The Influence of Mobile Banking Attributes on Cashless Society through Adaptive Anthropomorphism and Task-Fit Technology

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Abstract **-** The research aimed to analyze the role of adaptive anthropomorphism and Task-Fit Technology (TFT) in mediating the relationship between performance expectancy, effort expectancy, perceived security, and a cashless society among traditional market traders. The research procedures applied a quantitative design, and the sample population consisted of 279 traditional market traders who had utilized mobile banking services. The data obtained were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) to measure the structural relationships. Smart-PLS 3 was utilized as the analytical tool, following a two-stage process to examine data and assess the influence and significance of mediating variables. The results show the benefits of integrating Mobile Banking with the Unified Theory of Acceptance and Use of Technology (UTAUT) and Task-Fit Technology (TFT), offering scientific explanations and empirical evidence based on customer experiences in financial transactions. Adaptive anthropomorphism serves as a mediating factor, bridging the relationship between facilitating conditions, perceived security, perceived trust, and the adoption of a cashless society. In addition, TFT mediates the connection between effort expectancy, perceived security, perceived trust, and the adoption of a cashless society within the context of mobile banking services. These results could be helpful for banking management because facilitating conditions positively encourages the use of non-cash payments in the market between merchants and consumers where proof of payment is represented through human-like voice interaction.

Keywords: UTAUT model, cashless society, adaptive anthropomorphism, task-fit technology

I. INTRODUCTION

Indonesia is increasingly transitioning into a cashless society, marked by the widespread adoption of digital technology among both businesses and consumers (Priananda et al., 2020). Several research have shown that a cashless society is one in which individuals predominantly rely on non-cash payment methods, particularly in economic transactions (Priananda et al., 2020). The shift has significantly benefited small and medium-sized enterprises (SMEs) by enabling consumers to conduct transactions more flexibly and efficiently (Lestari et al., 2020). Among the various digital payment solutions, mobile banking applications featuring the Quick Response Code Indonesian Standard (QRIS) have emerged as the preferred method for seamless and standardized transactions (Kosim & Legowo, 2021).

The implementation of QRIS in Indonesia is not limited to large-scale businesses but also extends to micro and small-scale merchants, including traditional market traders. Many of these traders have adopted QRIS as a payment method due to its affordability and universality, as it requires only a single account to receive payments from various mobile banking applications (Rachmad & Raharjo, 2023). One notable example is the traditional market in Buleleng Regency, Bali, the largest in the region and a popular shopping

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destination for foreign tourists seeking local specialty products, such as handicrafts and food. Despite the widespread availability of mobile banking services among traditional market traders, research has shown that many still prefer cash transactions (Prasetia & Lestari, 2023). The primary challenges hindering the adoption of mobile banking include a lack of trust and concerns over security, which remain significant barriers for many merchants (Nubatonis et al., 2024). Furthermore, there is still a limited understanding of merchants' needs and behavioral patterns in optimizing their mobile banking payment experiences (Maurida et al., 2024).

Limited understanding and proficiency in information and communication technology pose significant challenges to merchants' acceptance of mobile banking, leading to relatively stagnant usage levels (Azis, 2024). The government's efforts to promote QRIS as a non-cash transaction method in traditional markets have not yielded substantial results, as both business operators and consumers exhibit low engagement in mobile banking transactions (Aman et al., 2023). Moreover, mobile banking services have not significantly contributed to the growth of traders' businesses due to unfulfilled performance expectations, effort expectations, and inadequate supporting infrastructure (Eneizan et al., 2019). Small and medium-sized merchants lack confidence in utilizing mobile banking services, partly due to difficulties in accessing comprehensive financial reports (Rachapaettayakom et al., 2020). In addition, expectations regarding transaction convenience remain unmet, as merchants must manually check their mobile banking accounts for payment confirmations (Guo & Bouwman, 2016). Traditional market traders also face challenges when transaction funds are delayed, as mobile banking applications lack an integrated technical support system for immediate refund processing (Dahlberg et al., 2015). These gaps show a critical disparity between the attributes of mobile banking services and traders' willingness to adopt cashless payment transactions in traditional markets.

To bridge the identified gap, this research applies adaptive anthropomorphism and TFT to mediate the relationship between mobile banking services and cashless transactions among traditional market traders. According to the TFT theory, adaptive anthropomorphism enhances user familiarity by integrating visual or audio features modeled after human behavior, thereby facilitating more contextually interactive responses (Moriuchi, 2021). The contextual interaction involves providing semantically accurate nominal payment information through human-like voice notifications, thereby reducing the need for traders to frequently open their mobile banking applications for transaction validation while fostering an emotional or social connection (Ochs et al., 2017). Performance expectations refer to consumers' anticipated outcomes when utilizing these services (Arcand et al., 2017). The integration of AI-driven, human-like features enhances convenience, allowing users to interact with these features (Lee & Chen, 2022). Effort expectations focus on the steps consumers must take to use mobile nanking effectively (Baabdullah et al., 2019). Advances in technology have led to more intuitive and visually appealing interfaces (Tran & Corner, 2016), thereby minimizing user effort while maximizing efficiency (Jamshidi et al., 2018). Enhanced mobile banking features, particularly AI-powered virtual assistants, offer significant benefits by providing intelligent solutions to various financial transaction-related tasks (Manser Payne et al., 2021). Consequently, these advancements motivate consumers to adopt Mobile Banking services, contributing to business growth and development (Molina-Collado et al., 2021).

Facilitating conditions refer to the factors that support the effective utilization of technological advancements (Baptista & Olifia, 2015). One key aspect is the social dimension, which helps consumers navigate challenges in Mobile Banking transactions (Laukkanen, 2016). Mobile banking services now incorporate virtual assistants powered by artificial intelligence (AI), designed to simulate human interactions and enhance user experience (Priya & Sharma, 2023). These AI-driven assistants, commonly known as chatbots, provide human-like customer support and operate optimally when supported by adequate Mobile Banking resources (Oruganti, 2020). Chatbots are specifically designed to comprehend consumer queries using natural language processing, appropriate intonation, and polite conversational delivery. The integration of anthropomorphic characteristics plays a crucial role in enhancing chatbot interactions, as it fosters more reliable and engaging communication between consumers and AI-driven services (Pelau et al., 2021).

Another approach involves applying TFT through structural assurance, which guarantees the protection of funds and the security of payment transactions, thereby encouraging traders to adopt cashless payment systems (Xia et al., 2023). Strong structural assurance is essential in ensuring payment security, serving as a foundation for merchants to build trust in mobile banking services (Geebren et al., 2021). The alignment between mobile banking service functionalities and user tasks significantly influences consumer perceptions, reinforcing the belief that mobile banking can effectively support financial transactions (Alalwan et al., 2018). Mobile banking users can easily access their financial reports without excessive effort, as the platforms provide comprehensive transaction records for all periods (Komulainen & Saraniemi, 2019). Continuous technological advancements enhance mobile banking features, making it better suited to user needs in financial transactions. Building user trust remains a key objective in the development of mobile banking services, particularly in enhancing transaction efficiency and security (Che et al., 2023). One crucial factor in enhancing the services is the availability of reliable infrastructure and resources that optimize functionality, performance,

and transaction security. These transactions include purchasing goods, transferring funds, checking balances, and reviewing financial statements. The integration of advanced security measures further enhances the users' experience by enabling safe, convenient, and seamless online financial transactions (Shahid et al., 2022). For instance, password security is reinforced with biometric authentication, such as facial recognition, which minimizes login errors and prevents unauthorized access (Wang et al., 2020).

Despite the growth of cashless payments in Indonesia, many traditional market traders are still hesitant to switch to mobile banking. Their concerns primarily revolve around transaction security and trust in digital systems, which often feel impersonal. In this context, adaptive anthropomorphism serves as a solution by creating more human-like interactions. With voice-based virtual assistants or chatbots, traders can more easily understand and manage their transactions. However, technology should not only be easy to use but also tailored to traders' needs. TFT ensures that mobile banking is not just sophisticated but also practical. For example, traders can receive automatic voice notifications when a payment is received, eliminating the need to check the app constantly. With technology that aligns with the way traders work, mobile banking is more natural and beneficial. By combining the human touch of adaptive anthropomorphism with the proper functionality of TFT, mobile banking can become more than just a financial tool; it can be a solution that makes traders feel safe, comfortable, and confident in using digital financial services. This not only accelerates the transition to a cashless society but also empowers traders to embrace the digital era easily. Therefore, the research aims to analyze adaptive anthropomorphism and TFT as mediator variables that mediate the relationship between performance expectancy, effort expectancy, facilitating conditions, perceived trust, perceived security, and cashless society among traditional market traders. The urgency of the research is to identify factors that could facilitate aspects of mobile banking service attributes in encouraging cashless society activities among traditional market traders. The proposed model is shown in Figure 1. Information related to these factors would be useful for banks in developing mobile banking services to support market digitalization programs and attract traders to carry out non-cash payment transactions in traditional markets.

The easier a technology is to use, the more likely users are to adopt anthropomorphic elements

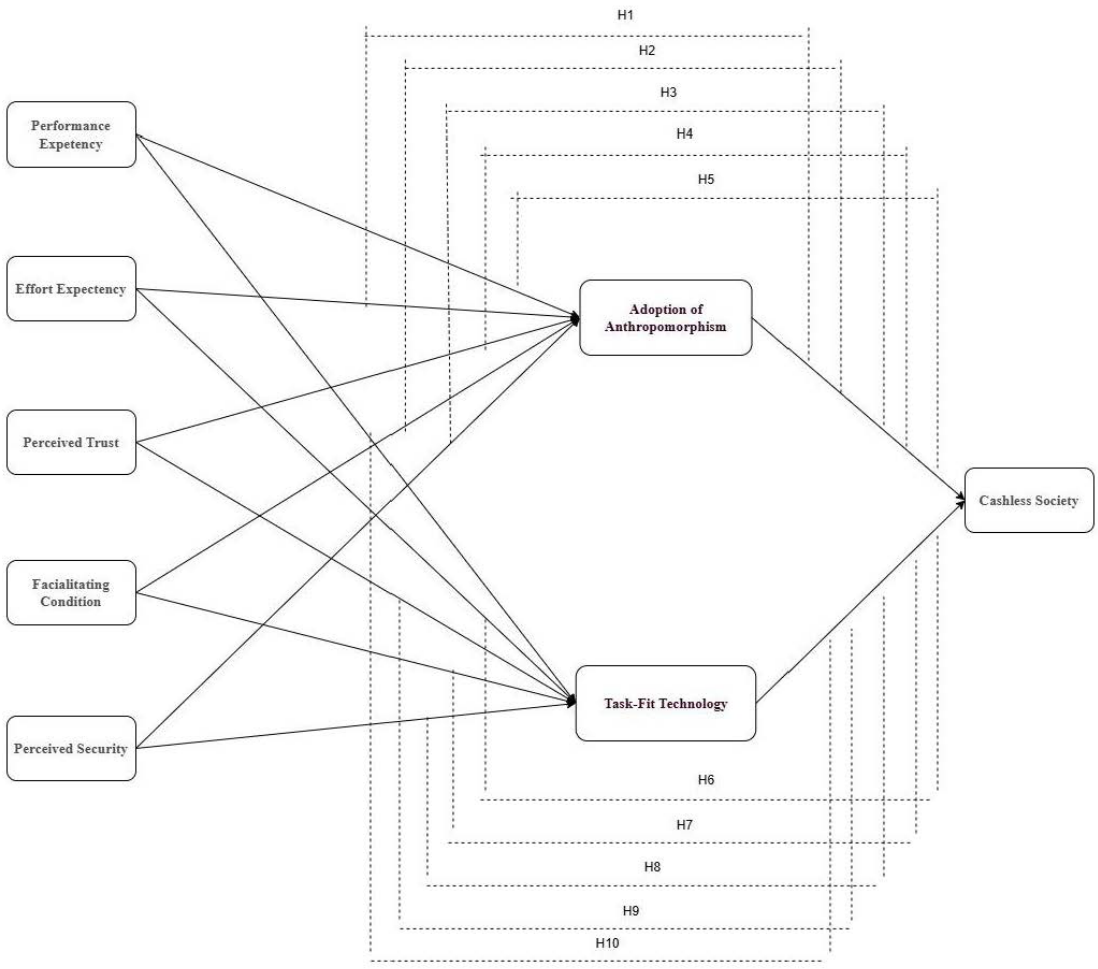

Figure 1 Conceptual Model

such as chatbots and transaction notifications, which enhance the accessibility of digital financial services. This, in turn, facilitates the adoption of digital payment methods and supports the transition to a cashless society. Research indicates that effort expectancy has a positive influence on users' willingness to adopt mobile banking, as it is strongly linked to the ease of learning and system usability. The following hypothesis is suggested.

H1: Adaptive anthropomorphism mediates the relationship between effort expectancy and cashless society.

Supportive facilities and anthropomorphism elements, such as virtual assistants, can enhance accessibility and user experience, encouraging the adoption of digital payment methods without third-party applications. Research has found that facilitating conditions positively influence mobile banking usage, supported by user knowledge, resources, and technological infrastructure (Ferghyna et al., 2020; Ningsih & Hamid, 2022). The following hypothesis is suggested.

H2: Adaptive anthropomorphism mediates the relationship between facilitating conditions and cashless society.

Technology with human-like characteristics that instill trust, such as warning notifications for suspicious transactions, enhances users' sense of security. This promotes the adoption of digital payment methods and supports the development of a cashless society. When users feel secure, they are more satisfied and more likely to continue using digital financial services, as they feel protected from cyber threats (Subani & Roostika, 2024). The following hypothesis is suggested.

H3: Adaptive anthropomorphism mediates the relationship between perceived security and a cashless society.

User trust increases with anthropomorphism elements such as interactive tutorials from virtual assistants, which help users understand new features. This strengthens trust in digital financial services and accelerates the transition to a cashless society. Perceived trust has been found to affect user loyalty, demonstrating that trust influences customers' perception of value alignment and their overall experience in using financial technology (Rahmansyah et al., 2023). The following hypothesis is suggested.

H4: Adaptive anthropomorphism mediates the relationship between perceived trust and a cashless society.

When technology meets performance expectations by providing a responsive and proactive experience, such as financial recommendations from a virtual assistant, users are more likely to adopt digital payment methods, supporting a cashless society. Research has found that performance expectancy strongly influences mobile banking due to its ease of use and efficiency in financial transactions (Migliore et al., 2022; Lesmana et al., 2023). The following hypothesis is suggested.

H5: Adaptive anthropomorphism mediates the relationship between performance expectancy and a cashless society.

Technology that aligns with user needs and facilitates navigation and transactions, such as quick transfer features and automated bill payments, enhances effort expectancy and encourages the adoption of digital payment methods. Research indicates that technology aligned with user tasks increases efficiency and users' expectations. Effort expectancy influences the adoption of mobile banking for transactions (Vendramin et al., 2021; Savić & Pešterac, 2019). The following hypothesis is suggested.

H6: Task-fit technology mediates the relationship between effort expectancy and a cashless society.

Supportive infrastructure, such as mobile banking compatibility with user devices and QRIS payment features, simplifies transactions and enhances the adoption of a cashless society. Studies have found that applications compatible with users' devices positively influence usage intentions, and the efficiency of mobile banking services is influenced by accessibility and system stability (Marciano et al., 2022; Ningsih & Hamid, 2022). The following hypothesis is suggested.

H7: Task-fit technology mediates the relationship between facilitating conditions and a cashless society.

Security features, such as two-factor authentication, data encryption, and real-time transaction notifications, enhance users' sense of security, encouraging the adoption of TFT and accelerating the shift to a cashless society. Perceived security significantly influences users' intentions to use mobile banking, particularly for financial transactions that require data protection (Tahar et al., 2020; Chiu et al., 2017). The following hypothesis is suggested.

H8: TFT mediates the relationship between perceived security and cashless society.

Trust in mobile banking systems increases with features such as automatic payments and guaranteed data security. This strengthens TFT, increases digital financial service usage, and supports a cashless society. Perceived trust significantly influences continuance intention, particularly regarding data privacy, which in turn determines customer loyalty toward banks

(Kurniawan et al., 2024). The following hypothesis is suggested.

H9: TFT mediates the relationship between perceived trust and a cashless society.

Features such as fast transactions, QRIS payments, and process automation enhance user efficiency and productivity. When technology meets performance expectations, digital payment adoption increases, accelerating the transition to a cashless society. Research shows that users continue to use technology when it offers value and innovation. QRIS technology has been proven to enhance user productivity in financial transactions (Marciano et al., 2022; Wardani & Masdiantini, 2022). The following hypothesis is suggested.

H10: TFT mediates the relationship between performance expectancy and a cashless society.

II. METHODS

The data collection technique in the research applies a cross-sectional survey method. The survey is conducted once at a single point in time with traditional market traders. The process follows several steps: (1) The investigators visit the traditional markets in person to ensure that the selected respondents meet the criteria; (2) The investigators distribute pre-prepared questionnaires to market traders as the primary data collection instrument; and (3) The investigators conduct informal interviews to gain additional insights into respondents' choices. These informal interviews are conducted to understand the reasoning behind respondents' answers, provide deeper context to the collected data, and ensure that the responses genuinely reflect the respondents' understanding of the questions. The research relies on primary data, which includes responses from a closed-ended questionnaire as well as supplementary information from interviews. The main objective is to analyze market traders' acceptance of mobile banking service attributes and how these services align with their financial transaction needs. The research applies the Likert scale to measure responses effectively, where traders indicated their level of agreement on a scale of 1 to 5 (1 = Strongly Disagree, 5 = Strongly Agree). This structured approach ensures a comprehensive understanding of traders' perceptions, providing valuable insights into the factors that influence the adoption of mobile banking in traditional markets.

Furthermore, to further analyze the data, the research applies PLS-SEM, a modeling technique that focuses on multivariate statistical techniques based on empirical data to explore both direct and indirect relationships between research variables (Hair Jr et al., 2017). The aim is to assess the structural relationships within the model using PLS-SEM, which provides insights into the role and impact of mediating variables whether partial or complete mediation occurred (Hair Jr et al., 2021). Then, the research applies Smart-PLS 3 software, which involves two key analysis stages. The first stage examines exogenous variables, including performance expectancy, effort expectancy, facilitating conditions, perceived trust, and perceived security. The endogenous variables include adaptive anthropomorphism, TFT, and a cashless society. The first stage helps ensure the validity and reliability of the model. The second stage focuses on analyzing the relationships between exogenous and endogenous variables, mediated by adaptive anthropomorphism and TFT. The research follows a quantitative study approach, involving 920 traders from the Singaraja traditional market. The target population is based on data from the Buleleng Market Regional Company (Kusuma, 2023), where traders have adopted electronic levies through mobile banking services. The sample consists of traditional market traders from various sectors, including food, vegetables, fruits, meat, fish, and groceries.

The research applies a Proportionate Stratified Random Sampling technique to ensure a fair representation of traders from different business sectors (Hair Jr et al., 2017). From the distributed questionnaires, 279 responses are successfully collected, representing a 30.32% response rate. The results indicate that traders hold positive perceptions of the research and believe that its findings could be a source of future benefits. The questionnaire, as the primary data collection instrument, consists of several structured questions designed to align with the research objectives. The variables measured in are adapted from previous research (Almaiah et al., 2023, Kaur & Arora, 2021, Lee & Chen, 2022, Tam & Oliveira, 2016, Rahi & Abd. Ghani, 2019). Specifically, the questionnaire includes three items per variable to measure performance expectancy, effort expectancy, facilitating conditions, perceived security, perceived trust, adaptive anthropomorphism, TFT, and cashless society.

The research emphasizes the measurement model, which is used to assess the convergent and discriminant validity of the constructs. This is evaluated based on factor loading, Average Variance Extracted (AVE), and reliability scores. Statistical reliability is determined using Cronbach's alpha, with the following acceptance thresholds, namely AVE >0.5, factor loading >0.6, and composite reliability >0.70 (Chin, 1998, Fornell & Larcker, 1981). The measurement model results confirm that convergent validity was achieved, indicating that all variables met the required reliability standards (Table 1). The next step in the analysis was assessing discriminant validity, which determined whether each construct was distinct from the others. This research applies the Heterotrait-Monotrait (HTMT) correlation method to measure discriminant validity, ensuring that the correlation values between variables remain below 0.90. The results indicate that all correlations fell within the acceptable range, confirming the validity

of the measurement model (Table 2). This rigorous approach ensured that the study's findings provided reliable and meaningful insights into the adoption of mobile banking services among traditional market traders.

Table 1 Reliability Test

Variable	Outer Loading	Cronbach's Alpha	Average Variance Extracted (AVE)	Description
Effort Expectancy (EE) (Almaiah et al., 2023)		0,886	0,814	
EE1	0,887			Reliable
EE2	0,923			Reliable
EE3	0,896			Reliable
Perceived Security (PS) (Kaur & Arora, 2021)		0,712	0,623	
PS1	0,640			Reliable
PS2	0,867			Reliable
PS3	0,842			Reliable
Facilitating Condition (FC) (Almaiah et al., 2023)		0,715	0,636	
FC1	0,780			Reliable
FC2	0,812			Reliable
FC3	0,776			Reliable
Perceived Trust (PT) (Rahi & Abd. Ghani, 2019)		0,715	0,636	
PT1	0,789			Reliable
PT2	0,815			Reliable
PT3	0,789			Reliable
Performance Expectancy (PE) (Rahi & Abd. Ghani, 2019)		0,858	0,778	
PE1	0,882			Reliable
PE2	0,910			Reliable
PE3	0,853			Reliable
Adaptive Anthropomorphism (Lee & Chen, 2022) (AA)		0,753	0,671	
AA1	0,861			Reliable
AA2	0,859			Reliable
AA3	0,731			Reliable
Task-fit Technology (TFT) (Tam & Oliveira, 2016)		0,799	0,713	
TFT1	0,851			Reliable
TFT2	0,853			Reliable
TFT3	0,829			Reliable
Cashless Society (CS) (Zhou et al., 2010)		0,732	0,651	
CS1	0,780			Reliable
CS2	0,837			Reliable
CS3	0,803			Reliable

Source: Primary Data Processed (2024)

Table 2 Discriminant Validity Test

	Adaptive Anthropo-morphism	Cashless Society	Effort Ex-pectancy	Facilitating Condition	Perceived Security	Perceived Trust	Perfor-mance Expectancy	Task-fit Technology
Adaptive Anthropo-morphism								
Cashless Society	0,723							
Effort Expectancy	0,718	0,616						
Facilitating Condition	0,798	0,751	0,799					
Perceived Security	0,825	0,611	0,749	0,897				
Perceived Trust	0,596	0,481	0,544	0,647	0,588			
Performance Expectancy	0,640	0,591	0,852	0,841	0,594	0,706		
Task-fit Technology	0,732	0,668	0,626	0,585	0,619	0,550	0,490	

Source: Primary Data Processed (2024)

III. RESULTS AND DISCUSSIONS

The results of this research focus on the relationship of the research hypothesis, which is tested using an internal model test. Furthermore, it can determine the significant influence of the concept and p-values. Figure 2 shows the results of the structural model, while Table 3 shows the standard path coefficient model. The results indicate that the indirect relationship of the effort expectancy to a cashless society mediated by adaptive anthropomorphism give positive and significant results, respectively (ß = 0.056, $p > 0.1$), and H1 is rejected. In addition, the indirect relationship of the facilitating condition to a cashless society mediated by adaptive anthropomorphism gives positive and significant results, respectively (ß = 0.047, $p < 0.1$), and H2 is accepted. The indirect relationship of perceived security to a cashless society mediated by adaptive anthropomorphism shows positive and significant results, respectively (ß = 0.156, $p < 0.01$), and H3 is accepted. The indirect relationship of the perceived trust to a cashless society mediated by adaptive anthropomorphism give positive and significant results, respectively (ß = 0.035, $p < 0.1$), and H4 is accepted. The indirect relationship of the performance expectancy to a cashless society mediated by adaptive anthropomorphism gives positive and significant results, respectively (ß = 0.027, $p > 0.1$), and H5 is rejected.

The research results show that the indirect relationship of the effort expectancy to a cashless society mediated by TFT gives positive and significant results, respectively (ß = 0,115, $p < 0.01$), and H6 is accepted. The indirect relationship of the facilitating condition to cashless society mediated by TFT gives positive and significant results, respectively (ß = 0.026, $p > 0.1$), and H7 is rejected. Furthermore, the indirect relationship of the perceived security to a cashless society mediated by TFT gives positive and significant results, respectively (ß = 0.051, $p < 0.05$), and H8 is accepted. The indirect relationship of the perceived trust in a cashless society mediated by TFT gives positive and significant results, respectively (ß = 0.068, $p < 0.01$), and H9 is accepted. The indirect relationship of the performance expectancy to a cashless society mediated by TFT gives negative and significant results, respectively (ß = -0.035, $p > 0.1$), and H10 is rejected.

The findings of this research reveal that the indirect relationship between various variables and a cashless society varied in significance depending on the mediator used, namely adaptive anthropomorphism or TFT. The results from the internal model testing indicate that the acceptance or rejection of a hypothesis was based on the standardized path coefficient (ß) and significance level (p-value). Compared to previous research, effort expectancy—despite lowering transaction administrative costs—remains a barrier to adopting adaptive voice notification features in mobile banking. The research results indicate that the relationship between effort expectancy and a cashless society, when mediated by adaptive anthropomorphism, is not significant (H1 is rejected). This is because accessibility controls, such as voice notification activation, are perceived as relatively difficult to manage when users interact with mobile banking applications. As a result, many merchants did not activate the feature, making consumers less

inclined to adopt cashless payments, which supports the idea that effort expectancy enhances adaptive anthropomorphism (Moghavvemi et al., 2021). However, when mediated by TFT, this relationship becomes significant and positive (H6 is accepted). This suggests that effort expectancy plays a crucial role in TFT Adaptive, as mobile banking reduces administrative burdens, such as eliminating the need for merchants to visit banks frequently to deposit sales revenue (Changchun et al., 2017). Therefore, TFT plays a more dominant role in technology Adaptive compared to anthropomorphism elements.

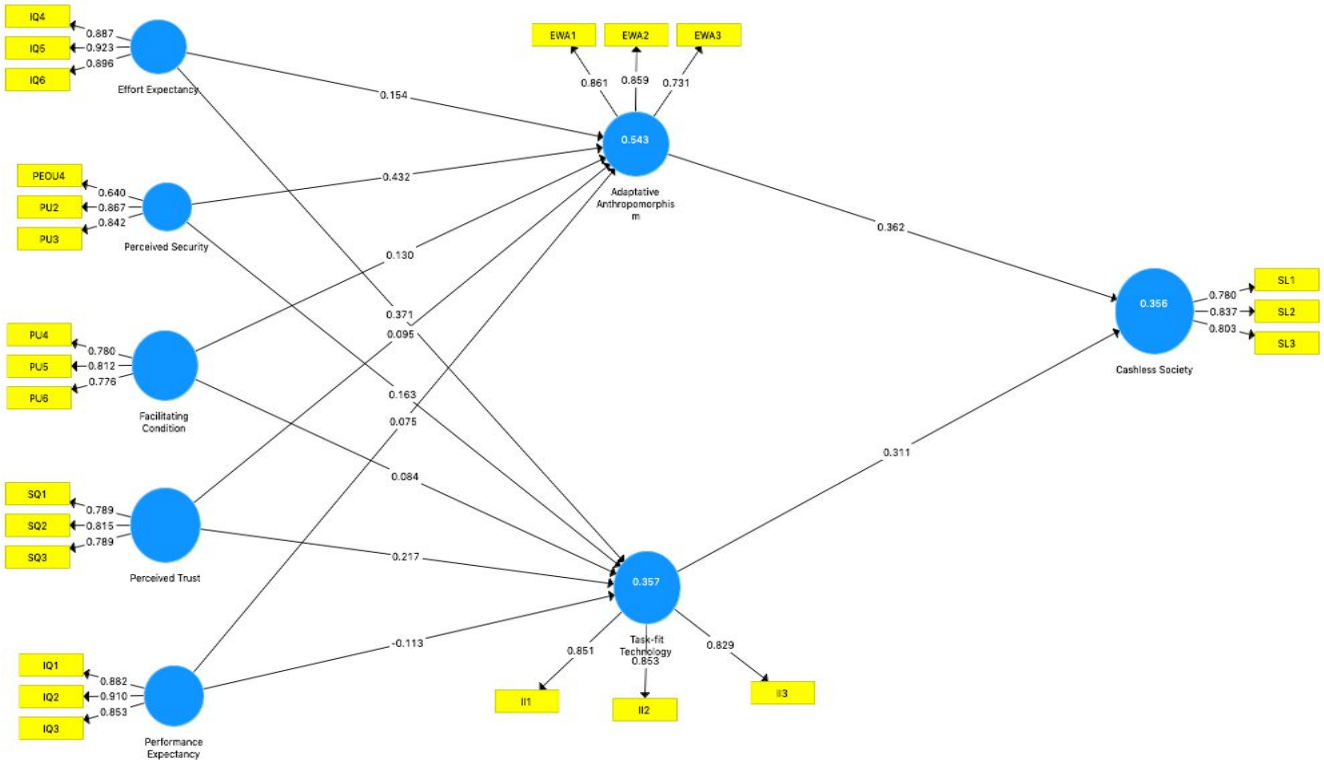

Figure 2 The Result of Conceptual Model

Table 3 Hypothesis Results

	Variable Relationships	Path Coefficient	t-statistic	P-Value	Conclusion
H1	Effort Expectancy → Adaptive Anthropomorphism → Cashless Society	0,056	1,513	0,131	Non-Significant
H2	Facilitating Condition → Adaptive Anthropomorphism → Cashless Society	0,047	1,698	0,090	Significant
H3	Perceived Security → Adaptive Anthropomorphism → Cashless Society	0,156	4,841	0,0001	Significant
H4	Perceived Trust → Adaptive Anthropomorphism → Cashless Society	0,035	1,798	0,073	Significant
H5	Performance Expectancy → Adaptive Anthropomorphism → Cashless Society	0,027	0,863	0,389	Non-Significant
H6	Effort Expectancy → Task-Fit Technology → Cashless Society	0,115	3,009	0,003	Significant
H7	Facilitating Condition → Task-Fit Technology → Cashless Society	0,026	1,698	0,115	Non-Significant
H8	Perceived Security → Task-Fit Technology → Cashless Society	0,051	2,177	0,030	Significant
H9	Perceived Trust → Task-Fit Technology → Cashless Society	0,068	2,754	0,006	Significant

Table 3 Hypothesis Results (Continued)

	Variable Relationships	Path Coefficient	t-statistic	P-Value	Conclusion
H10	Performance Expectancy → Task-Fit Technology → Cashless Society	-0,035	1,061	0,289	Non-significant

Source: Primary Data Processed (2024)

The facilitating condition is found to significantly influence adaptive anthropomorphism, supporting the adaptive voice features in mobile banking (H2 is accepted). Supportive facilities make it easier for merchants to accept cashless payments via voice-based interactions that mimic human conversation. This eliminates the need for merchants to open their mobile banking applications to verify transactions manually (Chi et al., 2021, de Kloet & Yang, 2022). This aligns with previous research, which suggests that customer trust increases when voice intelligence assists in the exchange of transaction information, particularly in payment confirmation. Trust is influenced by adaptive anthropomorphism, which helps users conduct financial transactions more efficiently and reinforces the role of anthropomorphism in supporting a cashless society (de Andrés-Sánchez & Gené-Albesa, 2023).

However, when mediated by TFT, the effect becomes insignificant (H7 is rejected), which is consistent with findings from Ratna et al. (2020). A possible reason is the limited RAM capacity of mobile devices, which often cause mobile banking applications to crash. This problem leads to transaction failures and lowers the reliability of the service. Although facilitating condition supports voice-featured adaptive, hardware limitations prevent seamless task-technology alignment, ultimately hindering the optimization of mobile banking features.

Perceived security plays a crucial role in promoting mobile banking adaptive, through adaptive anthropomorphism (H3 is accepted) and TFT (H8 is accepted). Similarly, this positively influences a cashless society, whether mediated by adaptive anthropomorphism (H4 is accepted) or TFT (H9 is accepted). These findings align with research by Gupta and Dhingra (2022) and Mahfuz et al. (2017), which highlight that voice intelligence enhances reassuring interactions in mobile banking, while TFT improves customers' trust in digital financial transactions. Additionally, biometric authentication methods, such as facial recognition and fingerprint scanning, played a vital role in maintaining financial transaction security. This supports previous research, which finds that advanced security features enhance user trust in digital transactions. Moreover, perceived security remains a key factor in improving TFT, as biometric authentication simplifies the login process by eliminating the need for password entry while maintaining transaction security (McLean et al., 2020). A clear example is QRIS technology, which allows users to make payments, check balances, and monitor financial transactions, further strengthening the positive impact of security on TFT (Baabdullah et al., 2019).

However, performance expectancy does not show significant results in either mediation model. Whether through adaptive anthropomorphism (H5 is rejected) or TFT (H10 is rejected), expectations regarding mobile banking performance do not significantly influence the Cashless Society. This aligns with findings from Njenga et al. (2016), which reveal that transaction notification delay and performance discrepancies in mobile banking applications create concerns among merchants. Many merchants perceive that the expected benefits of mobile banking performance are not fully realized, such as where a payment notification appears but the funds do not immediately appear in the merchant's account. This results in uncertainty and hesitation among merchants, leading to the belief that performance expectancy do not align with real-world experiences. However, performance expectancy enhance TFT (Lyu et al., 2022). This suggests that while mobile banking offer additional features like voice notifications, speed and accuracy remain the most critical factors in cashless payment adaptive.

These findings reinforce previous research indicating that perceived security, perceived trust, and facilitating conditions play significant roles in enhancing mobile banking Adaptive and fostering a cashless society, particularly when mediated by adaptive anthropomorphism or TFT. Meanwhile, effort expectancy and performance expectancy continue to face adaptive challenges. Technology must be leveraged effectively by integrating it into mobile banking developments that serve as innovations for seamless financial management, thereby increasing mobile banking adaptive in digital financial transactions. This includes payment processing, balance checking, and financial reporting. Mobile banking provides substantial benefits for users by facilitating financial transactions. Thus, these findings support the argument that TFT enhances the transition toward a cashless society (Afeti &Owusu, 2022).

IV. CONCLUSIONS

In conclusion, the mediating role of adaptive anthropomorphism is more influential than TFT in bridging the influence of market traders' perceptions of non-cash payments by buyers through mobile banking services. The results of this research provide information about the benefits of using mobile banking

integrated with the Unified Theory of Acceptance and Use of Technology (UTAUT) and Task-Technology Fit (TTF), as it can offer scientific explanations, evidence, and insights from customers who have used mobile banking in financial transactions. The results of the integrated model indicate that 45.4% of the variance in cashless society use is attributed to mobile banking, which is supported by five of the ten proposed hypotheses of this research. In addition, the results focus on customer perceptions related to perceived security, perceived trust, and facilitating conditions showing positive results. Therefore, a cashless society accepts the use of mobile banking mediated by adaptive anthropomorphism and TFT except for performance expectancy and effort expectancy.

From a theoretical perspective, adaptive anthropomorphism is positioned as a mediator that bridges the relationship between facilitating conditions, perceived security, perceived trust, and cashless society. In contrast, TFT could mediate the linkage between effort expectancy, perceived security, perceived trust, and cashless society in the context of mobile banking services. These mediators could address the research gap for these links. The authors also find that the mediating effect of adaptive anthropomorphism had more influence than TFT on the relationship between the perception of end-users of a cashless society. In turn, the application of appropriate anthropomorphism characteristics transformed human-mobile banking application interactions into a more trustworthy process. It can be concluded that TFT is evidence that technological developments, especially the use of mobile banking, can adapt to customer tasks, such as financial transactions which can be carried out effectively and efficiently.

From a practical standpoint, the authors' findings could be useful for banking management, as facilitating conditions positively encourage the use of non-cash payments in the market between merchants and consumers, where proof of payment is represented through human-like voice interaction in mobile banking services. Merchants no longer need to open the mobile banking application to validate proof of payment because notification of successful payment transactions from customers hasappeared. The use of adaptive anthropomorphism in mobile banking in the form of formal voice intonation could influence customer perceptions of the benefits of mobile banking in non-cash payment transactions. Therefore, the effort expectation showed that traders could reduce the administrative costs of payment transactions when using mobile banking, as previously, traders had to deposit cash from sales in the market at the bank, which took time and energy for the task. The existence of task-ft technology facilitated traders in reconciling sales reports with fund receipt transaction activities, allowing users to monitor financial flows quickly and in real time.

The research has several limitations that must be considered for future research to provide deeper and more comprehensive insights. First, this research applies a cross-sectional approach, meaning that data was collected at a single point in time. While this method helps capture the current situation, it does not reflect how traders' behavior evolved. In addition, to gain a better understanding of this transition, future research can adopt a longitudinal approach to observe how traditional market traders gradually adapt to mobile banking services and how this shift influences their long-term move toward cashless transactions. Second, this research focuses only on traditional market traders in Singaraja, which could limit the ability to generalize the findings. Different regions had different levels of digital literacy, access to technology, and transaction habits.

Furthermore, to gain a more well-rounded perspective, future research could expand to include traders from various cities in Bali or even other parts of Indonesia. This ensured a broader and more representative understanding of mobile banking Adaptive in traditional markets. The research primarily examines the role of adaptive anthropomorphism and TFT in mobile banking Adaptive. However, many other factors may influence traders' willingness to switch to cashless transactions, including trust in digital payments, government support, financial literacy, and infrastructure readiness. Future research could then explore these aspects to develop more tailored solutions that address traders' actual needs and challenges.

Lastly, the research applies a quantitative approach, which does not fully capture traders' personal experiences and challenges in adopting mobile banking. Furthermore, to gain deeper and more nuanced insights, future research could incorporate qualitative methods such as in-depth interviews or focus group discussions. This could help uncover traders' real-life experiences, struggles, and perspectives, making the research findings more holistic and actionable. By addressing these limitations, future reports could offer richer and more meaningful insights into how mobile banking could genuinely support traditional market traders in transitioning to digital financial systems. This could ultimately help build a more inclusive and sustainable cashless society where technology truly empowers small businesses and strengthens economic resilience.

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