

The Impact of AI Transformation and Risks in Financial Services

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ABSTRACT

This research presents a novel examination of the dual impacts of digital transformation and AI risks on the quality of financial services, with a particular focus on their interplay and the role of external regulatory factors. Unlike previous studies, this research offers a detailed quantitative analysis while integrating regulatory challenges and financial literacy as critical moderating factors. A survey of 84 respondents, including risk managers, IT managers, and executives from financial institutions, was conducted to analyze the specific effects of digital transformation and AI-related risks. The findings indicate that digital transformation negatively affects service quality, while AI risks positively impact operational efficiency and data analysis accuracy. However, these two variables explain only a small portion of the variance in service quality, suggesting that other factors, such as regulatory frameworks and financial literacy, play a significant role. The study recommends enhancing technological preparedness, implementing AI risk mitigation strategies, and addressing external factors to optimize service quality in the digital era.

INTRODUCTION

The digital transformation of financial services, primarily propelled by the adoption of artificial intelligence (AI) and financial technology (fintech), has emerged as a pivotal development in recent years. This transformation has fundamentally reshaped the provision of financial services, introducing new challenges and risks that stakeholders in the financial sector must confront. Fintech innovations, including digital payments, peer-to-peer lending, and blockchain technology, have significantly improved the efficiency and accessibility of financial services [1] [2]. Nevertheless, these advancements also pose risks related to data security, consumer protection, and regulatory uncertainties, which may erode user confidence in digital financial services [3] [4].

This research seeks to address three critical questions: What is the impact of digital transformation, particularly through the adoption of AI and fintech, on traditional financial services? What risks emerge from the implementation of these technologies, and how can they be effectively mitigated? What role do regulatory bodies play in promoting the growth of fintech while safeguarding consumer interests? This study aims to deliver a comprehensive analysis of the impact of digital transformation on financial services and propose strategies for mitigating the associated risks.

The researcher aims to delve deeper into the challenges and opportunities faced by the financial industry in dealing with digital transformation. Previous research has shown that the adoption of fintech technology not only functions as a tool but also as a catalyst that transforms how financial services are provided and accessed [5] [6]. Therefore, this approach will involve

collecting data through in-depth interviews with industry players, regulators, and financial service users to obtain a comprehensive perspective on the impacts and risks associated with digital transformation.

In addition, a literature review will be conducted to contextualize digital transformation within the financial services sector. Existing research suggests that financial inclusion and financial literacy are critical determinants of the successful adoption of fintech [7] [8]. Consequently, this study will explore how enhancing financial literacy can improve access to digital financial services and mitigate the risks faced by users. The research will also examine various innovations introduced by fintech and AI within financial services. For example, the use of AI for data analysis in credit assessment and fraud detection has become common practice in numerous financial institutions [9] [4]. Additionally, the development of mobile banking applications and online lending platforms has broadened financial access for previously underserved communities [2] [10]. However, challenges such as data security and consumer protection continue to be significant concerns that must be addressed by all stakeholders [3] [11].

The novelty of this research lies in its concentrated focus on the interplay between technology, regulation, and consumer behavior within the context of digital financial services. This study will not only emphasize the benefits of digital transformation but also provide a critical analysis of the associated risks and the implementation of effective mitigation strategies. As a result, this research is expected to contribute significantly to the understanding of digital transformation's impact on financial services and offer valuable recommendations for both policymakers and industry stakeholders.

Digital transformation in financial services, driven by advancements in technologies such as AI and fintech, presents both significant opportunities and challenges. This research aims to examine the impact of this transformation, identify the emerging risks, and propose strategies for mitigating these risks [12] [13]. Through a comprehensive approach and in-depth analysis, this study is expected to offer valuable insights for all stakeholders within the financial industry.

In addition to assessing the direct effects of digital transformation and AI risks, this study uniquely investigates the role of financial literacy and regulatory frameworks as moderating variables that influence the quality of financial services. By addressing these elements, this research not only fills a gap in existing literature but also provides practical recommendations for policymakers and financial institutions in emerging markets like Indonesia. The growing complexities introduced by AI and fintech call for a deeper understanding of how these technologies interact with external regulatory factors, which is the focus of this research.

METHODS

In studying the impact of digital transformation on risks within financial services, a quantitative approach utilizing survey methods is a highly suitable choice. This methodology facilitates the systematic and structured collection of data from key respondents, including risk managers, IT managers, and executives in financial institutions. A questionnaire, designed using a Likert scale, can yield deep insights into the perceptions, frequency, and preparedness of companies in managing risks associated with digital technology adoption [14] [15]. The integration of primary data collected through surveys with secondary data from reliable sources, such as annual company reports and industry publications, offers a broader analytical context. This secondary data serves to enrich the analysis and validate the primary data findings, thereby providing a more comprehensive understanding of the impact of digital transformation on financial services [16] [17].

The analysis of the collected data can be performed using a variety of statistical techniques. Descriptive analysis offers a general summary of the data, while correlation analysis helps identify relationships between the variables under investigation. Regression analysis

enables researchers to quantify the specific impact of digital transformation on particular risks, whereas factor analysis aids in uncovering underlying structures within the measured variables [18] [19]. Hypothesis testing plays a critical role in assessing the statistical significance of the findings, with the null hypothesis (H0) and alternative hypothesis (H1) formulated to examine the relationships or differences between the variables [20]. By integrating primary and secondary data and utilizing comprehensive analytical methods, this study seeks to generate deep and robust insights into the relationship between digital transformation and risks in financial services, as well as how organizations navigate these emerging risks [21].

The quantitative approach, utilizing a structured survey, was chosen for its ability to systematically capture the perceptions of key stakeholders, including risk managers, IT managers, and executives. This method allows for a detailed analysis of both the frequency and severity of perceived risks associated with AI and digital transformation in financial services. The use of regression analysis enables the identification of causal relationships, making it ideal for the complex dynamics examined in this study. This approach provides an in-depth understanding of how digital transformation and AI risks affect service quality.

Table 1. Operational Definition

No	Variable	No	Indicator	Scale
1	Digital Transformation (X1)			
	Has your company implemented fintech technology?	1	Adoption of Fintech Technology	
	What is the level of operational efficiency following the adoption of fintech?	2	Operational Efficiency	
	How significant is the impact of AI implementation in enhancing accessibility to financial services?	3	Improvement in Service Accessibility	
	How would you evaluate the role of regulators in facilitating the growth of fintech in Indonesia?	4	Role of Regulators	
2	AI Risk (X)			
	How concerned are you about the data security risks associated with the use of AI?	5	Data Security	
	How would you evaluate the level of consumer protection in your company concerning AI-based services?	6	Consumer Protection	
	Do you consider regulatory uncertainty to be a barrier to AI implementation in your company?	7	Regulatory Uncertainty	
3	Financial Services (Y)			
	How proficient are your employees in financial literacy concerning the use of digital financial services?	8	Financial Literacy	
	How effective are digital financial services in promoting financial inclusion within your company?	9	Financial Inclusion	
	Is AI utilized for credit assessment and fraud detection in your company?	10	Use of AI in Credit Assessment and Fraud Detection	

To collect data, this research will use a questionnaire distributed to respondents via Google Forms. The study employs hypotheses connected to the variables:

H1: There is an impact of digital transformation on financial services.

H2: There is an impact of AI risks on financial services.

H3: There is an impact of both digital transformation and AI risks on financial services. The purpose of these three hypotheses is to empirically test the relationships between the independent variables and the dependent variable.

RESULTS AND DISCUSSION

A total of 84 respondents completed the questionnaire distributed via Google Forms. The responses will now be analyzed to gain insights into each respondent's feedback.

Table 2. Respondent Description

No	Gender	Frequency	Percentage (%)
1	Male	50	60 %
2	Female	34	40%
	Total	84	100 %

Source: Processed Data

The table shows that the majority of respondents in this study are male, with 50 individuals accounting for 60% of the total 84 respondents. In contrast, female respondents total 34, representing 40% of the sample. This indicates that male respondents are more prevalent than female respondents in this study.

While the regression analysis indicates significant impacts of digital transformation and AI risks on financial services, the low R^2 value of 0.078 suggests that other external factors play a critical role. For instance, regulatory frameworks may either facilitate or hinder the successful implementation of AI and fintech solutions. Similarly, financial literacy among employees and customers can influence the effectiveness of digital financial services, as low literacy levels may result in miscommunication or misuse of digital platforms. Future studies should integrate these moderating factors into the analysis to provide a more comprehensive understanding of the dynamics at play.

Test Validity

Conceptions of Test Validity: The abstracts present various conceptions of test validity, including a focus on ontology, reference, and causality, along with an emphasis on the impact of testing on individuals [22]. The analysis revealed that the correlation values between individual question items and the total score ranged from 0.640 to 0.684 for the digital transformation variable and from 0.624 to 0.583 for the AI risk variable. For the financial services variable, the correlation values ranged from 0.754 to 0.771, indicating that all items are valid.

Reliability Test

Reliability testing plays a crucial role in ensuring the validity of research findings by confirming that the measurements are consistent and free from random error, which is essential for drawing valid conclusions from empirical studies [23]. A reliability test was conducted to evaluate the internal consistency of the questionnaire used in this study. Cronbach's Alpha, one of the most widely used methods for assessing internal consistency, was employed for this purpose. The results showed a Cronbach's Alpha value of 0.85, indicating a very high level of reliability. This suggests that the questionnaire items consistently and accurately measure the variables under investigation, making the instrument suitable for further measurement within the context of this research.

Table 3. Reliability Test

Variable	Reliability Coefficient	Result
Digital Transformation	0,802	Reliable
AI Risk	0,749	Reliable
Financial Services	0,762	Reliable

Source: Processed Data

While the reliability coefficients across all variables indicate a high level of internal consistency, it is important to note that the sample size of 84 respondents, though adequate for initial exploratory analysis, may limit the generalizability of the findings. Future research should consider expanding the sample size and incorporating respondents from a wider range of financial institutions to enhance the robustness of the results. This indicates that the instrument used in this study is sufficiently consistent and dependable for measuring each of the variables under investigation.

Classical Assumption Test

The model does not present significant collinearity issues, as evidenced by the relatively low VIF value of 2.076. This suggests that changes in Financial Services can be predicted based on variations in the Digital Transformation and AI Risk variables, though it is important to note that the model may not fully account for all factors influencing Financial Services. Additionally, the Durbin-Watson value of 1.588 indicates no autocorrelation in the residuals, confirming that the assumption of residual independence in this regression analysis is satisfied.

Multiple Regression Analysis

Table 4. Regression Results

Variable Relationship	Regression Coefficient	Sig	Note
Digital Transformation to Financial Services	0,352	0,025	Significant
AI Risk to Financial Services	0,399	0,014	Significant
Constant	41.727		
R ²	0,078		
Sig.F	0,038		
N	84		

Source: Processed Data

The regression model demonstrates that both Digital Transformation and AI Risk have significant effects on Financial Services. Digital Transformation shows a negative impact, with a regression coefficient of 0.352 and a significance value of 0.025, indicating that for every one-unit increase in Digital Transformation, Financial Services decrease by 0.352 units. In contrast, AI Risk has a positive effect, with a regression coefficient of 0.399 and a significance value of 0.014, meaning that each one-unit increase in AI Risk results in a 0.399 unit increase in Financial Services. Both p-values ($p < 0.05$) indicate that these effects are statistically significant and unlikely to occur by chance.

The model's constant value of 41.727 represents the baseline level of Financial Services when Digital Transformation and AI Risk have no effect. Although the model is significant overall, with a Sig. F value of 0.038 and a sample size of 84, its ability to explain the variation in Financial Services is still limited, as indicated by the R² value of 0.078, meaning that only about 7.8% of the variation in Financial Services can be explained by this model.

Hypothesis 1 (H1): Digital Transformation Has a Significant Impact on Financial Services

The regression analysis reveals that digital transformation has a regression coefficient of 0.352 with a significance value of 0.025, indicating a significant negative relationship between digital transformation and financial services. In other words, an increase in digital transformation is associated with a reduction of 0.352 units in the value of financial services. While digital transformation offers numerous advantages, this finding suggests that challenges or barriers in the adoption process may adversely impact the quality of financial services.

Hypothesis 2 (H2): AI Risk Has a Significant Impact on Financial Services

The regression analysis indicates that AI risk has a regression coefficient of 0.399 with a significance value of 0.014, signifying a significant positive relationship between AI risk and financial services. This means that for every increase in AI risk, financial services improve by

0.399 units. While AI does present certain risks, such as those related to data security, its benefits, such as increased efficiency and enhanced accessibility often outweigh these risks, positively contributing to the quality of financial services.

Hypothesis 3 (H3): Digital Transformation and AI Risk Together Have a Significant Impact on Financial Services

The regression analysis demonstrates that both digital transformation and AI risk collectively influence financial services, with the overall model being statistically significant (Sig. F value = 0.038). The model's R^2 value of 0.078 indicates that 7.8% of the variation in financial services can be attributed to digital transformation and AI risk. Although the explanatory power of these two variables is limited, their impact is still significant. This suggests that additional factors, beyond digital transformation and AI risk, may also play a crucial role in shaping financial services.

Discussion

Hypothesis 1 (H1) states that digital transformation has a significant impact on financial services. The analysis results reveal a significant negative relationship between digital transformation and financial services, with a regression coefficient of 0.352 and a significance level of 0.025. While digital transformation brings benefits such as increased efficiency and accessibility, challenges in technology adoption can undermine the quality of financial services. Research suggests that companies frequently encounter difficulties in integrating new technologies, often due to insufficient infrastructure and human resource capabilities [24]; [25]. Therefore, it is essential for organizations to not only focus on adopting new technologies but also to develop a carefully planned implementation strategy to mitigate potential negative impacts [26]; [27].

Hypothesis 2 (H2) proposes that the risks associated with the use of AI have a positive impact on financial services. The regression results show a coefficient of 0.399 with a significance level of 0.014, indicating that despite risks like data security and regulatory uncertainty, the benefits of AI, such as enhanced operational efficiency and improved data analysis accuracy, can outweigh these risks [28]; [29]. AI improves the accuracy of credit assessments and detects fraud more effectively than traditional methods, thereby contributing positively to the overall quality of financial services [30]; [31].

Hypothesis 3 (H3) posits that digital transformation and AI risks together have a significant impact on financial services. The regression analysis yields a Sig. F value of 0.038, confirming that the observed effect is statistically significant. However, the R^2 value of 0.078 indicates that only 7.8% of the variation in financial services can be attributed to the two variables studied. This suggests that other factors, such as government regulations, technological infrastructure readiness, and human resource capabilities, also play critical roles in shaping the quality of financial services [32]; [33]; [34]. To achieve a comprehensive improvement in financial services, companies must consider factors beyond digital transformation and AI risk mitigation [34], including the dynamics of financial and economic correlation networks in banks as they implement digital transformation with well-targeted policies. In conclusion, while digital transformation and AI risks significantly impact financial services, challenges related to technology adoption, along with other external factors, play an equally crucial role in determining service quality. Therefore, a holistic and integrated approach is essential to achieving optimal outcomes in financial services in the digital era.

CONCLUSION

This study reveals that digital transformation and risks associated with the implementation of artificial intelligence (AI) have a significant impact on the quality of financial services. While digital transformation can enhance operational efficiency, it also presents various challenges, including infrastructure limitations and human resource readiness, which can ultimately diminish the quality of financial services. Conversely, AI-related risks

contribute positively to increasing efficiency and accuracy in data analysis, particularly in credit assessment and fraud detection. Nevertheless, these two factors account for only a small portion of the variation in financial service quality, indicating the importance of other external factors, such as comprehensive regulatory frameworks and financial literacy levels, in optimizing technology adoption in the financial sector.

This study has several limitations, including a relatively small sample size, limited generalizability of the findings, and potential biases that may affect the validity of the results. Additionally, respondent characteristics and the quality of the collected data have implications for interpreting this study's findings. Future research should therefore consider using more rigorous methods in respondent selection and data collection to improve the validity and reliability of the findings.

The recommendations from this study include enhancing technological preparedness through infrastructure strengthening and human resource development, implementing more effective AI risk mitigation strategies, and increasing financial literacy among employees and consumers. These efforts are expected to maximize the benefits of digital transformation and AI while improving the quality of financial services in the digital era.

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