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CAN AI-DRIVEN FEATURES ALONE FOSTER CUSTOMERS' TRUST IN INDONESIAN AND MALAYSIAN BANKS?

ROCHANIA AYU YUNANDA[1], TOTO RUSMANTO[1], MOHAMMAD ALI TAREQ[2], NURIL KUSUMAWARDANI SOEPRAPTO PUTRI[3]

[1]Accounting Program, School of Accounting, Bina Nusantara University, Jakarta, Indonesia
[2]Faculty of Business and Economics, University of Malaya, Kuala Lumpur, Malaysia
[3]Information System Department, School of Information System, Bina Nusantara University, Jakarta, Indonesia
*rochania.yunanda@binus.edu

ABSTRACT

Artificial intelligence (AI) has rapidly transformed numerous industries, including banking. Despite global economic challenges, the banking sectors in Indonesia and Malaysia have shown resilience and growth, actively adopting digital technologies. This study examines the effect of AI features on trust in banking industry of both countries. Besides AI features, this study explores other predictive factors such as income, gender, experience in using banking services and also frequency in dealing with banking services. Questionnaires were distributed to banking customers in Indonesia and Malaysia. Multiple regression analysis were performed using SmartPLS 4. The findings reveal that AI feature alone do not affect customer' trust. Some demography factors also play the important roles. The implications of this study are significant for both the banking sector and policymakers. By highlighting the role of AI in enhancing customer trust, the study underscores the importance of integrating advanced technologies to improve operational efficiency and customer experience. Prior studies focus on examining the determinants of technology adoption. This study is one among a very limited number of studies scrutinizing the adopted technological features on the customers' trust in banking industry.
Keywords: *AI Features, Banking, Trust, Income, Banking Experience, Frequency, Indonesia, Malaysia*

1. INTRODUCTION

Artificial Intelligence (AI) has made investing in information and communications technology essential for all industries. AI has undeniably advanced with many sophisticated technologies [1]. AI is rapidly evolving, allowing various industry sectors to harness its capabilities and enhance their business operations. It is considered a major force in digitalization, holding the potential to revolutionize several industries, especially the financial sector [2].

In today's technological era, traditional banking institutions are facing increasing pressure and operational challenges [3], [4]. AI has played a pivotal role in transforming the banking industry [5]. It has revolutionized the sector by enabling personalized services and enhancing operational efficiency [6], [7], [8]. Given the banking industry's extensive data management and analytical requirements, the integration of AI technologies is expected to have a profound impact on the sector [4].

The banking sectors in Indonesia and Malaysia have demonstrated resilience and growth despite the economic downturn. In Indonesia, the banking industry is progressively embracing digital technologies, with a particular emphasis on financial inclusion and improving access to banking services in underserved areas. The government and central bank have been proactive in encouraging digital banking and financial innovations to aid economic recovery. Similarly, in Malaysia, in line with the global fourth industrial revolution and the National Transformation 2050 (TN50) initiative, the country is advancing toward AI-driven innovation in the banking sector [9]. The Malaysian government, through the Malaysian Digital Economy Corporation (MDEC), has shown strong interest and taken proactive steps in advancing AI-enabled technologies. MDEC has brought together both local and international experts to create the National AI Framework, aiming to foster the development of the AI ecosystem in the country [5].

The integration of AI into banking has proven to be a powerful catalyst for the sector's growth. Malaysia's robust financial infrastructure provides a significant advantage to its banking industry. According to Bank Negara Malaysia, by 2024, over 97% of Malaysians will have internet access, 95% will own smartphones, and 96% of adults will have an active deposit account. In 2020, Bank Negara Malaysia also introduced the Regulatory Sandbox to support innovation in the sector [10]. It plays a crucial role in facilitating the testing of innovative AI applications in areas where regulatory barriers presently exist.

Indonesia, as an emerging economy with a large population, offers a unique banking landscape. The country holds significant potential to drive economic growth by optimizing the role of financial technology as an intermediary [11]. The swift advancement of innovations in financial technology poses a challenge for central banks in harnessing the benefits of digitalization. Bank Indonesia recognizes the necessity of creating a policy framework that emphasizes digital innovation, including the efficient use of Artificial Intelligence (AI).

The technological landscape is highly conducive to the growth of the Indonesian banking industry. The widespread adoption of smartphones and the Internet of Things (IoT) has facilitated the rapid expansion of financial technology and digital banking. This environment enables the integration of financial services across various platforms, driving innovation and promoting competition. The regulatory framework in Indonesia also plays a vital role in shaping AI adoption within the banking sector. Bank Indonesia, the country's central bank, has taken an active approach in developing policies and initiatives to support digital finance and AI integration. Recently, Bank Indonesia launched the Indonesian Payment System Blueprint (BSPI) 2025 to further promote these advancements [12].

AI significantly contributes to the immense development of the banking industry [13], [14]. AI in banking system is projected to create better customer engagement[9]. Nevertheless, an advanced technology in banking also possesses a few disadvantages including cyber threats [15], [16] and security encounters [17]. In line with this, AI is anticipated to enhance banking performance, efficiency, and security. An AI-integrated banking system should ensure the accountability of the bank's activities and processes. Ultimately, the banking system must focus on building and strengthening customer trust[18].

A major challenge in developing countries is the lack of trust in institutional structures and systems, which prevents consumers from participating in online transactions due to the perceived risks [19]. By utilizing data analysis and machine learning, banks can ensure fairness and impartiality in their lending and investment practices, thereby building trust with customers who value ethical and responsible financial services [20]. Researchers have highlighted that trust represents consumers' belief in the reliability of providers of innovative technologies [21]. Researchers have pointed out that trust signifies consumers' confidence in the dependability of providers of innovative technologies.

Some prior studies focus on the determinants of customers' intention to adopt AI in banking services [9], [22], [23], [24]. There is a lack of study examining how AI implementation affects customers' trust [25], [26]. This study examines the impact of AI on trust in the banking industry. By examining innovative applications of artificial intelligence and their effect trust, this study provides valuable insights into the future of banking in the dynamic Southeast Asian market. The current study examines the AI features in banking context comprising information quality [27], system quality [27], [28], online security [29], [30], customization [22], [31], and communication quality [27], [31]. Furthermore, this study also includes other variables such as gender, frequency using banking technology, experience using banking technology, and income. These variables are predicted to have impacts on trust. This study also compares two countries which are Indonesia and Malaysia.

2. LITERATURE REVIEW

2.1. AI in Banking Industry

In this era of technological advancement, traditional financial institutions are facing increased pressure and greater management challenges. The integration of AI into the banking sector represents a significant leap forward, allowing banks to enhance customer experiences, optimize operations, and minimize risks. As the adoption of AI grows, it is expected to continue transforming the banking industry, fostering a more efficient, secure, and customer-centric environment [9], [32]. Due to the extensive data management and analytical needs of the banking sector, the integration of artificial intelligence such as chatbots will have a significant impact on the industry [13] The application of AI is very useful for financial industry in terms of fraud detection and risk prevention.

The development of various disruptive technologies in the banking industry has reached the level of digital innovation [32]. AI is crucial for fraud detection and risk prevention. However, challenges such as the absence of regulatory requirements, concerns over data privacy and security, and the lack of necessary skills and IT infrastructure are significant obstacles in AI adoption [9]. AI is playing an important role in the digital transformation of the financial industry. Digital transformation has profoundly affected the banking sector in several ways such as enhancing customer experience, performing banking operation remotely, and other specialized financial services.

2.2. AI Features and Trust in Banking Industry

Several prior studies examined the factors influencing customers' trust in banking industry. In the one hand, AI-embedded banking is expected to enhance accountable and transparent activities and operations. On the other hand, the more accountable banking operation is projected to enhance customers' trust on technology-based banking system. Provided information including the information quality is a crucial factor affecting trust [22], [28]. AI adoption in banking should ensure the information is truthful, reliable, and transparent.

Another study scrutinized the quality aspects of banking. Those include service and system quality [27], [28] Implementing AI should embed this quality element. Customers do not have a direct access into the banking system. Therefore, system quality becomes strength of banking to ensure the customers utilize the technology and advancement offered by the banks. Service quality refers to the facilities needed by the customers. Customization refers to the degree or process of modifying a service to meet the specific needs, preferences, of the customers [32].

In banking, privacy and security are associated with financial risks [31]. Online security is found as a major factor influencing customers choice and decision in using banking technology [30]. Communication quality is another crucial aspect of banking powered by artificial intelligence [32]. Communication quality refers to the extent to which a bank delivers accurate, reliable, efficient, solution-oriented, and time-saving information to customers. Therefore, this study proposes that AI features in banking should comprise information quality, system quality, online security, customization, and communication quality.

AI is transforming roles in professional fields such as accounting, reshaping tasks and responsibilities to enhance accountability. AI will necessitate a reassessment of roles and responsibilities. AI does not only complement human functions but also takes on entirely new tasks, which will be held to accountability standards [33].

The changing dynamics of customer relationships, including factors like customer trust, have made traditional marketing strategies less effective in building and strengthening these connections. This highlights the need to integrate AI to foster more meaningful and personalized customer interactions. Technology-based banking should gain more trust than prior traditional system [34]. It is noteworthy that customers are increasingly turning to AI for guidance on managing their bank accounts and making specific investment choices.

2.3. Hypotheses Development

The integration of AI into the banking sector has greatly improved fraud detection and risk prevention. AI algorithms allow banks to identify and prevent fraudulent activities and gain more trust from their customers. The AI features like customization, attractiveness and problem solving have made banking operations more attractive and innovative [6]. The utilization of AI tools such as chatbots and virtual assistants for customer service will lead to an enhanced and personalized banking experience. As AI-powered systems many banking advancements, it is expected that customers will perceive increased convenience, responsiveness, and efficiency, consequently contributing to higher levels of trust in the bank's commitment to customer satisfaction [35]. Based the above explanation, this study derives the following hypotheses:

H1: Information quality positively affects customers' trust
H2: System quality positively affects customers' trust
H3: Online security positively affects customers' trust
H4: Customization positively affects customers' trust
H5: Communication quality positively affects customers' trust

Research indicates that individuals' trust in banks can vary based on their gender and income levels, as these factors can influence their perceptions of financial security and accessibility. Some prior study found that gender plays a critical role in behavior. Men can interact better with technology and have more positive response toward technology [36]Additionally, customers who have encountered problems with banking services in the

past may exhibit lower levels of trust, as negative experiences can lead to skepticism about the reliability of financial institutions. Furthermore, the frequency with which customers use banking technology, such as online or mobile banking, also affects trust, with frequent users generally having more confidence in the security and efficiency of digital banking systems. Together, these factors contribute to how customers perceive and trust the banking sector.

H6: Income positively affects customers' trust
H7: Gender affects customers' trust
H8: Experience in using banking service affects customers' trust
H9: Frequency in using banking service affects customers' trust

3. RESEARCH METHODOLOGY

In order to answer the research questions, this study distributed questionnaires to Indonesian and Malaysian banking customers. The closed ended questionnaire were designed to capture views and opinions perception of banking customers related to the impacts of AI on banking accountability and finally enhance customers' trust and in Malaysia and Indonesia. The respondents were screened and ensured that they understood the context of AI in banking industry. The total of 221 complete responses were analysed using SEM PLS 4. The questionnaire instruments to asseess AI features use Likert Scale of 1 to 5 and consist of 21 elements confirming the AI features in banking. Other factors include gender (binary), experience in using banking services (binary, if the customer experiences troubles dealing with banking technology), frequency using banking technology, and Income.

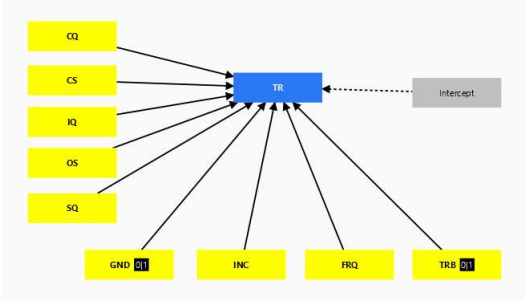

Figure 1: Research model

This study examines the relationship between technological investments and banking scalability and productivity through the following model:

$$TR = b_0 + b_1IQ + b_2SQ + b_3OS + b_4CS + b_5CQ + b_6FRQ + b_7GND + b_8INC + b_9TRB + e$$

TR : Trust
IQ : Information Quality
SQ : System Quality
OS : Online Security
CS : Customization
CQ : Communication Quality
FRQ : Frequency in using m-banking
GND : Gender
INC : Income
TRB : Trouble using m-banking

4. FINDINGS AND DISCUSSION

This session presents the statistical results of the study. It is started with the descriptive statistics of the data.

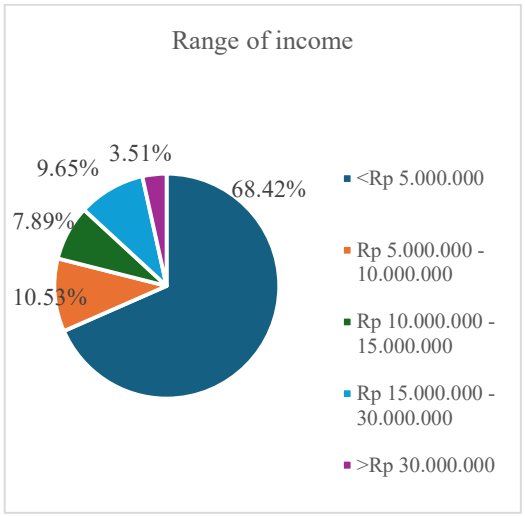

Figure 2: Range of Income of Indonesian Respondents

Based on the data visualized in the pie chart above the Indonesian users of Mbanking is dominated by low income users. Up to 68% of users with income lower than 5 million followed by 10% users in the range of 5 million and up to 10 million rupiah which means almost 80% of Indonesian users of mbanking has a low very income. Only slightly more than 20% of users has a high income of more than 10 Million rupiah.

Based on the data, most respondent of Indonesia Mbanking users is Female with the rate of 67% users while the males have a much lower rate of only 32%. This indicates that majority of

respondents could mostly come from female students that have low income or allowance that are used to buy food and residents.

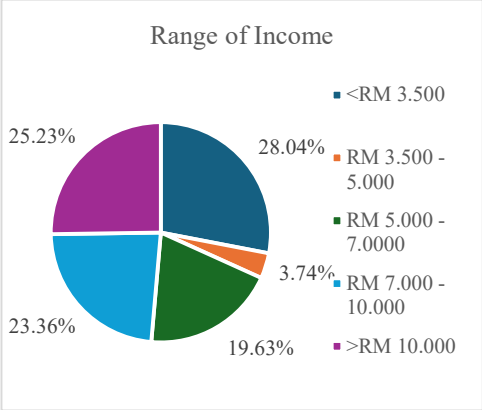

Figure 3: Range of Income of Malaysian Respondents

Malaysian user of Mbanking is evenly distributed from 28% in the low income class of less than RM 3.500 monthly up to 25% in the high income class of over RM 10.000 with a more diverse range of income the transaction being made with the application is surely done with a higher value and a more diverse range of people.

Based on the data, majority of respondent or Mbanking users in malaysia is female with the rate of 67% with the male at only 32%. The detail amount of user is 72 female and 35 male respondents.

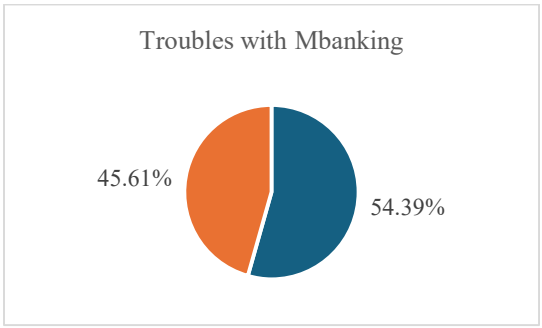

Figure 4: Troubles with M-banking - Indonesia

Based on the chart above more than half of Mbanking users has never experienced some sort of trouble while using the application. However 45.61% of users has stated that they never have any troubles while using the application so its safe to assume that Mbanking applications are quiet reliable in Indonesia with troubles that still need to be fixed by the banks.

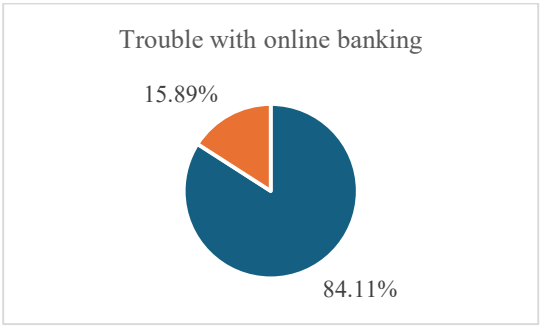

Figure 5: Troubles with M-banking – Malaysia

Based on the chart above 84.11% of Mbanking user in Malaysia has never experienced some kind of problem with their application. Only 15.89% of users have experience any problems with their application this means that although Mbanking is widely used in Malaysia the application is not optimized well enough.

Table 1: Multicollinearity

	Indonesia	Malaysia
	VIF	VIF
CQ	3,798	1,690
CS	3,242	1,816
FRQ	1,637	1,215
GND	1,126	1,801
INC	1,531	1,160
IQ	1,981	1,870
OS	1,712	1,192
SQ	2,607	1,230
TRB	1,096	1,118
CQ	3,798	1,690

The values for all variables is below ten. When the value remains below the threshold of ten, it indicates that multicollinearity is not present [37]. The Breusch-Pagan test result shows that P value is 0.886 for Malaysian model, and 0.112 for Indonesian model. Both are above 0.005 meaning that there is no heteroscedasticity problem.

Table 3: The R-Square

	Indonesia		Malaysia	
	R-square	R-square adjusted	R-square	R-square adjusted
TR	0.666	0.637	0.297	0.232

The adjusted R-Square shows the influence of AI adoption in banking on on trust. For Indonesian case, the adjusted R-square explaining the influence of AI adoption on customers' trust is 0.637. Malaysian case is different. The adjusted R-square explaining the influence of AI adoption on customers' trust is 0.232. The R-square results indicate that the AI feature variables are good enough to explain accountability and trust. However, the proposed variables explain trust in Indonesian case better than Malaysian.

Table 4: The Impact of AI features and Other Factors on Trust

Relation-ship	Indonesia		Malaysia	
	T statistics	P values	T statistics	P values
CQ	1,999	**0,048**	1,758	**0,002**
CS	2,199	**0,030**	2,985	**0,027**
FRQ	1,491	0,139	0,708	-0,188
GND	0,576	0,566	0,381	-0,132
INC	0,870	0,386	0,128	**-0,048**
IQ	1,499	0,137	0,373	**0,041**
OS	4,993	0,000	1,648	0,211
SQ	0,652	0,516	2,165	-0,138
TRB	0,419	0,676	1,536	**-0,007**

*Significant at 0.05

Table 5 explains the results of the impacts of AI features and other factors on customers' trust. The value of F = 0.0000. This indicates that the predictable variables have simultaneously significant impact on customers' trust.

For both countries, Communication Quality (CQ) and Customization (CS) have significantly positive impacts on customers' trust. Customization and communication quality in banking features have a significant impact on customer trust because they directly enhance the personal experience and transparency between banks and their customers. Customization allows banks to tailor services and offers based on individual preferences and needs, creating a sense of personal attention and increasing customer satisfaction [27]. When customers feel that banking services are designed to meet their specific requirements, they are more likely to trust the institution. Similarly, communication quality plays a crucial role in building trust by ensuring that customers receive clear, timely, and relevant information. Effective communication, whether through customer support, notifications, or updates, fosters a sense of reliability and openness, which is essential for gaining customer confidence. Together, these factors contribute to creating a positive relationship, encouraging customer loyalty and trust in the banking institution [32].

This study is in line with previous study stating that customization affects customers' preference in adopting banking technology [32]. However, some other variables do not seem to have a significant impact on customers' trust. For instance, prior studies also indicate that system quality does not satisfy customers' expectation [27]. Another study also found that data security hinder the intention of customers to use banking technology. This means that online security of banking industry still becomes a challenge [18].

According to the distribution data of income in Malaysia, it can be concluded that the majority of respondents are middle income individuals. For medium-income individuals, income can have a negative impact on banking trust due to perceived inequities in financial services and concerns over accessibility to the best banking products [22]. While they may not face the same barriers as lower-income customers, medium-income individuals often find themselves in a gap where they do not qualify for premium services or favorable terms offered to higher-income clients. This can lead to feelings of being overlooked or underserved by banks, as they may struggle to access better loan rates, credit facilities, or personalized services. Additionally, medium-income customers may feel that their financial stability is more vulnerable to changes in the economy or banking policies, leading to greater anxiety and mistrust in the institution's ability to protect their financial well-being. Consequently, these factors contribute to a diminished sense of trust in the banking system among medium-income individuals [31].

Experiencing trouble with mobile banking can significantly impact customer trust, as it creates doubts about the reliability, security, and efficiency

of the banking services. When users face frequent technical issues, such as app crashes, slow transaction processing, or difficulties accessing their accounts, it undermines their confidence in the bank's ability to manage their financial needs effectively [38]. Furthermore, concerns over security breaches, such as unauthorized transactions or data leaks, are heightened when mobile banking systems fail to function smoothly, leading customers to question the safety of their personal information. These negative experiences can erode trust, as customers may feel their money and data are not adequately protected, and they may become reluctant to rely on mobile banking for future transactions. Trust is built on consistent, seamless experiences, and trouble with mobile banking disrupts this foundation, pushing customers away from using these services and towards more traditional, in-person banking methods [26].

5. CONCLUSION

Traditional banking institutions are encountering growing pressure and operational difficulties. AI has been instrumental in reshaping the banking industry, revolutionizing the sector by facilitating personalized services and improving operational efficiency. Considering the banking industry's vast data management and analytical demands, the adoption of AI technologies is anticipated to significantly impact the sector.

This study examines the impact of AI on trust in the banking industry. this study also includes other variables such as gender, frequency using banking technology, experience using banking technology, and income. These variables are predicted to have impacts on trust. This study also compares two countries which are Indonesia and Malaysia.

The results indicate that customization and communication quality in banking features have a significant impact on customer trust in both Indonesia and Malaysia. Other than that, some demographic variables such as income, information quality, and customers' experiences facing banking troubles have significant impact for Malaysian customers only. Other predicted variables do not seem to have significant impacts in this study.

The implications of this study are significant for both the banking sector and policymakers. By highlighting the role of AI in enhancing customer trust, the study underscores the importance of integrating advanced technologies to improve operational efficiency and customer experience. For banks, the findings suggest that prioritizing AI-driven features, such as customized services and communication quality can strengthen customer relationships, boost loyalty, and enhance the overall credibility of financial institutions. Policymakers can also benefit from these insights by developing regulations that foster innovation while ensuring consumer protection in the rapidly evolving digital banking landscape. Ultimately, this study provides valuable guidance for shaping the future of banking in Malaysia and Indonesia, particularly in terms of leveraging technology to meet customer expectations and build trust in the digital age.

This study is not without limitations. This study includes a limited number of samples and limited proxies of AI features. The results of this study are not generalizable since it compares two neighbour countries with similar cultures. Furthermore, this study involves a limited number of prior studies examining AI proxies in banking technology. It does not involve particular variables derived from either TAM or UTAUT.

The following are suggestions for the better future studies. The subsequent studies are expected to involve more samples to derive the influencing factors. Other than that, future studies may compare the technological factors in different countries as well. The future studies may also include more demography variables such as age, education level, ethnicity, marital status, and also occupation. These factors may have influence on trust.

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