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EMPLOYEE PERCEPTIONS OF ORGANIZATIONAL READINESS FOR THE FOURTH INDUSTRIAL REVOLUTION: EVIDENCE FROM THE TANZANIAN BANKING SECTOR

Dr. Noel Damson Nthangu
Lecturer, Geography and Economics Department, Faculty of Humanities and Social Sciences, Dar es Salaam University College of Education, University of Dar es Salaam, Tanzania
Orcid Id: 0000-0001-6296-185X

ABSTRACT
Tanzanian banks operate in an environment where digital services increasingly shape competitio n and how financial products reach customers. Fourth Industrial Revolution (4IR) technologies are affecting work organization, customer interaction, and staff responsibilities. This study investigates how employees in selected banks in Tanzania view digital banking technologies and their institutions' preparedness to implement them. A modified Technology Acceptance Model (TAM) guides the analysis, incorporating perceived usefulness (PU), perceived ease of use (PEOU), attitude towards technology (ATT), employees' information technology proficie ncy (ITP), and information technology infrastructure (ITI). The research used a descriptive quantitat ive survey. From a stated population of 2,560, a sample of 346 was calculated. Questionna ires were circulated using Google Forms, and the responses were transferred to Excel for analysis in SPSS version 27. Following removal of one duplicate, 345 responses remained, reported as a 99.7% response rate. Cronbach's alpha was used to assess interna l consistency; Spearman's correlation and ordinal regression were used for the inferential analysis. Intention to use digital banking (ITU) was positively correlated with PU, PEOU, ATT, ITI, and ITP. In the ordinal regression, however, attitude was the only statistically significant explanatory variable. The findings support regular, job-relevant training and continuing skills development as banks adapt to changing digital systems.

Keywords: *Fourth industrial revolution, employees' perceptions, banking industry, digita l banking, technology acceptance model.*

1. INTRODUCTION
Competition from fintech enterprises and mobile-network operators is changing the conditions under which African banks deliver financial services. These developments make digital adaptation an important strategic concern for established institutions (Ohene-Afoakwa & Nyanhongo, 2024). The Fourth Industrial Revolution (4IR) refers to the growing integration of technologies such as artificial intelligence, large-scale data analytics, blockchain, the Internet of Things, digita l platforms, and automated fraud-detection tools (Chemhuru, 2025). Such technologies link digita l processes with physical operations and can reshape how organizations coordinate their activit ies (Schwab, 2016). Their benefits depend not only on acquisition but also on effective implementation and employees' ability to use them.

In banking, digital applications can support customer identification, transaction processing, and the detection of suspicious activity. Their introduction may also change internal workflows, administrative routines and the nature of employees' responsibilities. Spath et al. (2013) describe Industry 4.0 in terms of connected people, objects and systems that exchange data. These changes make the human and organizational dimensions of digital transformation important alongside technical investment.

The African fintech landscape is not developing uniformly. Mureithi (2021) reported that Nigeria, South Africa and Kenya received substantial shares of fintech investment on the continent. Although these figures do not directly measure Tanzanian banks' readiness, they i llustrate the wider competitive context in which financial institutions must consider their digital capabilit ies. Banks need to evaluate whether staff have the knowledge, practical support, and confidence required to incorporate new systems into routine work.

Research on mobile banking and digital financial services has expanded across East Africa, but the literature reviewed for this study provides less direct evidence about how bank employees in Tanzania assess

organizational preparedness for 4IR technologies. This study addresses that local question using evidence from 24 selected banks in Dar es Salaam, Tanzania. An adapted Technology Acceptance Model (TAM) is used to consider perceived usefulness, perceived ease of use, attitude, employee IT proficiency, and IT infrastructure. The following sections describe the theoretical basis, methods, findings, and implications.

2. LITERATURE REVIEW

2.1. Theoretical Background

The study uses the Technology Acceptance Model (TAM) to frame employees' perceptions of digital banking. In its conventional form, TAM focuses on beliefs about whether a system is useful and whether it can be operated without undue effort. Here, the framework is extended to include attitude towards technology (ATT), staff IT proficiency (ITP), and IT infrastructure (ITI), alongside perceived usefulness (PU) and perceived ease of use (PEOU). This adaptation allows the analysis to consider both individual perceptions and workplace conditions.

Prior applications of TAM have examined how these beliefs relate to acceptance and behavioura l intention in different settings (Matikiti, Mpinganjira, & Roberts-Lombards, 2018). The underlying expectation is that people may be more willing to use a system when they see a work-related benefit and consider the system manageable. Research cited in the manuscript also identifies usefulness and ease-of-use beliefs as relevant correlates of intention (Scherer et al., 2019; Abdullah, Ward, & Ahmed, 2016; Tubaishat & Care, 2018). The additional variables in this study capture skills and the organizational resources that can enable or constrain use.

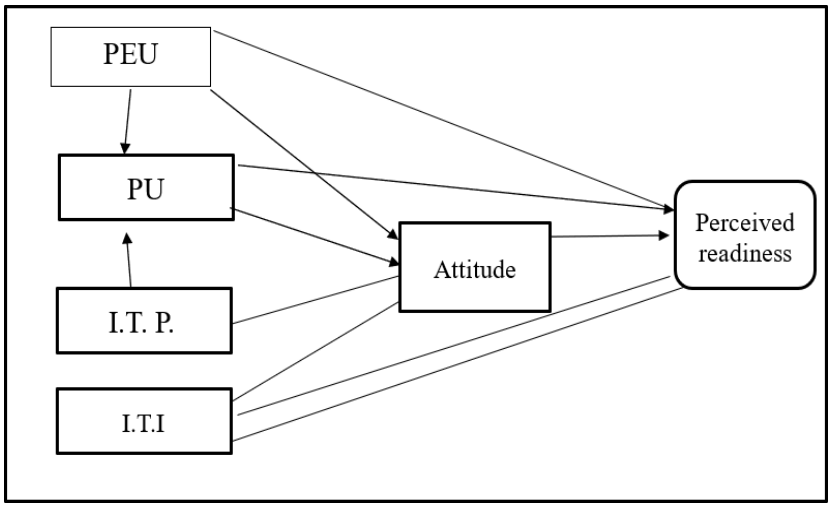


Figure 1. The modified technology acceptance model (TAM)

2.2. Empirical Literature Review

Digital change can alter both the tasks performed in banks and the capabilities employees need to perform them. Schwab (2017) discusses the potential for artificial intelligence and machine learning to automate activities, making workforce adaptation and skills development relevant concerns. Ejemeyovwi, Osabuohien, and Bowale (2020) connect digital transformation with growth and investment considerations for African banks, including customer service. The World Economic Forum (2019) and Schwab (2017) are cited in relation to workplace learning approaches such as training, orientation, mentoring, job rotation, and leadership support. Adoption also depends on context: Nasri (2021), in research involving 253 respondents in Tunisia, considered risk, convenience, security, and prior internet knowledge in relation to internet-banking adoption. Taken together, this literature supports examining technology perceptions alongside employees' capabilities and the conditions provided by their organizations.

3. DATA AND METHODS

The methods section describes the study setting and design, the population and sampling plan, questionnaire development, pilot testing, reliability and validity checks, analytical procedures, ethical safeguards and

variables.

3.1. Research Design

A quantitative descriptive survey was conducted to document staff perceptions of 4IR-related banking technologies and their assessment of institutional preparedness. This design enabled responses from multiple participants to be summarized and compared. The approach follows the general survey principles discussed by Saunders and Lewis (2012), with statistical analysis used to address the study questions within a positivist orientation (Zikmund et al., 2013).

3.2. Study Area

Dar es Salaam was selected deliberately as the study setting. The manuscript cites Bank of Tanzania statistics indicating that 36 of the 45 licensed banks in Tanzania operate in the Dar es Salaam region, where many also maintain their headquarters (BoT, 2025). These 36 institut ions formed the initial frame. The study then included 24 licensed banks that had operated for at least 12 years; banks outside those eligibility conditions were excluded.

3.3. Target Population

The estimated population consisted of 2,560 managers and other employees working in the selected banks in Dar es Salaam. Their views were sought because staff experience can help explain how prepared an institution may be to introduce and use 4IR-related digital banking systems.

3.4. Sample Size

The target sample was calculated using Yamane's (1967) approach. With a stated population of 2,560 and a margin of error of 0.05, the calculation produced a required sample of approximate ly 346 participants.

The Yamane formula for calculating the sample size is given as follows:

$$n = \frac{N}{1 + N(e^2)}$$

Where: N= Population size n = Sample Size

e = Error margin

In the calculation, N denotes the population, n the required sample, and e the chosen error margin. The analysis used N = 2,560 and e = 0.05 (5%) for the bank employees and managers included in the population estimate.

Substitution of the population and error-margin values into the formula gives the sample size shown below:

3.5. Sampling Technique

$$n = \frac{2,560}{1+ 2,560(0.05)^2}$$

$$=345.95=346$$

Stratified random sampling is reported as the selection procedure. The staff population was divided into managerial and non-managerial categories, after which participants were selected from each group. The intention was to include both categories in the survey.

3.6. Research Instruments

The questionnaire was administered to the planned 346 respondents across the 24 banks. It gathered employees' assessments of 4IR and related digital technologies, as we l as background information used to describe the respondent group.

3.7. Preliminary Testing

A pilot exercise was carried out before the main survey with ten bankers randomly selected in Tanzania. The purpose was to identify unclear or unsuitable questionnaire items. The manuscr ipt reports that the instrument

was retained following this preliminary check.

3.8. Reliability and Validity

3.8.1. Reliability

Internal consistency was examined using Cronbach's alpha, which indicates the extent to which items intended to measure the same construct are consistent with one another. The method is discussed with reference to Bougie and Sekaran (2016).

3.8.2. Validity

Questionnaire validity was considered in terms of face and content coverage: whether the questions appeared understandable and whether they represented the concepts the study intended to measure.

3.9. Data Analysis

Responses submitted through Google Forms were exported to Microsoft Excel and analysed in SPSS version 27. Descriptive statistics, including frequencies and percentages, were used to summarize participant characteristics and questionnaire responses. The manuscript also reports inferential tests, including chi-square, ANOVA, t-tests, correlation and regression procedures; the final analysis should clearly identify which tests address each research question.

3.10. Consideration of Ethics

Permission to conduct the research was obtained through the human-resource departments of the two selected banks in Ilala Municipality, according to the manuscript. Participants were informed that their identities would remain undisclosed and that their answers would be treated confidentially. Questionnaire completion was arranged in consultation with bank managers to avoid unnecessary disruption to employees' work.

3.11. Variables of Study

The analysis considers five potential dimensions of employees' readiness to use 4IR-related digita l banking systems. PU and PEOU represent users' beliefs about the benefits and effort associated with technology; ATT reflects their evaluation of using it; ITP concerns their practical capabilit y; and ITI represents the technical facilities and organizational support available at work.

Perceived Usefulness (PU)

For this study, perceived usefulness means the extent to which an employee expects digita l technology to improve performance on work tasks. This construct has been examined in technology-acceptance research (Marangunić & Granić, 2015; Mortenson & Vidgen, 2016; Chang et al., 2017). Such evaluations may also be shaped by contextual factors, as discussed by Nasir et al. (2015), Pickering et al. (2019) and Rahimi et al. (2018).

Users' Perceived Ease of Use (PEU)

Perceived ease of use concerns an employee's expectation about how difficult or demanding a system will be to learn and operate. In TAM-based research, this belief is considered alongside perceived usefulness when explaining technology acceptance (Tubaishat & Care, 2018; Hess et al., 2014).

Attitude towards using Digital Banking Technologies (ATT)

Attitude captures an employee's overa l positive or negative evaluation of using digital banking systems in the workplace. This evaluation may involve perceived effects on task performance, time and work quality. Earlier work has also considered attitude in relation to technology use and acceptance (Pickering et al., 2019).

Staff IT Proficiency (ITP)

IT proficiency refers to the practical digital knowledge employees bring to their roles. In this study, it includes familiarity with electronic tools, experience applying them to work tasks and training received to use the systems.

Information Technology Infrastructure (ITI)
IT infrastructure refers to the technical environment and support arrangements that make digita l services possible, including computers, banking applications and related operational facilit ies. Although infrastructure is not one of TAM's original core constructs, enabling conditions may influence whether users can continue using a system; the manuscript cites Idoga et al. (2019) and Wang et al. (2016) in relation to technical conditions.

4. EMPIRICAL ANALYSIS AND FINDINGS

This section reports the survey evidence and interprets what it suggests about employees' readiness and intention to use digital banking technologies.

4.1. Response Rate

Of 346 questionnaires distributed to employees in the 24 participating banks in Dar es Salaam, one duplicate was removed from the dataset. The remaining 345 responses were analysed. The manuscript reports a response rate of 99.7%; the calculation should be checked against the number of questionnaires actually returned and deemed usable.

4.2. Descriptive Statistics

Frequencies, percentages, and charts are used to describe the respondents' characteristics.

4.2.1. Age and Gender

Among the 345 participants, 252 (73%) were men and 93 (27%) were women. The largest age category was 18–30 years, with 162 participants (47%); those aged 31–40 formed the next largest group, reported as 42%.

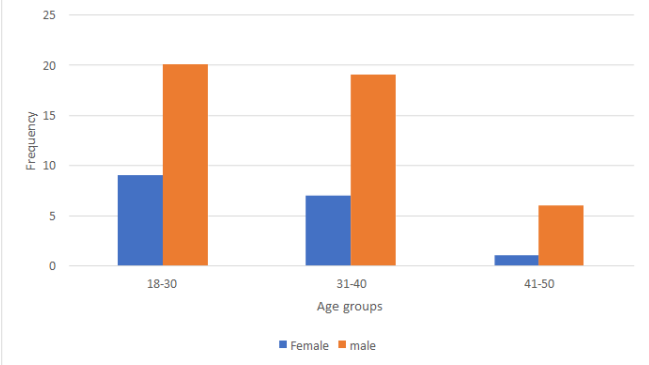


Figure 2. The frequency distribution of age and gender characteristics

Men represented 73% of the respondents (252 people), while women accounted for 27% (93 people). Participants aged 18–30 made up the largest age group at 47% (162 people), followed by the 31–40 group, reported as 42%. These figures describe the composition of the sample; they do not by themselves demonstrate differences in technology readiness by age or gender.

4.2.2. Level of Education

The education profile reported in the manuscript comprised 82% with a university degree, 16% with postgraduate qualifications, and 2% with a diploma. These figures provide context about respondents' formal education, but qualifications alone cannot establish how proficient a person is with a particular digital banking platform.

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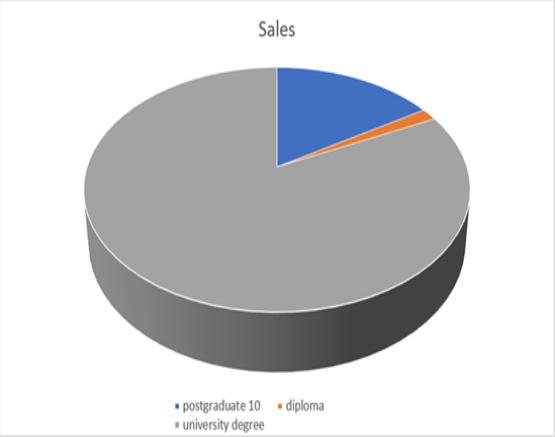


Figure 3. Education level of respondents

4.2.3. Work Experience

Three to five years was the most commonly reported period of employment. This suggests that many participants had several years of experience in their organizations. Nevertheless, tenure should not be treated as a direct measure of competence with emerging digital systems.

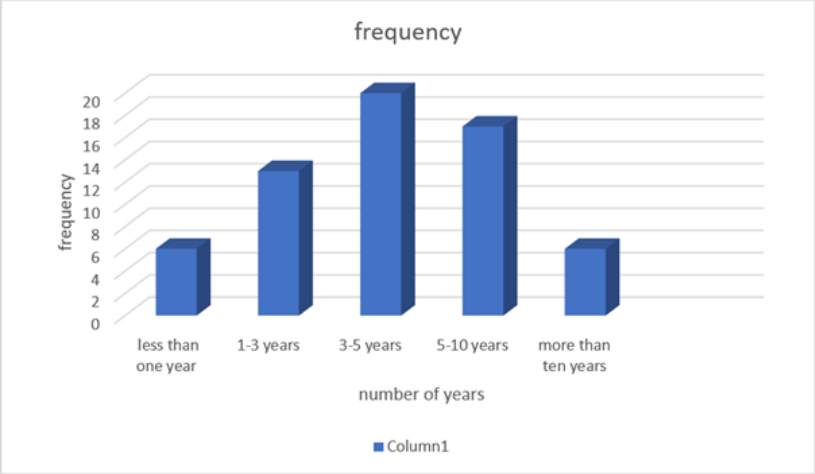


Figure 4. Working years of employees

4.3. Employees' Readiness and Intention to Use Digital Banking Technologies

4.3.1. Employees' Perceived Usefulness of 4IR Banking Technologies

Responses to the perceived-usefulness questions were predominantly positive. For the item on completing tasks more quickly, 74% strongly agreed, 24% agreed and 2% selected neutral. For the item on making tasks easier, the corresponding proportions were 71%, 26% and 3%. These responses suggest that most participants saw practical work-related benefits in the digital banking technologies covered by the survey.

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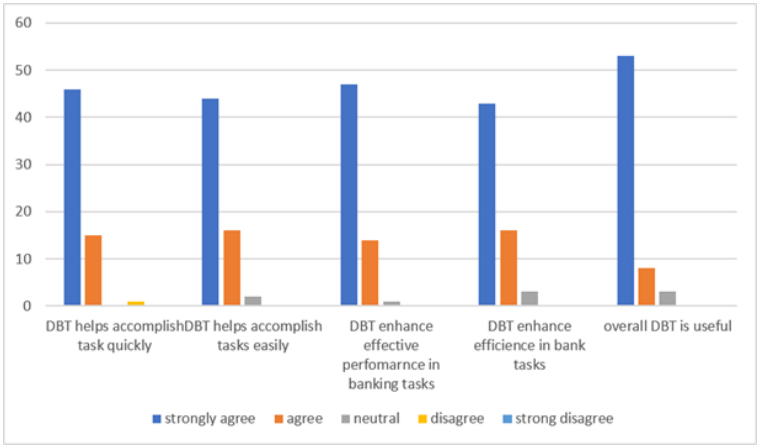


Figure 5. Employees' perceived usefulness of 4IR banking technologies

4.3.2. Employees' Perceived Ease of Use of 4IR Banking Technologies

Most participants reported that they could understand the operations performed through digita l banking technologies. The manuscript indicates that approximately 90% found these operations understandable and more than 90% considered the systems straightforward or seamless to use. The pattern reflects favourable perceptions of usability among the respondents, although it does not independently establish actual system performance.

Taken together, the ease-of-use responses suggest that the surveyed employees generally did not regard the systems as difficult to navigate. The precise item-level percentages should be confirmed against the original dataset and chart before publication.

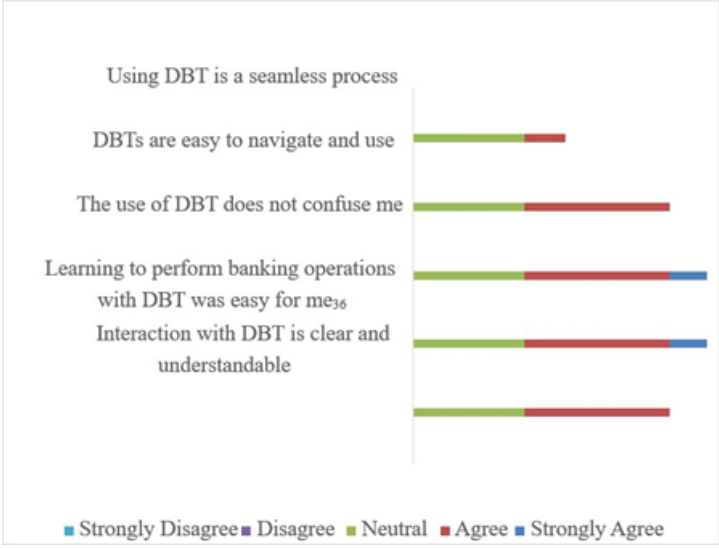


Figure 6. Employees' perceived ease of use of 4IR technologies

4.3.3. Employees' Information Technology Proficiency and 4IR Banking Technologies

Respondents commonly reported having relevant digital skills, yet the survey also revealed demand for further training. Specifically, 77% indicated that they needed additional skills to use the technologies effectively; 11.3% were neutral, 3% disagreed and 8% strongly disagreed. The results therefore point to a distinction between current confidence and perceived need for continuing development. This issue is consistent with broader discussions of workforce readiness for Industry 4.0, including Mukwawaya et al. (2018).

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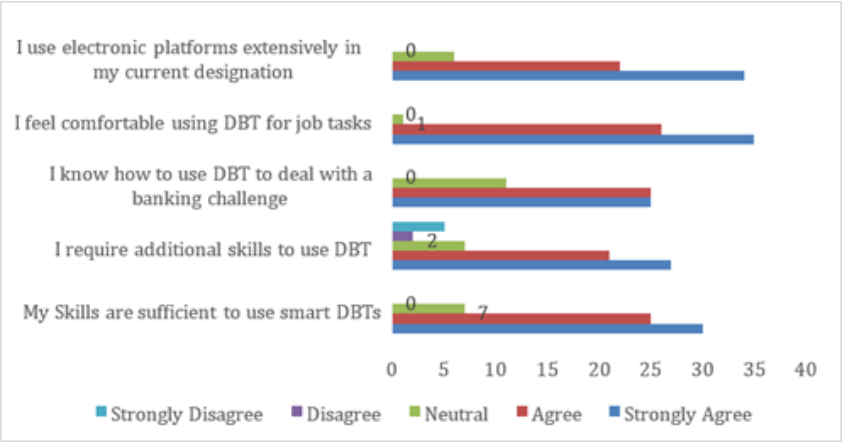


Figure 7. Employees' information technology proficiency and 4IR banking technologies

4.3.4. Employees' Perception of IT Infrastructure and Use of 4IR Banking Technologies

Perceptions of the technical environment were mostly favourable. For the statement that bank infrastructure supported 4IR systems, 47% strongly agreed, 39% agreed, 13% were neutral, and 1% strongly disagreed. For IT assistance when problems arose, 45% strongly agreed, and 39% agreed, while 11% were neutral; the remaining responses were negative. Views of learning materials were less positive: 40% strongly agreed that specific resources were available, whereas 42% disagreed, with other responses described as neutral or disagreement. The reported figures for updates about industry developments are internally inconsistent, because the stated percentages do not sum to 100%; those values must be checked against the source data before publication.

The results indicate that banks should review not only the availability of technical infrastruc ture but also the practical support surrounding it. Help-desk access, system-specific learning resources and regular communication about updates may a**l** affect employees' ability to adapt to changing platforms.

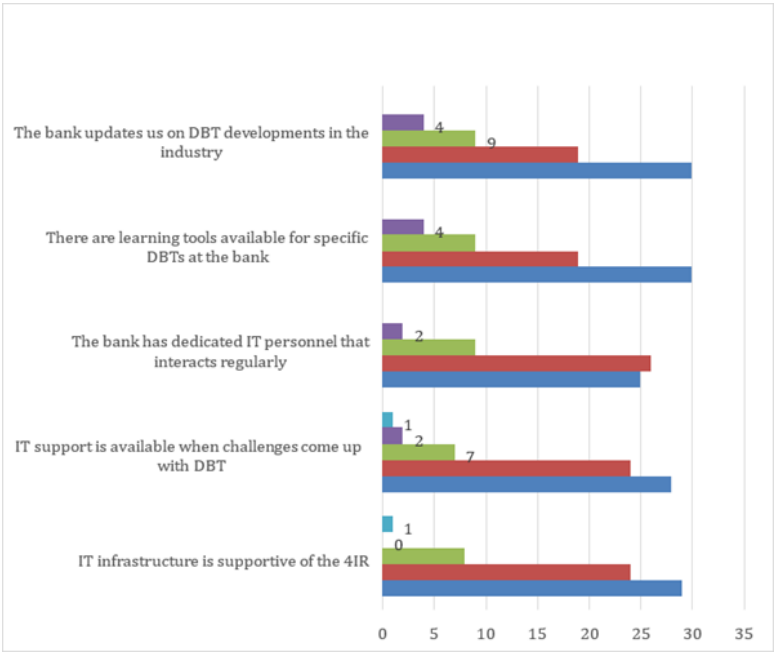


Figure 8. Information Technology Infrastructure and Adoption of 4IRbank

4.3.5. Employees' Attitudes and Intention to Use 4IR Banking Technologies

The manuscript records generally positive attitudes towards digital banking. It reports that 95% considered

use of the technologies desirable and that all respondents regarded their use as good. Participants also indicated that they could encourage colleagues to use the systems provided by their banks. These claims should be checked against the underlying response distributions to ensure that the narrative and chart agree.

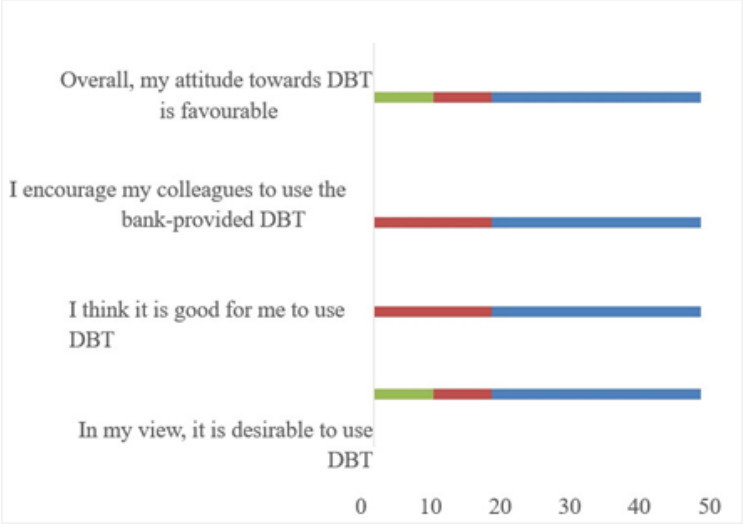


Figure 9. Employee attitudes and intention to use 4IR banking technologies

An overall favourable attitude was reported by 97% of participants, with 3% selecting neutral. This suggests broad acceptance among the employees surveyed. However, positive views should not be equated with complete organizational readiness, which also depends on employees' capabilities, suitable infrastructure, and effective implementation support. The discussion relates these findings to Chogo's (2020) study of 4IR readiness in Tanzania.

4.4. Inferential Statistics

The inferential analysis considers the consistency of the survey scales, the distributions of the variables, and the relationships between intention to use digital banking technologies and the five explanatory measures. The reported procedures include internal-consistency analysis, normalit y testing, Spearman's rank correlation, and ordinal regression.

4.4.1. Reliability Test

Cronbach's alpha was calculated for each construct to evaluate the internal consistency of its questionnaire items. The manuscript attributes the interpretation categories used in Table 1 to George and Mallery (2003).

Table 1. Cronbach's alpha value

value	Interpretation
Alpha ≥0.9	Excellent
0.8 ≥alpha<0.9	good
0.7 ≥alpha<0.8	acceptable
0.6 ≥alpha <0.7	questionable
0.5 ≥ alpha<0.6	poor
Alpha<0.5	unacceptable

The reported alpha coefficients exceed 0.70 for PU, PEOU, ATT, ITU and ITI. By contrast, ITP has an alpha of 0.566, below the threshold used in the manuscript. The IT proficiency scale therefore shows weaker internal consistency, and results involving this measure should be interpreted cautiously.

Table 2. Results from reliability tests

Variable	Number of items	Cronbach alpha	Interpretation
PU	5	0.87	Good
PEOU	5	0.86	Good

ATT	4	0.895	Good
ITU	4	0.82	Good
ITI	5	0.84	Good
ITP	5	0.566	Poor

4.4.2. Normality Tests

Kolmogorov–Smirnov and Shapiro–Wilk tests were used to examine whether the distributions of the study variables were consistent with normality. The reported significance values were below

.05 for each variable, leading the manuscript to treat the distributions as non-normal.

Table 3. Results for normality tests

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ITU	.406	345	.000	.667	345	.000
PU	.296	345	.000	.704	345	.000
PEOU	.172	345	.000	.885	345	.000
ATT	.361	345	.000	.697	345	.000
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
ITI	.171	345	.000	.910	345	.000
ITP	.120	345	.027	.938	345	.004
a. Lilliefors significance correction						

The significance results reported for both normality tests are below .05 across the variables. On that basis, the authors report that the data depart from a normal distribution. The decision to use subsequent tests should nevertheless be justified in relation to the measurement scales and the study design, not solely by these tests.

4.4.3. Correlation Analysis

Spearman's rank correlation was used to examine the direction and strength of association between intention to use digital banking technologies (ITU) and each explanatory construct. The reported correlations with ITU were positive for PU (ρ = .499), PEOU (ρ = .590), ATT (ρ = .698), ITI (ρ = .346) and ITP (ρ = .516). Attitude had the largest reported association, and infrastruc ture the smallest. These correlations indicate association, not causation.

Table 4. Results from Spearman's correlation

Correlations								
			ITU	PU	PEOU	ATT	ITI	ITP
Spearmans rho	ITU	Correlation coefficient	1.000	499	590	698	346	516
		Sig.(2-tailed	.	000	000	000	006	000
	PU	Correlation coefficient	499	1.000	508	574	346	398
		Sig(2- tailed	000	.	000	000	006	001
	PEOU	Correlation coefficient	590	508	1,000	660	620	645
		Sig(2-tailed	000	000	.	1.000	000	000
	ATT	Correlation coefficient	698	574	660	.	382	582
		Sig(2- tailed	000	000	000	000	002	000
	ITI	Correlation coefficient	346	346	620	382	1.000	688
		Sig(2- tailed	006	006	000	002	.	000
	ITP	Correlation coefficient	516	398	645	582	688	1.000
		Sig(2- tailed	000	001	0001	000	000	.

In the reported matrix, all five explanatory variables are positively associated with ITU. The largest coefficient is for ATT (ρ = .698), while the sma**l**est is for ITI (ρ = .346). The table should be checked for consistent

decimal notation and significance values, since several entries appear inconsistently formatted.

4.4.4. Ordinal Regression Analysis

Ordinal regression was used to assess the joint relationship between the five explanatory variables and employees' intention to use digital banking technologies. The model comparison reports that the final model improved on the intercept-only model, $\chi^2 = 39.722$ with 5 degrees of freedom ($p < .001$).

Table 5. Model fit

Model fit information				
Model	-2 log likelihood	Chi-square	df	Sig.
Intercept only	135.110			
Final	95.388	39.722	5	000
Link function: logit.				

Table 6. Goodness-of-fit test

Goodness -of -fit			
	Chi-square	df	sig
Pearson	192.701	250	997
deviance	95.388	250	1.000
Link function: Logit			

The reported goodness-of-fit results are not statistically significant (Pearson $p = .997$; deviance $p = 1.000$), which does not indicate lack of fit under these tests. Before interpreting the model definitively, the original SPSS output should be checked for sample size, degrees of freedom, outcome-category coding and the proportional-odds assumption.

Table 7. Ordinal regression results

Parameter Estimates								
		Estimate	Std. error	Wald	df	Sig.	95% confidence interval	
							Lower bound	Upper bound
Threshold	[ITU = 4]	19.537	5.176	14.247	1	.000	9.392	29.683
	[ITU = 4]	22.826	5.264	18.803	1	.000	12.508	33.143
	[ITU = 4]	23.603	5.331	19.604	1	.000	13.155	34.051
	[ITU = 5]	24.485	5.421	20.397	1	.000	13.859	35.111
	[ITU = 5]	24.612	5.435	20.510	1	.000	13.961	35.264
Parameter Estimates								
		Estimate	Std. error	Wald	df	Sig.	95% confidence interval	
							Lower bound	Upper bound
Location	PU	.471	.748	.397	1	.529	-.994	1.937
	PEOU	1.275	.844	2.281	1	.131	-.380	2.930
	ATT	2.535	.925	7.505	1	.006	.721	4.348
	ITI	-.211	.673	.098	1	.754	-1.530	1.108
	ITP	1.549	.984	2.479	1	.115	-.379	3.478
Link function: Logit								

The regression estimates were positive for PU, PEOU, ATT and ITP, whereas ITI had a negative coefficient. ATT was the only predictor with a statistically significant estimate ($\beta = 2.535$, $p = .006$). The estimates for PU ($p = .529$), PEOU ($p = .131$), ITI ($p = .754$) and ITP ($p = .115$) were not statistically significant. Thus, after accounting for the other variables in this model, attitude alone showed a statistically significant association with intention to use digital banking technologies. This should not be interpreted as proof of a causal effect.

5. CONCLUSION AND POLICY IMPLICATIONS

This study examined employees' views of readiness for Fourth Industrial Revolution technolo gies in selected

banks in Tanzania. Most respondents evaluated digital banking favourably and reported that it could help them complete work more quickly or easily. Attitudes were generally positive, but the responses also pointed to a need for additional skills development and reliable technical support. In the ordinal regression, attitude was the only explanatory variable that reached statistica l significance; the positive bivariate correlations for the other measures did not translate into statistically significant independent effects in that model.

Banks should plan continuing professional development around the systems employees use and the tasks they are expected to perform. Training should be complemented by accessible technical assistance, useful system-specific guidance and timely communication about changes. Managers should also assess whether employees have opportunities to practise new skills as digital processes are introduced and job responsibilities evolve.

The research was self-funded, and limited resources constrained the scale of data collection. Future studies could include institutions in additional regions, compare readiness across sectors, and examine whether reported readiness is associated with measurable banking outcomes.

REFERENCES

[1] Chang, C. T., Hajiyev, J. & Su, C. R. (2017). Examining the students' behaviora l intent ion to use e-learning in Azerbaijan. The general extended technology acceptance model for e-learning approach. Computers Education, 111, 128-143.

[2] Chemhur, M. (2025). The fourth industrial revolution (4IR) and Africa's future: Reflect io ns from African Ethics. African Values, Ethics, and Technology. (pp.17-33). Palgrave Macmillan, Cham.

[3] Chogo, P. (2020). Professionals' opinion on the fourth industria l revolution readiness in Tanzania. International Journal of Scientific and Research Publications, 1011.

[4] EjemeyovwiI, J. O., Osabuohien, E. S. & Bowale, E. I. (2021). I adoption, innovation and financial development in a digital world: empirical analysis from Africa. Transnational Corporations Review, 13(1), 16-31.

[5] Geissbauer, R., Vedso, J. & Schrauf, S. (2016). Industry 4.0: Building the digital enterprise. 1.

[6] George, D., Mallery, P. (2003). SPSS for Windows step by step: A simple guide and reference 11.0 update 4th edition.

[7] Hess, T. J., Mcnab, A. L., & Basoglue, K. A. (2014). Reliability generalization of perceived ease of use, perceived usefulness, and behavioural intentions. MIS Quarterly, 38(1), 1-28.

[8] Idoga, P. E., Toycan, M., Nadiri, H., & Çelebi, E. (2019). Assessing factors militating against the acceptance and successful implementation of a cloud-based health center from the healthcare professionals' perspective: a survey of hospitals in Benue State, North Central Nigeria. BMC Medical Informatics and Decision Making, 19(1), 1-18.

[9] Innocent, G. (2020). Effect of digital banking on financial inclusion among commercia l banks in Tanzania: The Case of CRDB, NMB and NBC Bank. Mzumbe University.

[10] Krejcie, R. V. & Morgan, D. W. (1970). Determining sample size for research activit ies. Educational and Psychological Measurement, 30, 607-610.

[11] Matikiti, R., Mpinganjira, M. & Roberts-Lombards, M. (2018). Application of the technology acceptance model and the technology organisational environment model to examine social media marketing use in the South African tourism industry. South African Journal of Information Management, 20, 1-12.

[12] Marangunic, N. & Granic, A. (2015). Technology acceptance model: a literature review from 1986 to 2013. Universal Access in the Information Society, 14, 81-95.

[13] Mukwawaya, G. F., Emwanu, B., & Mdakane S. (2018). Assessing readiness of South Africa for Industry 4.0: analysis of government policy, skills and education. In Proceedings of the International Conference

on Industrial Engineering and Operations Management (pp. 1587-1604).

[14] Mortenson, M. J. & Vidgen, R. (2016). A computational literature review of the technology acceptance model. International Journal of Information Management, 36(6), 1248-1259.

[15] Mwalibwa, L. (2020). The impact of digital banking in furthering financial inclusion in Tanzania. Mzumbe University.

[16] Nasir, S., & Yurder, Y. (2015). Consumers' and physicians' perceptions about high- tech wearable health products. Procedia-Social and Behavioural Sciences, 195, 1261-1267.

[17] Nasri, W. (2021). Acceptance of internet banking in Tunisian banks: Evidence from modified UTAUT model. International Journal of E-Business Research (IJEBR), 17, 22-41.

[18] Ohene-Afoakwa, E. & Nyanhongo, S. (2024). Banking in Africa: Strategies and systems for the banking industry to win in the fourth industrial revolution. Bank Seta: Africa Expansion Project 2017.

[19] Pickering, B., Faiella, G. & Clemente, F. (2019). Resolving stakeholder tussles in healthcare systems: ethical challenges to data protection. In International Conference on Model and Data Engineering (pp. 190-201). Springer, Cham.

[20] Rahimi, B., Nadri, H., Afshar, H. L. & Timpaka, T. (2018). A systematic review of the technology acceptance model in health informatics. Applied Clinical Informatics, 9, 604-634.

[21] Saunders, M. N. & Lewis, P. (2012). Doing research in business & management: An essential guide to planning your project, Pearson.

[22] Scherer, R., Siddiq, F., Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. Computers & Education 128, 13-35.

[23] Schwab, K. (2016). The fourth industrial revolution. Geneva: World Economic Forum Annual Meeting 2016.

[24] Schwab, K. (2017). The fourth industrial revolution, Currency.

[25] Spath, D., Ganschal, O., Gerlach, S., Hammerle, M., Jesemann I., Krause, T. & Schlund, S. (2013). Industry 4.0-manufacturing work of the future: Survey results. Proceedings of ICPR22, July 28th-August 1st.

[26] Tubaishat, A. (2018). Perceived usefulness and perceived ease of use of electronic health records among nurses: application of technology acceptance model. Informatics for Health and Social Care, 43(4), 379-389.

[27] Wang, Y., Xiao, Q., Sun, L., Wu, Y. (2016). Chinese nurses' acceptance of PDA: A cross-sectional survey using a technology acceptance model. Studies in health technology and informatics, 225, 889-890.

[28] Zikmund, W. G., Carr, J. C., & Griffin, M. (2013). Business Research Methods. Cengage Learning.