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Embrace, Evolve, & Excel: Artificial Intelligence-Driven Transformational Acceptance in the Commercial Banking Sector

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Abstract

This study investigates the importance of employee acceptance of artificial intelligence (AI)-enabled transformations within the commercial banking sector, recognising that technological adoption significantly enhances operational efficiency and innovation. The primary aim is to identify key factors influencing acceptance, notably perceived usefulness, perceived ease of use, and subjective norms, while utilising employee attitudes as a mediating factor. A quantitative approach was employed for data collection through a structured survey, which yielded 303 responses from employees across various banking institutions. The data analysis utilised structural equation modelling (SEM) to test several hypotheses regarding the relationships among the constructs. The hypotheses testing results indicate that perceived ease of use and subjective norms are significant predictors of attitude and acceptance, while perceived usefulness shows a mixed influence. The findings underscore the necessity for targeted training programs and user-friendly interfaces to enhance perceived usefulness and ease of use. Furthermore, fostering a supportive organisational culture that encourages

collaboration and innovation is essential. Future research should focus on the long-term impacts of AI integration, exploring employee productivity and customer satisfaction over time. Additionally, examining the influence of organisational culture on technology acceptance and segmenting employee demographics could provide deeper insights into varying needs and preferences. The implications of this study are significant for banking institutions. They provide actionable strategies for increasing employee engagement and maximising AI adoption, ultimately leading to a more innovative and competitive banking environment. By prioritising employee acceptance, banks can ensure the successful implementation and sustainability of AI technologies.

Keywords: Perceived Usefulness, Perceived Ease of Use, Subjective Norms, Attitude, Acceptance

Introduction

Artificial intelligence (AI)-enabled transformation is increasingly vital in the commercial banking sector, driving efficiency, enhancing customer experiences, and fostering innovative service delivery (Yadav et al., 2023). As financial institutions leverage AI technologies such as machine learning and predictive analytics, they are better equipped to analyse vast amounts of data, optimise operations, and personalise customer interactions (Dewasiri et al., 2023). This transformation is not without its challenges; current issues include data privacy concerns, the need for substantial investment in technology, and the adaptation of existing workforce skill sets to manage AI-driven processes in a continuously evolving environment (Abdulsalam & Tajudeen, 2024). Globally, trends in AI-enabled transformation highlight a growing emphasis on automation in areas such as customer service, risk management, and fraud detection (Oyeniyi et al., 2024). With AI's capability to process and analyse vast data sets, banks can enhance their decision-making processes and provide a more tailored experience to customers (Nguyen et al., 2025). The integration of AI with emerging technologies like blockchain is also gaining traction, promising to enhance transparency and security in banking transactions, which is critical in maintaining customer trust (Dewasiri et al., 2023). However, despite these advancements, significant research gaps persist in understanding the nuanced impacts of AI acceptance among employees (Jisham et al., 2024). Many studies often overlook the psychological and organisational factors affecting employee attitudes toward AI in the workplace (Adhaen et al., 2024). Furthermore, there is a need for comprehensive frameworks that consider workplace dynamics and staff involvement when adopting AI solutions. (Kaur et al., 2024). This study's significance extends to policymakers and the commercial banking sector. By understanding the factors that influence AI-enabled transformation acceptance, stakeholders can facilitate smoother transitions into AI adoption, ensuring that employees are adequately supported through training and resources (Kebah et al., 2019). Addressing potential resistance and bolstering employee engagement is crucial for maximising the benefits of AI integration. This can lead to higher productivity, increased job satisfaction, and improved overall performance within banks (Bhatnagr et al., 2024). Moreover, insights garnered from this research can inform policy decisions, enabling regulatory frameworks that promote innovation while safeguarding consumer interests. Policymakers can foster relationships between technology providers and banks, enhancing collaborative efforts to ensure beneficial outcomes for all stakeholders involved (Kebah et al., 2019). Exploring AI-enabled transformation acceptance among employees provides valuable contributions to both academic literature and practical implementations within the commercial banking sector. As the sector continues to evolve, understanding the dynamics at play among various

acceptance factors will be crucial for fostering a future-ready workforce capable of navigating the complexities of AI-enhanced banking services. This study aims to assess the direct and indirect influence of perceived usefulness, perceived ease of use, and subjective norms on the employee acceptance of artificial intelligence-enabled transformation in the commercial banking sector, with attitude as a mediator.

Literature Review

Underpinning Theory

The Technology Acceptance Model (TAM) is an ideal framework for analysing the acceptance of AI-enabled transformations in the commercial banking sector, particularly in your study focusing on perceived usefulness, perceived ease of use, and subjective norms. Originally developed by Davis, TAM posits that perceived usefulness (the degree to which a person believes that using a particular system would enhance their job performance) and perceived ease of use (the degree to which a person believes that using the system would be free of effort) are primary determinants of technology acceptance (Davis, 1989). In the context of AI adoption in commercial banking, perceived usefulness may relate to how employees view AI as beneficial to improving efficiency, decision-making, and customer service. Perceived ease of use, meanwhile, addresses whether employees find AI tools intuitive and user-friendly. Both factors heavily influence attitudes toward AI technologies, subsequently affecting acceptance behaviour (Davis, 1989; Venkatesh & Davis, 2000). By integrating subjective norms borrowed from the Theory of Planned Behaviour, your study acknowledges the social influence exerted by peers and organisational culture, which can shape individual attitudes and behavioural intentions toward AI adoption (Venkatesh et al., 2003). In this model, attitude serves as a mediator, linking these perceptions and social pressures to the ultimate acceptance of AI, thereby offering a holistic view of how these factors interplay, driving AI-enabled transformation within the banking sector. This enriched TAM framework provides valuable insights into the psychological and social dimensions of technology acceptance, guiding strategic implementations of AI in commercial banking.

Relationship between Perceived Ease of Use and Perceived Usefulness

Numerous studies have investigated the relationship between perceived ease of use (PEOU) and perceived usefulness (PU), highlighting their interconnectedness in influencing user acceptance of technology. Zubir and Abdul Latip (2024) explored the mediating effects of these constructs in the context of e-government services, revealing that a higher level of perceived ease of use significantly increased perceived usefulness among citizens, thus enhancing their intention to utilise such services. Similarly, Ullah et al. (2025) found that digital literacy positively influenced both PEOU and PU, ultimately shaping online purchase intentions (Li et al., 2020). This relationship underscores the critical role of user competency in navigating technology. In the financial sector, Chong et al. (2024) examined mobile wallet adoption in Malaysia, concluding that perceived ease of use directly enhances perceived usefulness, which subsequently drives actual adoption. Furthermore, Barry et al. (2024) confirmed the significance of this link in mobile commerce, emphasising that user experiences drive the perceived benefits of technology applications. Lastly, Perwitasari (2022) indicated that when users perceive technology as easy to use, they are more likely to recognise its benefits, reinforcing the essential relationship between perceived ease of use and perceived usefulness across various contexts. Collectively, these findings emphasise the importance of

both constructs in fostering technology acceptance (Maria & Sugiyanto, 2023). Therefore, the following hypothesis was proposed for this study:

H1: There is a relationship between perceived ease of use and perceived usefulness of artificial intelligence-enabled transformation acceptance among employees in the commercial banking sector.

Relationship between Perceived Usefulness, Attitude, and Acceptance

Studies have consistently demonstrated a significant relationship between perceived usefulness (PU), attitude, and acceptance of technology across various contexts. Perceived usefulness, defined as the extent to which a user believes that using a particular technology will enhance their performance, plays a critical role in shaping user attitudes toward that technology. Higher levels of perceived usefulness positively influence users' attitudes, which in turn affect their behavioral intentions to use the technology (Bustaman et al., 2023). Moreover, a favourable attitude, bolstered by perceived usefulness, is a strong predictor of actual acceptance and usage of technology. When users recognise the benefits of a technology, they are more likely to develop a positive attitude toward it, leading to greater acceptance. Studies have shown that ease of use and perceived enjoyment also contribute to this relationship, further shaping users' attitudes as they engage with various technologies (Jundiy & Ridanasti, 2024; Liesa-Orús et al., 2023). These findings highlight the importance of perceived usefulness as a foundational factor that not only cultivates positive attitudes but also drives the acceptance of new technologies, emphasising its critical role in successful technology adoption strategies (Nguyen et al., 2025). Understanding this connection can help organisations design and implement technology solutions that enhance user satisfaction and increase the likelihood of acceptance among potential users (Luo et al., 2024; Tan et al., 2024; Toros et al., 2024). Thus, the following hypotheses were proposed for this study:

H2: There is a relationship between perceived usefulness and artificial intelligence-enabled transformation acceptance among employees in the commercial banking sector.

H3: There is a relationship between perceived usefulness and attitude toward artificial intelligence-enabled transformation acceptance among employees in commercial banking sector.

H4: There is a mediating effect of attitude on the relationship between perceived usefulness and intelligence-enabled transformation acceptance among employees in the commercial banking sector.

Relationship between Perceived Ease of Use, Attitude, and Acceptance

Research has shown a significant relationship between perceived ease of use (PEOU), attitude, and acceptance of technology, highlighting the importance of user experience in technology acceptance. Perceived ease of use refers to the degree to which a person believes that using a technology will require minimal effort. When users find technology easy to use, they tend to develop a more favorable attitude towards it. This positive attitude, in turn, enhances their acceptance and actual usage of the technology (Intaratat et al., 2024). Numerous studies indicate that a high level of perceived ease of use increases the likelihood of technology acceptance. For instance, when users perceive technology as intuitive and user-friendly, their attitudes toward its acceptance improve, leading to greater acceptance (Ridanasti, 2024). Furthermore, perceived ease of use serves as a mediator in the relationship

between perceived usefulness and acceptance, reinforcing the notion that ease of use significantly shapes user attitudes (Anggraeni et al., 2024; Tan et al., 2024). In summary, PEOU plays a critical role in fostering positive attitudes toward technology, which ultimately drives users' acceptance and engagement with new systems and applications. Understanding this relationship can aid organizations in designing technologies that enhance user satisfaction and facilitate smoother acceptance (Istiqomah & Alfansi, 2024; Harris, Zaid, & Philip, 2024). Hence, the following hypotheses were proposed for this study:

H5: There is a relationship between perceived ease of use and artificial intelligence-enabled transformation acceptance among employees in the commercial banking sector.
H6: There is a relationship between perceived ease of use and attitude toward artificial intelligence-enabled transformation acceptance among employees in commercial banking sector.
H7: There is a mediating effect of attitude on the relationship between perceived Ease of use and intelligence-enabled transformation acceptance among employees in the commercial banking sector.

Relationship between Subjective Norms, Attitude, and Acceptance

Many studies have highlighted the critical role that subjective norms play in shaping attitudes and acceptance of technology. Subjective norms refer to the perceived social pressure individuals feel regarding the use of a particular technology (Nor et al., 2023). When users perceive that important others, such as peers, family, or colleagues, favour a technology, they are more likely to develop a positive attitude toward its use. This positive attitude subsequently enhances their acceptance and intention to adopt the technology (Chille & Mollel, 2024). Numerous studies suggest that subjective norms significantly influence users' acceptance behaviours (Mohamad & Osman, 2025). For instance, when individuals are surrounded by support and encouragement from their social circles regarding technology use, their willingness to engage with the technology increases (Abd Rahman et al., 2024). This is particularly important in environments where social interaction is essential, such as in educational settings or collaborative work environments. Additionally, subjective norms often interact with perceived usefulness and perceived ease of use, further shaping user attitudes (Chille & Mollel, 2024). The interplay of these factors underscores the importance of considering social influences alongside individual perceptions when assessing technology acceptance (Nugraha et al., 2024; Lean et al., 2024). In summary, subjective norms are crucial in driving positive attitudes and acceptance of technology, indicating that fostering a supportive social environment can significantly enhance adoption rates and user engagement. Understanding this relationship can guide organisations in promoting new technologies effectively (Haslinda et al., 2024). Therefore, the following hypotheses were proposed for this study:

H8: There is a relationship between subjective norms and artificial intelligence-enabled transformation acceptance among employees in the commercial banking sector.
H9: There is a relationship between subjective norms and attitude toward artificial intelligence-enabled transformation acceptance among employees in commercial banking sector.
H10: There is a relationship between attitude and artificial intelligence-enabled Transformation acceptance among employees in the commercial banking sector.

H11: There is a mediating effect of attitude on the relationship between subjective norms and intelligence-enabled transformation acceptance among employees in the commercial banking sector.

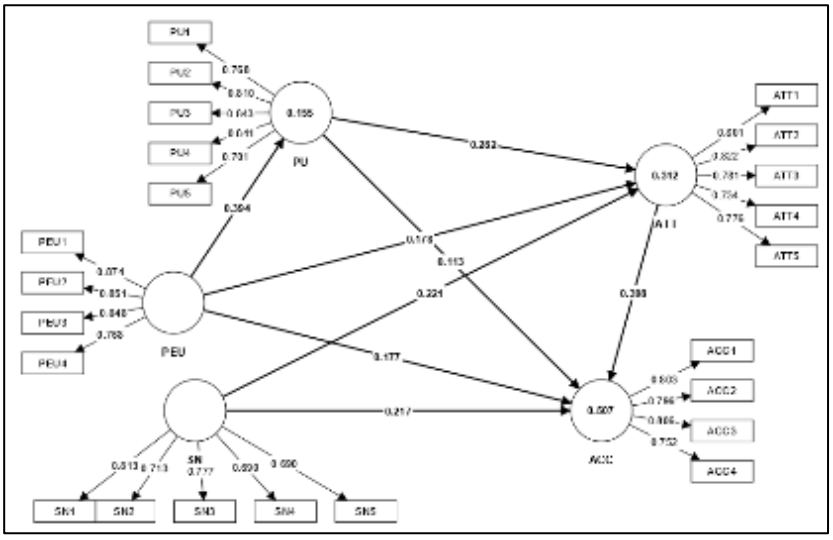

Figure 1: Research Model

Notes: PU=Perceived Usefulness PEU=Perceived Ease of Use SN=Subjective Norms ATT=Attitude ACC=Acceptance

Methodology

This research aimed to evaluate the acceptance of artificial intelligence-enabled transformation among employees in the commercial banking sector. To achieve this objective, a comprehensive survey was conducted to collect primary data, augmented by a thorough review of prior studies to ensure the use of reliable and valid metrics. The survey questionnaires were distributed via email to intentionally selected participants through purposive sampling, as a comprehensive list of the population was unavailable. A total of 23 observed variables were analysed, including exogenous variables like perceived usefulness (measured with 5 items; Shang et al., 2011) and perceived ease of use (measured with 4 items; Shang et al., 2011). Additionally, subjective norms were measured using 5 items (Holden & Karsh, 2010). The mediating variable, attitude, was assessed using 5 items as per Hair et al. (2019), while the dependent variable, acceptance, was evaluated using 4 items based on Gardner & Amoroso (2004). Each construct was measured using a Likert scale with five response options, ranging from strongly disagree to strongly agree. Out of the 397 distributed surveys, 329 responses were collected, yielding a satisfactory response rate of 82.87% for structural equation modelling (SEM) analysis. Of these, 303 responses were deemed clean and suitable for analysis. For data analysis and hypothesis testing, Smartpls4 software was employed due to its robust capabilities in structural equation modelling techniques, which align well with the study's objectives and the guidelines outlined by Ringle et al. (2022). This software was instrumental in effectively examining proposed hypotheses and conducting comprehensive multivariate data analysis, enabling a thorough evaluation of both measurement and structural models. Table 1 provides the demographic profile of the respondents involved in this study.

Respondents' Profiles

The table presents a demographic profile of the study's 303 respondents. In terms of gender, 38.3% are male (116 participants) and 61.7% are female (187 participants). Regarding age

distribution, 31 to 40 years is the largest group at 51.5% (156 participants), followed by 41 to 50 years at 25.1% (76 participants), 51 to 60 years at 16.8% (51 participants), and those over 60 at 6.6% (20 participants). For years of service, <5 years accounts for 12.9% (39 participants), 6-10 years for 21.1% (64 participants), 11-15 years for 13.5% (41 participants), 16-20 years for 13.5% (41 participants), 21-25 years for 11.9% (36 participants), 26-30 years for 10.2% (31 participants), and >30 years for 16.8% (51 participants). At the occupational level, 32.3% (98 participants) are management, while 67.7% (204 participants) are non-management. Income distribution shows that 34.7% (105 participants) earn <RM4,850, 39.3% (119 participants) earn RM4,851-RM10,970, and 26.1% (79 participants) earn >RM10,971. Regarding recommendations to other employees to accept AI-enabled transformation, 76.2% (231 participants) responded "yes," while 23.8% (72 participants) responded "no."

Common Method Bias

Kock (2015) introduced a comprehensive method known as the collinearity test, with further elaboration by Kock and Lynn (2012). This test evaluates both vertical and horizontal collinearity to assess the presence of common method bias in a model. Specifically, pathological collinearity is indicated when variance inflation factors (VIFs) exceed 3.3, suggesting a significant concern. Therefore, if the VIFs from the collinearity assessment are below this threshold, the model is considered free from common method bias. In the analysis, Table 1 shows that the VIFs from the collinearity evaluation were all below 3.3, confirming that the model does not suffer from common method bias (Kock, 2015; Kock & Lynn, 2012). This finding provides robustness to the model's results and ensures the reliability of the data interpretation, enhancing the study's overall validity.

Table 1
Full Collinearity Statistics (VIF)

	ACC	PU	SN	PEU	ATT
ACC		1.954	1.878	1.882	1.618
PU	1.919		1.479	1.913	1.886
SN	1.874	1.503		1.958	1.959
PEU	1.263	1.307	1.316		1.315
ATT	1.432	1.698	1.736	1.733	

Measurement Model

The analysis of construct reliability and validity, as presented in Table 2, indicates a robust measurement model across various constructs. Cronbach's Alpha (CA) values range from 0.790 to 0.856, demonstrating good internal consistency for all constructs, as values above 0.70 are generally acceptable. Composite Reliability (CR) further supports these findings, with values ranging from 0.791 to 0.873, confirming that the constructs have reliable indicators. The Average Variance Extracted (AVE) values, which indicate the amount of variance captured by the construct about measurement error, range from 0.545 to 0.700. While all constructs exceed the minimum threshold of 0.50 for acceptable AVE, the Subjective Norms construct (AVE = 0.545) is above 0.5 as well. Therefore, the AVE suggested that convergent validity has been achieved. The item loadings are above the recommended threshold of 0.70 for most items except for a few, like ACC4 (0.752) and SN4 (0.690), which slightly fall below this benchmark; however, it is significant. To ensure discriminant validity, cross-loadings were first assessed to confirm the accurate representation of constructs (Table 2). Following this, the

Heterotrait-Monotrait (HTMT) ratio was employed for further evaluation, adhering to the recommended criteria for discriminant validity in Variance-Based Structural Equation Modelling (VB-SEM) (Henseler et al., 2015). Table 3 presents the HTMT ratios, confirming compliance with the threshold of 0.9, thereby ensuring the constructs are sufficiently distinct.

Table 2
Construct Reliability and Validity & Items Loadings

Constructs	Items	Loadings	CA	CR	AVE
ACCEPTANCE	ACC1	0.803	0.800	0.805	0.624
	ACC2	0.796			
	ACC3	0.806			
	ACC4	0.752			
ATTITUDE	ATT1	0.801	0.843	0.847	0.613
	ATT2	0.822			
	ATT3	0.781			
	ATT4	0.734			
	ATT5	0.776			
PERCEIVED EASE OF USE	PEU1	0.874	0.856	0.861	0.700
	PEU2	0.851			
	PEU3	0.848			
	PEU4	0.768			
PERCEIVED USEFULNESS	PU1	0.768	0.854	0.873	0.631
	PU2	0.810			
	PU3	0.843			
	PU4	0.841			
	PU5	0.701			
SUBJECTIVE NORMS	SN1	0.813	0.790	0.791	0.545
	SN2	0.713			
	SN3	0.777			
	SN4	0.690			
	SN5	0.690			

Notes: CA=Cronbach Alpha CR=Composite Reliability AVE=Average Variance Extracted

Table 3
Hetrotrait-Monotrait (HTMT) Ratios

	ACC	ATT	PEU	PU
ATT	0.750			
PEU	0.541	0.44		
PU	0.613	0.569	0.448	
SN	0.677	0.571	0.455	0.792

Structural Model

In this study, the structural model assessment followed the methodology outlined by Hair et al. (2017), focusing on both pathway coefficients (β) and coefficients of determination (R^2). Using the Partial Least Squares (PLS) method, 5,000 subsamples were analysed to determine the significance of the path coefficients. The results of the hypothesis tests, including confidence intervals, path coefficients, t-statistics, and p-values, are detailed in Table 4. This

thorough examination provides critical insights into the significance and robustness of the relationships among the variables within the structural model, revealing noteworthy findings regarding the hypotheses. The analysis of the 11 hypotheses reveals varying degrees of relationships among the constructs, indicating their significance in understanding the acceptance of technology. Hypothesis 1 *(H1)* posits that perceived ease of use positively influences perceived usefulness, with a beta value of 0.394, a t-statistic of 6.608, and a p-value of 0.000, leading to acceptance of this hypothesis. In contrast, Hypothesis 2 *(H2*), which suggests a direct link between perceived usefulness and acceptance, shows a beta of 0.113, a t-statistic of 1.577, and a p-value of 0.115; thus, this hypothesis is rejected due to a lack of significant evidence. Hypothesis 3 *(H3)* demonstrates a significant relationship between perceived usefulness and attitude (beta = 0.282, t-statistic = 4.037, p-value = 0.000), resulting in acceptance. *H4* expands this by establishing that perceived usefulness influences acceptance through attitude, delivering a beta of 0.113, t-statistic of 3.305, and p-value of 0.001, which is also accepted. Hypothesis 5 *(H5)* shows that perceived ease of use directly affects acceptance (beta = 0.177, t-statistic = 3.261, p-value = 0.001), while *H6* reveals a significant impact on attitude (beta = 0.178, t-statistic = 3.336, p-value = 0.001), both accepted. Hypothesis 7 *(H7)* further confirms the mediating role of attitude in the relationship between perceived ease of use and acceptance, with significant results (beta = 0.071, t-statistic = 2.995, p-value = 0.003). Hypothesis 8 *(H8)* affirms the influence of subjective norms on acceptance (beta = 0.217, t-statistic = 3.225, p-value = 0.001), and *H9* indicates that subjective norms significantly affect attitude (beta = 0.221, t-statistic = 3.620, p-value = 0.000), both accepted. Hypothesis 10 *(H10)* illustrates a strong influence of attitude on acceptance, supported by a high beta of 0.398, a t-statistic of 7.798, and a p-value of 0.000, leading to acceptance. Finally, Hypothesis 11 *(H11)* supports the notion that subjective norms influence acceptance indirectly through attitude, with a beta of 0.088, t-statistic of 3.547, and p-value of 0.000, thus accepted. Overall, the findings strongly validate the hypotheses, highlighting the significant and interdependent relationships among perceived usefulness, perceived ease of use, subjective norms, attitude, and acceptance.

Table 4
Hypothesis Testing Results

Hypotheses	Beta	T statistics	P values	2.50%	97.50%	Decision
H1: PEU -> PU	0.394	6.608	0.000	0.271	0.506	*Accepted*
H2: PU -> ACC	0.113	1.577	0.115	-0.027	0.254	***Rejected***
H3: PU -> ATT	0.282	4.037	0.000	0.142	0.415	*Accepted*
H4: PU -> ATT -> ACC	0.113	3.305	0.001	0.054	0.188	*Accepted*
H5: PEU -> ACC	0.177	3.261	0.001	0.060	0.274	*Accepted*
H6: PEU -> ATT	0.178	3.336	0.001	0.072	0.283	*Accepted*
H7: PEU -> ATT -> ACC	0.071	2.995	0.003	0.028	0.121	*Accepted*
H8: SN -> ACC	0.217	3.225	0.001	0.087	0.351	*Accepted*
H9: SN -> ATT	0.221	3.620	0.000	0.092	0.335	*Accepted*
H10: ATT -> ACC	0.398	7.798	0.000	0.293	0.496	*Accepted*
H11: SN -> ATT -> ACC	0.088	3.547	0.000	0.043	0.141	*Accepted*

Notes: significant at p<0.05, t>1.96

Effect Sizes (f^2) & Variance Inflation Factor (VIF)

Table 5 provides a comprehensive analysis of effect sizes and collinearity results, highlighting the structural relationships within the model. Effect sizes follow Cohen's criteria (1992), classified as small (0.020 to 0.150), medium (0.150 to 0.350), or large (0.350 or greater). In this study, effect sizes varied from small (0.013) to large (0.222), indicating different levels of impact among the constructs. Variance Inflation Factor (VIF) values remained consistently below the threshold of 5, with a maximum of 1.968, suggesting low multicollinearity and supporting reliable coefficient interpretation. The model shows significant explained variance for the endogenous construct, with an R^2 value of 0.507, as depicted in Figure 1. Furthermore, the mediator's influence is evident, with the model accounting for about 31.2% of the variance, reflected by an R^2 value of 0.312.

Table 5
Effect Size (f^2) & Variance Inflation Factor (VIF)

	ACC	ATT	PU	ACC	ATT	PU
ATT	0.222			1.454		
PEU	0.050	0.038	0.183	1.267	1.221	1.012
PU	0.013	0.063		1.968	1.852	
SN	0.050	0.039		1.901	1.830	

PLS Predicts & Cross-validated Predictive Ability Test

The model's capacity for inference and managerial insights was evaluated using the PLSpredict method, as described by Shmueli et al. (2016, 2019). Table 6 depicts the results of the out-of-sample predictive analysis, where Q^2 predictions exceeding 0 indicate a performance superior to that of naive mean predictions. Furthermore, in eight out of nine cases, the root mean square error (RMSE) values for PLS-SEM predictions consistently surpassed those of the linear model (LM) prediction benchmark, highlighting the predictive efficacy of the proposed model (Table 6).

Hair et al. (2022) introduced the Cross-Validated Predictive Ability Test (CVPAT) as a vital method for evaluating the predictive capabilities of PLS-SEM results. In assessing the model's predictive performance, Liengaard et al. (2021) carried out a CVPAT alongside PLSpredict analysis. The CVPAT utilised an out-of-sample prediction technique to measure the model's prediction error and calculate the average loss value. Two benchmarks were established for comparison: the average loss value from predictions using indicator averages (IA) as a basic reference and the average loss value from a linear model (LM) forecast as a more conservative standard. For PLS-SEM to demonstrate superior predictive performance, its average loss value must be lower than that of the benchmarks, resulting in a negative difference in average loss values. The main objective of the CVPAT was to ascertain whether this difference between PLS-SEM and the benchmarks significantly fell below zero. The findings, detailed in Table 7, verify that the average loss value for PLS-SEM was indeed lower than that of the benchmarks, indicated by the negative difference in average loss values, thereby confirming the model's enhanced predictive capabilities.

Table 6
PLSpredicts

	Q^2predict	PLS-RMSE	LM-RMSE	PLS-LM
ACC1	0.252	0.617	0.619	-0.002
ACC2	0.198	0.624	0.628	-0.004
ACC3	0.217	0.677	0.690	-0.013
ACC4	0.156	0.723	0.733	-0.010
ATT1	0.170	0.655	0.644	0.011
ATT2	0.132	0.652	0.653	-0.001
ATT3	0.108	0.682	0.683	-0.001
ATT4	0.126	0.709	0.716	-0.007
ATT5	0.161	0.634	0.641	-0.007
PU1	0.063	0.815	0.760	0.055
PU2	0.096	0.735	0.739	-0.004
PU3	0.129	0.782	0.678	0.104
PU4	0.095	0.753	0.757	-0.004
PU5	0.065	0.749	0.706	0.043

Table 7
Cross-Validated Predictive Ability Test

	Average loss difference	t-value	p-value
ACC	-0.113	5.441	0.000
ATT	-0.072	4.245	0.000
PU	-0.064	2.817	0.005
Overall	-0.081	5.080	0.000

Importance-Performance Map Analysis (IPMA)

Importance-Performance Map Analysis (IPMA), as advocated by Ringle and Sarstedt (2016) and Hair et al. (2018), serves as a practical framework for assessing and prioritising constructs based on their significance and performance within a given context. In this case, the construct attitude demonstrates the highest importance (0.398) but has a moderate performance rating of 60.828. In contrast, perceived usefulness ranks lowest in importance (0.226) while exhibiting a relatively solid performance score (66.595), highlighting the need for targeted improvement. To enhance perceived usefulness, which has the lowest importance paired with moderate performance, strategies could include boosting user involvement through focused training initiatives that clearly outline the benefits of AI for collaborative learning. Furthermore, incorporating real-world applications and success narratives can increase its relevance and perceived significance. Providing continuous support and feedback can elevate its importance among users, thereby creating a more favourable environment for achieving better artificial intelligence-enabled acceptance results.

Table 8
Importance-Performance Map Analysis (IPMA)

	Importance	Performance
ATT	0.398	60.828
PEU	0.337	67.520
PU	0.226	66.595
SN	0.305	66.030

Discussion & Conclusion

Discussion

To effectively enhance employee acceptance of artificial intelligence (AI)-enabled transformation in the commercial banking sector, organisations must focus on improving perceived usefulness, perceived ease of use, and subjective norms, utilising employees' attitudes as a mediating factor. The findings from the hypotheses testing reveal significant beta values, such as 0.394 for perceived ease of use influencing perceived usefulness (H1) and 0.398 for attitude impacting acceptance (H10), underscoring the importance of these constructs in driving acceptance (Davis, 1989; Venkatesh & Davis, 2000). Commercial banks should implement targeted training programs that emphasise the practical benefits of AI technologies, which would enhance the perceived usefulness among employees (H3, beta = 0.282) (Abdulsalam & Tajudeen, 2024). Additionally, through user-friendly interfaces and streamlined processes, banking institutions can improve the perceived ease of use, substantiated by the beta of 0.178 from H6 (Chong et al., 2024). Subjective norms, which were shown to influence acceptance significantly (H8, beta = 0.217), should be nurtured by fostering a positive organisational culture that encourages collaboration and innovation (Nguyen & Le, 2025). This can be achieved by promoting peer endorsements and testimonials from early adopters of AI tools within the organisation, thereby generating a supportive environment that shapes favourable attitudes towards technology adoption. Furthermore, communicating leadership commitment to AI initiatives can strengthen subjective norms and reinforce employees' perception that using AI is both beneficial and widely accepted within commercial banks. Banking institutions must prioritise the design of intuitive systems that require minimal effort to navigate to enhance perceived ease of use. Beta values indicate that strategies targeting ease of use yield high significance; for instance, H6's significant beta of 0.178 suggests a direct influence on acceptance through better usability. Implementing step-by-step onboarding procedures and continuous technical support can further alleviate users' apprehensions, making the technology more approachable and effective in meeting their needs. While several hypotheses show significant support, some, like H2 (perceived usefulness influencing acceptance with a beta of 0.113), are rejected due to insufficient evidence. This outcome may stem from the fact that employees might recognise the usefulness of AI tools but may not view them as directly impacting their work processes, thus leading to a disconnect in acceptance. A lack of robust integration of AI into daily bank operations could also contribute to this diminishing perception of direct influence. By enhancing perceived usefulness, ease of use, and subjective norms, the commercial banking sector can create a conducive environment for AI acceptance, utilising employees' attitudes as a bridge to facilitate transformation. Implementing these strategies will not only align with the data-driven insights provided by the hypothesis testing but will also foster a culture of innovation that is essential for the successful integration of AI technologies in the banking landscape.

Theoretical Implications

The theoretical implications of this study illuminate the interconnected roles of perceived usefulness, perceived ease of use, subjective norms, and attitude in facilitating employee acceptance of artificial intelligence (AI)-enabled transformations within the commercial banking sector, aligned with the Technology Acceptance Model (TAM) and expanded by the Theory of Planned Behavior (TPB). According to Davis (1989), perceived usefulness and perceived ease of use are pivotal in determining technology acceptance, demonstrating that employees are more likely to adopt AI tools when they recognise their benefits and find them user-friendly. Furthermore, the significant influence of subjective norms underlines the importance of social context, as the attitudes and behaviours of peers and leaders shape employees' acceptance. This interplay suggests that organisational climate can enhance or hinder technology adoption, as supportive social norms reinforce positive attitudes toward AI. Moreover, the mediating role of attitude aligns with TPB's assertion that personal attitudes significantly influence behavioural intentions (Ajzen, 1991). The study highlights that while employees may acknowledge the usefulness of AI, they often do not perceive it as directly beneficial to their workflow, emphasising the need for robust integration strategies to improve this perception (Chong et al., 2024). Overall, by integrating these theories and variables, the proposed research model offers a comprehensive framework to enhance understanding of technology acceptance, fostering a culture of innovation in the banking industry, and providing a basis for further empirical inquiry into holistic factors influencing acceptance dynamics in technology adoption.

Practical Implications

The practical implications of this study for the commercial banking sector are significant, particularly in enhancing employee acceptance of artificial intelligence (AI).-enabled transformations. To foster a successful transition, banks must prioritise strategies that improve the perceived usefulness and ease of use of AI technologies. This involves implementing targeted training programs that effectively communicate the benefits of AI tools, helping employees understand how these technologies can improve their efficiency and decision-making processes. By showcasing real-world applications and success stories, banks can bolster employees' perceptions of AI as a valuable resource in their daily tasks. Moreover, the design of user-friendly interfaces is crucial. Simplifying workflows and ensuring that AI applications are intuitive can significantly increase perceived ease of use, making employees more comfortable with using these technologies. Periodic feedback sessions should be instituted to gather employee experiences and suggestions for improvement, ensuring that the systems are continuously refined based on user input. Additionally, cultivating a supportive commercial bank culture is vital. Promoting a positive environment in which collaboration and innovation are encouraged can significantly influence subjective norms. Peer endorsements and testimonials from early adopters of AI tools can nurture a sense of community, demonstrating that embracing technology is widely accepted within commercial banks. Leadership also plays a critical role in this transformation. Transparent communication from management regarding their commitment to AI initiatives can reinforce positive subjective norms and foster an environment where employees feel valued and supported. By enhancing perceived usefulness, ease of use, and subjective norms, the commercial banking sector can create a conducive environment for AI acceptance, ultimately driving innovation and improved performance. This proactive approach ensures that employees are equipped

and motivated to embrace AI technologies, thereby facilitating a smoother transition towards a more technologically advanced banking landscape.

Suggestions for Future Studies

Future studies should explore the long-term impacts of artificial intelligence (AI) integration in the commercial banking sector, mainly focusing on employee productivity and customer satisfaction. It would be beneficial to investigate how perceived usefulness and ease of use evolve as employees gain experience with AI technologies. Longitudinal studies could measure shifts in attitudes and acceptance levels, providing insights into the factors that sustain or diminish these perceptions. Additionally, researchers might consider segmenting the workforce by demographic or job role to identify the varying impacts of AI tools. Such studies could reveal specific needs and preferences, allowing for more tailored training programs that address the distinct challenges faced by different employee groups. It would also be valuable to examine the role of organisational culture in more depth. Future research should investigate how specific cultural attributes, such as openness to innovation, flexibility, and collaboration, influence the acceptance of AI technologies. Furthermore, qualitative studies could provide richer insights into employee experiences and perceptions of AI, helping to uncover underlying motivations and concerns that quantitative methods may not fully capture. This comprehensive understanding can guide further implementation strategies and enhance the overall effectiveness of AI initiatives in banking.

Conclusion

This study highlights the critical factors influencing employee acceptance of artificial intelligence (AI)-enabled transformations in the commercial banking sector. By emphasising perceived usefulness, perceived ease of use, and subjective norms, the findings illuminate the interconnected nature of these constructs and their significant impact on employees' attitudes and acceptance of new technologies. The results underscore the need for targeted training programs that effectively communicate the benefits of AI and the importance of designing intuitive user interfaces to enhance usability. Additionally, fostering a supportive organisational culture is paramount, as positive subjective norms can significantly influence employees' willingness to embrace AI tools. Leadership commitment to AI initiatives is essential to reinforce these norms, creating an environment where technology adoption is perceived as beneficial and widely accepted. Overall, by addressing the identified factors, commercial banks can facilitate a smoother transition towards AI integration, ultimately driving innovation and improving operational efficiency. The insights gained from this study not only contribute to the existing body of knowledge on technology acceptance but also provide actionable strategies for banking institutions to enhance employee engagement and maximise the potential of AI technologies in their operations. Thus, the study serves as a foundational step toward fostering a culture of innovation in the banking industry.

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