



Digital Innovation and Employee Performance in the Nigerian Banking Sector: A Case Study of Zenith Bank Plc

¹Olufemi Epebinu; ²Segun Adeagbo

^{1,2}Department of Business Administration, National Open University of Nigeria, Abuja.
fepebinu@noun.edu.ng. +2348060879434

Abstract

Organisations in the Nigerian banking sector increasingly invest in digital technologies, yet many still struggle to translate these innovations into improved employee performance. This study addresses this problem by examining how digital innovation capabilities conceptualized across four dimensions: digital innovation initiation, development, implementation, and exploitation, influences employee performance at Zenith Bank Nigeria Plc. It further investigates whether employee engagement mediates the relationship between digital innovation and employee performance. A quantitative survey design was adopted, and data were collected from employees at the bank's corporate headquarters and branch offices in the Federal Capital Territory, Abuja. Of the 317 questionnaires distributed, 300 valid responses were analyzed using multiple linear regression in SPSS (version 26). Findings revealed that the four predictors jointly explained approximately 18.6% of the variance in employee performance ($R^2 = .186$; Adjusted $R^2 = .174$). The correlation coefficient ($R = .432$) indicates a moderate positive relationship between the dimensions of digital innovation and employee performance. The standard error of the estimate (.16087) suggests a reasonably good model fit, while the overall regression model was statistically significant, $F = 14.67$, $p < .001$, indicating that at least one digital innovation dimension significantly predicts employee performance. Results further showed that employee engagement mediates the relationship between digital innovation and employee performance. The study underscores the importance of effective implementation strategies and high employee involvement in unlocking the performance benefits of digital innovation. It concludes that organisations such as Zenith Bank Nigeria Plc should not only invest in digital technologies but also cultivate an engagement-driven culture that empowers employees to integrate innovation into their daily work processes.

Key words: Digital Innovation, Employee Performance, Employees Engagement

1. Introduction

The fourth industrial revolution has brought a huge change to corporate organisation's operation as digital technology and innovation has become a critical driver in this change. Digital innovation has to do with the use of digital technology during the process of innovating, which is described as fully or partly, the outcome of innovation that involves radical change in the nature and structure of new products and services, spawned novel value creation and value appropriation pathways (Nambisan et al., 2017). Digital innovation encompasses the adoption of advanced technologies to improve services, products, and processes as customers expectations, competitive pressure, and technology advancement are key drivers of digital innovation in banking sector. In today's rapidly evolving financial landscape, digital innovation has become a critical driver of change, particularly within the banking industry. Digital banking like mobile banking, internet banking, biometric validation and artificial intelligence like chatbots and virtual assistants, fraud detection personalized banking are basic examples of digital innovation which is propelled by digital technology. All the aforementioned digital innovation in banking sector is deployed to enhance customer experience, increase efficiency, enhance security and bring about innovative products and services to attract new customers to the sector. In the banking sector these technologies aim to make banking faster, more efficient,

and more customer-centric. Banks around the world are leveraging these innovations to enhance operational efficiency, reduce manual processes, and offer better services to customers (Sri-Annisa, 2024).

Meanwhile, Digital innovation implementation within corporate organisations could be a driving factor. It includes change management, user adoption, system integration and data security. Digital innovation exploitation on the other hand involves scalability, expanding the innovation to new markets or customer segments which are targeted to drive basic organizational outcomes (Kohli, et al, 2019). Corporate organisations make huge investment on the employees to attain performance and overall organisational excellence but the challenge in attaining employees' performance is still a concern within the organisations (Pradhan & Jena, 2017).

The Nigerian banking sector has increasingly become a focal point of innovation within the national economy, mirroring the transformative impact of the Fourth Industrial Revolution (4IR) on global financial systems. Data from the National Bureau of Statistics (NBS) indicate that the financial services sector contributed ₦3.8 trillion to Nigeria's Gross Domestic Product (GDP) in 2023, representing a 26.5% increase from ₦3.01 trillion in 2022. By 2024, the sector's contribution rose to approximately 6.40% of GDP, nearly double the 3.60% recorded in 2022. This upward trajectory underscores the sector's deepening integration of digital technologies and its strategic alignment with global trends in automation, artificial intelligence, and data-driven financial management.

Within this broader technological landscape, Zenith Bank Plc exemplifies the growing digital innovation in Nigeria's banking industry. The bank's 2024 annual report records an 86% increase in gross earnings, reflecting the tangible outcomes of its adoption of advanced digital solutions such as automated workflows and customer relationship management (CRM) systems. The bank stands as the lead among the first four leading banks in Nigeria (Tokede, 2025). However, the efficacy and sustainability of these digital transformations are contingent upon employees' ability to adapt to technological change, develop requisite competencies, and maintain high levels of engagement and performance in increasingly digitalized work environments. Although digital innovation has been widely recognized as a catalyst for organizational competitiveness in the era of the Fourth Industrial Revolution (4IR), empirical inquiry into its human-centered consequences within emerging economies remains limited (Hanelt et al; 2021).

The extant literature on digital innovation in Nigeria's financial services sector tends to focus predominantly on technological adoption, service delivery efficiency, and financial performance indicators. However, considerably less scholarly attention has been directed toward understanding how these innovations reshape employee experiences, work engagement, and performance outcomes. This gap is particularly evident in the banking industry, where technology-driven restructuring has intensified the demand for digital competencies, agility, and adaptability among employees.

Therefore, this study is justified by the need to bridge the empirical gap between digital innovation and employee performance in Nigeria's banking sector. The study seeks to examine the influence of digital innovation as conceptualised across four key dimensions on employee performance, with an evidence on the mediating role of employee engagement within Zenith Bank Nigeria Plc

2. Literature Review

Digital Innovation: In reviewing the concept of digital innovation, the study explored extant literature to be able to understand the concept. Some scholars have defined the concept of digital innovation to mean the process of combining different components of digital and physical components together to achieve a purpose within the organisation (Yoo et al. 2012). Whereas, some other scholars defined the concept of digital innovation with its effects while most definitions include several 'digital' terms such as digital objects or digital technologies. Stated differently, in digital innovation, digital technologies and associated digitizing processes form an innate part of the new idea and/or its development, diffusion, or assimilation (Nambisan et al., 2017). The concept is further described as new combinations of digital and physical components to produce new products (and services) by combining digital data from heterogeneous sources easily 'to deliver diverse services, which dissolves product and industry boundaries (Barrett, et al., 2015) and in a related way, as the recombination of digital components in a layered, modular architecture to create new value-in-use to users or potential users of a service (Huang et al, 2014). Moreover, digital innovation' is used to refer to a product-centric perspective involving new combinations of physical and digital products to form new products. In this conceptualization, innovation refers to the role of underlying architectures of IT artifacts in enabling and constraining the development of new IT artifacts and the implications for structuring and managing innovation within firms (Kohli and Melville., 2018). This is done in the creation or adoption and exploitation of an inherently unbounded, value-adding novelty such as product, service, process or business model through the incorporation of digital technology.

Meanwhile, Nambisan et al. (2020), opined that digital innovation "is the use of digital technology during the process of innovating", and state that the resulting digital innovation has radically changed the way services and products are created and structured, enabling new ways of creating values in the organisation. The authors opined that digital innovation is a sociotechnical phenomenon and conceptualize it "as the creation of (and consequent change in) market offerings, business processes, or models that result from the use of digital technology. They opined that, in digital innovation, digital technologies and associated digitizing processes form an innate part of the new idea and/or its development, diffusion, or assimilation". This reasoning reflects that innovation outcomes and processes are less bounded and digital innovation provides a new level of fluidity where, e.g., the innovation process as well as outcomes such as a new products or services are constantly re-scoped.

Furthermore, Kohli and Melville (2019) provides a model of a combined component of digital innovation to fully describe its capability. They opined that digital innovation activities include digital innovation initiation (triggers, opportunity identification, decision making), digital innovation development (designing, developing, adopting), digital innovation implementation (installing, maintaining, training, incentives) and digital innovation exploitation (maximising returns, leveraging existing systems/data for new purpose). These four dimensions are expressed to be present in any digital innovation activities. They further opined that these activities do not just occur in a vacuum within the organisation but are framed to be strategic initiatives. These activities signify the integration of digital technology (e.g. cloud computing, data analytics artificial intelligence) into all aspect of a business to deliver values among employees to customers. This is done by disrupting the market and gain a competitive edge.

Employee Performance: The concept of employee performance is strategic in the organisation as it encompasses both what has to be accomplished and how it can be realized. The term performance comes from the word job performance or actual performance (work performance or actual achievement achieved by a person), namely the quality and quantity of work achieved by an employee in carrying out his duties in accordance with the responsibilities assigned to

him (Mangkunegara, 2011). This definition provides an understanding that performance is an act or behavior of a person in carrying out his duties, which can be observed and assessed by others. Berberoglu, (2015) described employees' performance as a driver to overall organizational performance. Griffiths (2004) opined that employee performance reflects the employees' contributions to achieving organizational goals. Moreover, employees performance is a strategic concept in the organization that stands as a fundamental benchmark for organizational outcomes (Kreitner & Kinicki, 2010). It is further opined by Meyer et al, (2011) that employees performance also encompasses the action of engaging in activities with a focus on monitoring progress and achieving objectives through measurable criteria.

The concept of employee performance has been researched in literature and various measures have been identified to constitute the dimensions of employee performance (Pradhan & Jena, 2017). These dimensions include, *Task Performance*: This comprises of job explicit behaviours which includes fundamental job responsibilities assigned as a part of job description. Task performance requires more cognitive ability and is primarily facilitated through task knowledge (requisite technical knowledge or principles to ensure job performance and having an ability to handle multiple assignments), task skill (application of technical knowledge to accomplish task successfully without much supervision), and task habits (an innate ability to respond to assigned jobs that either facilitate or impede the performance) (Conway, 1999). Therefore, the primary antecedents of task performance are the ability to do the job and prior experience. *Adaptive Performance*: An individual's ability to acclimatize and provide necessary support to the job profile in a dynamic work situation is referred to as *adaptive performance* (Hesketh, & Neal, 1999). Earlier studies have found that once the employees derive a certain amount of perfection in their assigned tasks, they try to adapt their attitude and behavior to the varied requirements of their job roles (Huang et al., 2014). An effective adaptive performance necessitates employees' ability to efficiently deal with volatile work circumstances (Baard, Rench, & Kozlowski, 2014), for example, technological transformations, changes in one's core job assignment, restructuring of organization and so on. Evolutions of various new occupations as an offshoot of technological innovation need employees to engage in fresh learning and get oneself adaptable with changes in an efficient manner. *Contextual Performance*: This is a kind of prosocial behaviour demonstrated by individuals in a work set-up. Such behaviours are expected of an employee but they are not overtly mentioned in one's job description. These kind of unstated expectations are called prosocial behaviour or extra role behaviour, which is referred to as contextual performance.

Employees Engagement: Employee engagement has been conceptualized in literature as a means of employee devotion to their physical and emotional roles in the work place. It reflects personal energies to drive into the role behaviours and find the self within that role (Hameduddin & Lee, 2019). Employee engagement consists of three prime components: absorption, dedication and vigor (Aboramadan & Kundi, 2020; Schaufeli *et al.*, 2006). The extent of employee enthusiasm toward the role is absorption, whereas dedication indicates the level of employee concentration while performing the roles (Ali *et al.*, 2020). Vigor denotes the extent to which employees become ready to invest time, energy and effort (Ali *et al.*, 2020). It is observed in literature (Chopra *et al.*, 2024; Kundu and Lata, 2017) that engaged employees are more likely to stay with the organisation and eager to learn about the organisational process. Meanwhile, there are related empirical studies on digital transformation and employees performance to digital innovation on employees performance with different scope in terms of coverage. These studies were carried out in organisations where transformation is taking place, which is an offshoot of digital innovation related with the fact that the duo rest on digital technology. Such studies include (Melati et al, 2024; Chandrashekar, 2021; Singh et al. 2021; Sri-Annisa et al,2024).

Hypothesis1 (H_{01}): There is no significant effect of digital innovation initiation on employees' performance.

Hypothesis2 (H_{02}): There is no significant effect digital innovation development on employees' performance

Hypothesis3 (H_{03}): There is no significant effect of digital innovation implementation on employees' performance

Hypothesis4 (H_{04}): There is no significant effect of digital innovation exploitation on employees' performance

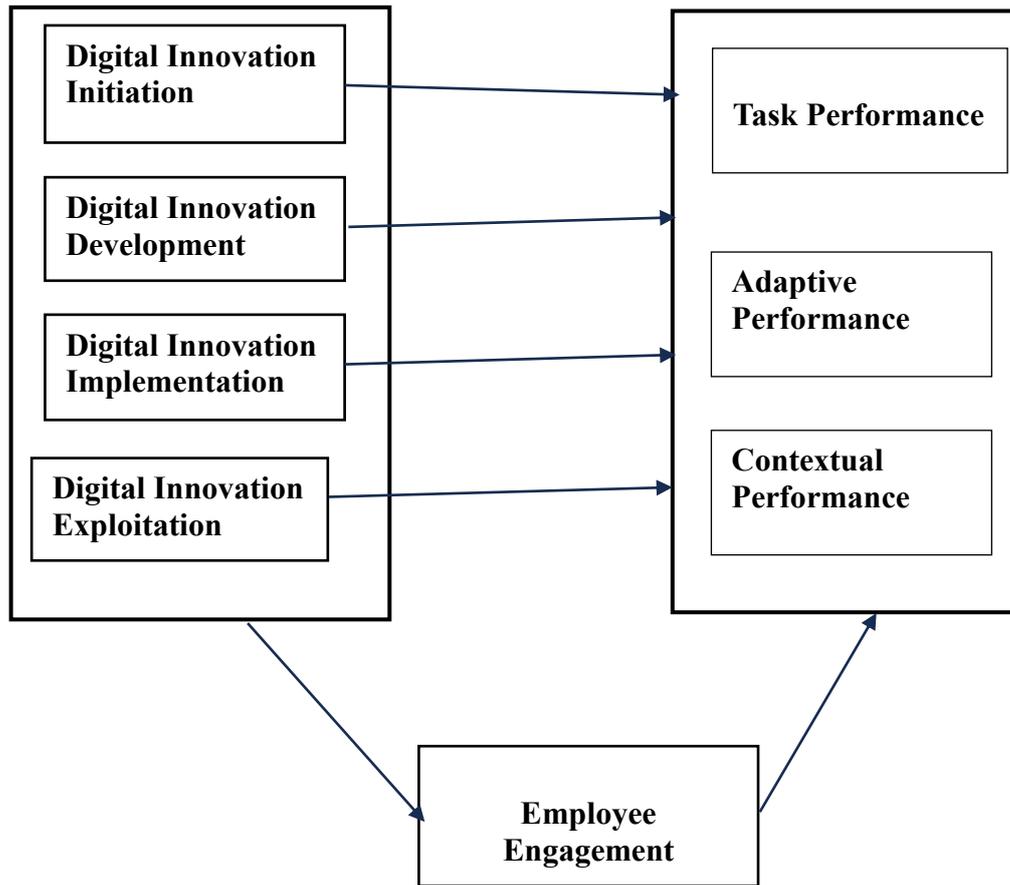
Hypothesis 5 (H_{05}): There is no significant mediating effect of employees' engagement on the relationship between digital innovation and employees' performance

Theory Underpinning: The theory underpinning this study is Unified Theory of Acceptance and Use of Technology (UTAUT). This theory synthesizes eight prominent technology adoption models to explain variance in individuals' behavioural intention to use a system and their actual use (Venkatesh, et al, 2003). UTAUT posits four core determinants of performance expectancy, effort expectancy, social influence, and facilitating conditions that shape intention and use. UTAUT offers a clear mechanism linking digital innovation to employee performance. Innovations influence employees' beliefs about expected gains (performance expectancy) and ease of use (effort expectancy), which, together with social influence (leadership and peer pressure) and facilitating conditions (training, infrastructure, bandwidth, support), drive intention and subsequent system use. This intention use chain provides the theoretical conduit through which technology adoption can plausibly translate into task performance, adaptive performance and contextual performance, which are the dimensions of employee performance this study.

Meanwhile, UTAUT has broadened the model for consumer contexts by adding motivation, price value, and habit (Venkatesh, et al, 2012). While these additions are less central in mandated workplace settings, habit and aspects of motivation can still illuminate routinization and intrinsic engagement with digital tools. For the present study, UTAUT can be productively adapted by modeling employee engagement as a mediator between intention to use and performance outcomes, reflecting the view that engaged employees more fully leverage digital affordances to deliver superior results.

Notwithstanding its strengths, UTAUT has been critiqued for emphasizing adoption over downstream outcomes. Addressing this limitation, the present study explicitly links UTAUT's belief intention to use pathway to objective and subjective performance indicators, thereby extending the theory's criterion space from acceptance to work outcomes. In this view, UTAUT provides a theoretically coherent and empirically supported framework for explaining how digital innovation shapes employees' technology use and, through engagement, their performance in a Fourth-Industrial-Revolution banking environment.

Fig 1: Conceptual Framework



Source: Adapted from Kohli and Melville (2019); Pradhan and Jena (2017).

3. Methodology

Research Design: The study engaged survey design with a quantitative research approach carried out within Zenith Bank Nig Plc in Abuja, Nigeria. The bank is renowned for its innovative products and services, strong financial performance, and commitment to customer satisfaction. The study focused on the headquarters of the bank and other branches situated in FCT Abuja with total of thirty-nine (39) branches of 1,550 employees spread across various departments engaged in the use of digital innovation activities. Random sampling technique was used with Slovin (1960), sampling size determination formula to determine the sample size, with 5% margin of error which resulted to 317 employees.

Measurement: Constructs were measured through existing validated indicator items from literature. Digital innovation was measure with the four-model developed by Kohli and Melville (2019). This comprised digital innovation initiation, development, implementation and exploitation. Employee performance was measured via items developed in three dimensions of task performance, contextual performance and adaptive performance by Pradhan and Jena (2017). Employee engagement was measured via items developed by Bakker and Schaufeli (2003).

Data Collection: Primary data was used with a well-structured questionnaire in five-point Likert scale format, as data instrument. The survey with validated items covered the three main variables of the study was administered online via Google form template to the employees'

official e-mail to capture their responses. A total of 317 copies of questionnaire were administered and 300 copies were retrieved which represents 94.6% of the total administered.

Method of Data Analysis: The study engaged both descriptive and inferential statistics. The descriptive was used to analyse the demographics responses of the respondents and the inferential statistics to test the formulated hypotheses. The descriptive used percentages while the inferential used regression tool in SPSS statistical package, version 26 for the analysis. The regression model is in two parts, the first shows the direct effect of digital innovation in four dimensions on employees performance and second is the mediating effect of employees' engagement on the relationship between digital innovation and employees' performance.

$$EP = \beta_0 + \beta_1 DII + \beta_2 DID + \beta_3 DIM + \beta_4 DIE + e_1 \quad (1)$$

$$EP = \sigma_0 + \sigma_1 DI + \sigma_2 DI * EE + e_2 \quad (2)$$

Where: EP = f (DI)

EP= (TP, AP, CP). DI = (DII, DID, DIM, DIE)

$\beta_1 - \beta_4$ = Regression Coefficient

$\sigma_1 - \sigma_2$ = Regression Coefficient

e = error

EP=Employees Performance (TP-Task Performance, AP-Adaptive Performance, CP-Contextual Performance)

DI= Digital Innovation

DII = Digital Innovation Initiation

DID= Digital Innovation Development

DIM= Digital Innovation Implementation

DIE = Digital Innovation Exploitation

EE = Employees Engagement

DI*EE = Mediation effect of Employees Engagement

4. Results and Discussion

Table 1: Profile of Respondents.

Characteristics	Frequency	Percentage (%)
Sex:		
Male	185	61.66
Female	115	38.33
Age:		
below 20 years	57	19
20 – 29 years	123	41
30 – 39 years	54	18
40 – 49 years	35	11.66
50 years above	31	10.33

Marital status:		
Married	166	55.33
Widowed	4	1.33
Single	130	43.33
Literacy Level:		
School Certificate	13	4.33
NCE/OND	89	29.66
HND/BSC	154	51.33
Post Graduate	44	14.66
Length of service in the Organisation:		
1 - 5 years	65	21.66
6 – 10 years	112	37.33
11 – 15 years	43	14.33
16 – 20 years	58	19.33
21 years +	22	7.33
Departments within the organisation:		
Corporate communication	19	6.33
Human Resources Management	20	6.66
Customer Services Management	60	20
Financial Control	21	7
Marketing	98	32.66
Operations	64	21.33
Funds Transfer	18	6

Source: Field survey 2025

The demographic profile of respondents as shown from Table 1, provides insight into the personal and professional characteristics of participants involved in the study, including sex, age, marital status, educational level, length of service, and departmental distribution.

Table 1 indicates that majority of respondents were male, with 185 participants (61.66%), while 115 respondents (38.33%) were female. This indicates a male-dominant workforce among the surveyed population, suggesting that men constitute a larger proportion of employees in the organisation.

Also, Table 1 shows that the respondents were mostly young adults. The largest age group was 20–29 years, accounting for 123 respondents (41%), followed by below 20 years with 57 respondents (19%). Participants aged 30–39 years comprised 54 respondents (18%), those aged 40–49 years were 35 (11.66%), and 50 years and above accounted for 31 respondents (10.33%). Overall, the data reveal a predominantly youthful workforce, with nearly 60% of respondents under the age of 30.

Furthermore, Table 1 reveals that more than half of the respondents were married (166 respondents; 55.33%), while 130 (43.33%) were single. Only a small proportion were widowed

(4 respondents; 1.33%). This suggests that the workforce is largely composed of individuals in stable family arrangements.

Most respondents possessed higher-level qualifications. HND/BSc holders constituted the largest group with 154 respondents (51.33%). This was followed by those with NCE/OND qualifications (89; 29.66%) and postgraduate degrees (44; 14.66%). Respondents with only a school certificate were few (13; 4.33%). These figures indicates that the organisation employs a predominantly well-educated workforce, with over two-thirds of participants holding at least a university degree.

As also indicated in Table 1, the largest group of respondents had served 6–10 years (112 respondents; 37.33%). Those with 1–5 years of service constituted 65 respondents (21.66%), while 16–20 years of service accounted for 58 respondents (19.33%). Respondents with 11–15 years were 43 (14.33%), and only 22 respondents (7.33%) had served for 21 years or more. This distribution suggests that most employees fall within the early-to-middle stages of their careers, contributing to a fairly experienced but not aging workforce.

Similarly, Table 1 shows that participants were drawn from various departments. The Marketing Department had the highest representation with 98 respondents (32.66%), followed by Operations with 64 respondents (21.33%) and Customer Services Management with 60 respondents (20%). Other departments included Financial Control (21; 7%), Human Resources Management (20; 6.66%), Corporate Communication (19; 6.33%), and Funds Transfer (18; 6%). This indicates that marketing and operational units form the largest segments of the organisation’s workforce.

Overall, the demographic analysis shows that respondents are largely male, young, married, and well educated, with many having moderate work experience (6–10 years). The workforce is concentrated mainly in the Marketing, Operations, and Customer Services departments. These characteristics provide important context for interpreting findings from the broader study, as the views expressed stem largely from a youthful and academically qualified employee population with practical workplace experience.

Testing of Hypotheses: Tables below shows the model summary (showing how well the model explains the dependent variable), the anova (shows the regression model as statistically significant) and the coefficient (shows how each independent variable affects the dependent variable)

Table 2. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.432 ^a	.186	.174	.16087

a. Predictors: (Constant), DIE, DIM, DII, DID

Source: Field survey 2025

Table 3. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.518	4	.380	14.669	.000 ^b
	Residual	6.625	256	.026		
	Total	8.143	260			

a. Dependent Variable: EP

b. Predictors: (Constant), DIE, DIM, DII, DID

Source: Field survey 2025

Table 4. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.698	.190		19.468	.000
	DII	.075	.027	.200	2.724	.007
	DID	-.005	.029	-.014	-.178	.859
	DIM	.148	.030	.324	4.952	.000
	DIE	-.010	.032	-.020	-.321	.748

a. Dependent Variable: EP

Source: Field survey 2025

Table 5. Coefficients: Showing the mediation significance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.123	.203		15.370	.000
	DII	.032	.027	.085	1.193	.234
	DID	-.053	.029	-.144	-1.852	.065
	DIM	.128	.028	.281	4.540	.000
	DIE	-.041	.031	-.080	-1.334	.184
	EE	.265	.045	.397	5.925	.000

a. Dependent Variable: EP

Source: Field survey 2025

Multiple regression analysis was conducted to examine the influence of the four dimensions of digital innovation on employee performance (EP) in Zenith Bank Nig Plc. The model summary (Table 2) shows the four predictors jointly explained approximately 18.6% of the variance in employee performance ($R^2 = .186$, $Adjusted R^2 = .174$). The correlation coefficient ($R = .432$) indicates a moderate positive relationship between digital innovation dimensions and employee performance. The standard error of the estimate (.16087) suggests that the model provides a reasonably good fit for the data. In Table 3, the overall regression model was statistically significant, $F= 14.67$, $p < .001$, implying that at least one of the digital innovation dimensions significantly predicts employee performance. This confirms that digital innovation, as a composite construct, has a meaningful impact on employees' performance outcomes. Table 4 presents the coefficients for each predictor. Among the four dimensions, Digital Innovation Initiation (DII) ($\beta = .200$, $t = 2.72$, $p = .007$) and Digital Innovation Implementation (DIM) ($\beta = .324$, $t = 4.95$, $p < .001$) were found to exert positive and significant effects on employee performance. In contrast, Digital Innovation Development (DID) ($\beta = -.014$, $t = -0.18$, $p = .859$) and Digital Innovation Exploitation (DIE) ($\beta = -.020$, $t = -0.32$, $p = .748$) showed no significant effects. Meanwhile, from table 5, the mediation analysis revealed a significant effect of Employee Engagement (EE) ($\beta = .397$, $t = 5.925$, $p = .000$), on the relationship between digital innovation and employee performance. This leads to rejecting hypotheses 1,3 and 5 while

accepting 2 and 4. These results suggest that improvements in digital innovation initiation and digital innovation implementation are the most salient predictors of higher employee performance within Zenith Bank Nig Plc. Conversely, digital innovation development and digital innovation exploitation, as operationalised in this model, did not significantly contribute to performance variance.

Discussion of Findings

The findings of this study reveals that digital innovation significantly influences employee performance within the Nigerian banking context, specifically at Zenith Bank Plc. The regression model demonstrated that digital innovation dimensions collectively explain approximately 18.6% of the variance in employee performance, confirming that the adoption and effective utilization of digital technologies constitute an important determinant of employees performance. This aligns with earlier empirical evidence that positions digital innovation as a critical enabler of efficiency and performance (Hanelt et al., 2021; Annisa et al., 2024). From the dimensions examined, Digital Innovation Implementation (DIM) and Digital Innovation in Initiation (DII) emerged as the strongest and statistically significant predictors of employee performance. These findings corroborate the performance expectancy construct of the UTAUT model (Venkatesh et al., 2003), which posits that employees' belief that digital tools will enhance their job performance strongly influences actual use and productivity. In contrast, Digital Innovation in Development (DID) and Digital Innovation in Exploitation (DIE) were found to have statistically insignificant effects on employee performance. This may indicate that while development-oriented innovations and engagement platforms exist, they may not yet be effectively aligned with employees' work processes or lack the training, motivation, or support structures necessary for optimal utilization.

From the UTAUT perspective, this reflects a gap in facilitating conditions and social influence two key factors that determine whether digital tools are fully adopted and internalized by employees. This outcome echoes findings from Neumann et al. (2021) and Adekanmbi and Ukpere (2023), who observed that technological innovations without adequate human and organisational integration often yield limited performance benefits. Overall, these findings contribute to the literature by reinforcing that in the context of the Fourth Industrial Revolution, employee performance is maximized not simply through the presence of advanced technologies, but through the strategic integration of digital innovation with human capability development and organizational support mechanisms. Therefore, banking institutions must prioritize not only technological upgrades but also employee training, engagement, and digital culture alignment to ensure sustainable performance outcomes in an increasingly digitalized financial environment.

5. Conclusion

This study examined the influence of digital innovation across four dimensions: initiation, development, implementation, and exploitation on employee performance within Zenith Bank Plc, Nigeria. The empirical results demonstrated that digital innovation initiation and digital innovation in implementation infrastructure significantly and positively affect employee performance, while digital innovation development and digital innovation exploitation exhibited no significant influence. Collectively, the four dimensions accounted for 18.6% of the variance in employee performance, indicating that while digital innovation is an important driver of employees' performance, its impact is mediated by the extent to which employees are engaged effectively adopt and utilize these technologies. From a theoretical standpoint, the findings provide further empirical validation of the Unified Theory of Acceptance and Use of Technology (UTAUT) in an emerging economy context. The results support the centrality of

performance expectancy and facilitating conditions as key determinants of the link between digital innovation and performance. The study extends UTAUT by demonstrating that the

pathway from digital innovation to employee performance is contingent upon the presence of supportive managerial systems and infrastructural resources.

Recommendations and Future Research Directions

Based on the findings of this study, several recommendations are proposed to strengthen the relationship between digital innovation and employee performance within the Nigerian banking industry. First, management should prioritize the strategic alignment of digital innovation initiatives with human resource development policies. Continuous capacity building programs, such as digital skills training, workshops, and certifications, are essential to enhance employees' digital competence and confidence in adopting new technologies. Second, banks should invest in robust digital infrastructure and supportive management systems that ensure ease of access, reliability, and usability of digital tools.

From a research perspective, future studies should adopt longitudinal and mixed-method approaches to capture the evolving nature of digital transformation and its sustained impact on employee behaviour and performance. Comparative studies across different banks, industries, and national contexts could provide deeper insights into how institutional, cultural, and infrastructural factors moderate the digital innovation performance relationship. Additionally, future research should examine the mediating and moderating roles of, organisational culture, and leadership style to provide a more holistic understanding of how digital innovation affects individual and organizational outcomes within the Fourth Industrial Revolution.

References:

- Aboramadan, M., & Kundi, Y. M. (2020). Does transformational leadership better predict work related outcomes than transactional leadership in the NPO context? *International Journal of Voluntary and Nonprofit Organizations*, 31(6), 1254–1267. <https://doi.org/10.1007/s11266-020-00278-7>
- Akmajian, A., Demers, R. A., Farmer, A. K., & Harnish, R. M. (2017). *Linguistics: An introduction to language and communication*. MIT Press.
- Ali, M., Ullah, S., & Guha, S. (2020). Role of talent development on talent engagement and self-efficacy: A structural model. *Journal of Social Economics Research*, 7(2), 118–129. <https://doi.org/10.18488/journal.35.2020.72.118.129>
- Bakker, A. B., & Schaufeli, W. B. (2003). Positive organizational behavior: Engaged employees in flourishing organizations. *Journal of Organizational Behavior*, 29(2), 147–154.
- Barrett, M., Davidson, E., Prabhu, J., & Vargo, S. L. (2015). Service innovation in the digital age: Key contributions and future directions. *MIS Quarterly*, 39(1), 135–154.
- Berberoglu, A. (2015). Organizational commitment and perceived organizational performance among healthcare professionals: Empirical evidence from a private hospital in Northern Cyprus. *Journal of Economics and Behavioral Studies*, 7(1), 64–71.
- Mathapati, C. M. (2021). Key aspects of digital technology and its impact on bank employee performance. *IOSR Journal of Business and Management*, 23(8), 1–3.
- Chopra, A., Sahoo, C. K., & Patel, G. (2024). Exploring the relationship between employer branding and talent retention: The mediation effect of employee engagement. *International Journal of Organizational Analysis*, 32(4), 702–720. <https://doi.org/10.1108/ijoa-02-2023-3638>
- Conway, J. M. (1999). Distinguishing contextual performance from task performance for managerial jobs. *Journal of Applied Psychology*, 84(3), 3–13.

- Faulkner, P., & Runde, J. (2019). Theorizing the digital object. *MIS Quarterly*, 43(4), 1–25.
- Faulkner, P., & Runde, J. (2013). Technological objects, social positions, and the transformational model of social activity. *MIS Quarterly*, 37(3), 803–818.
- Griffin, M., Parker, S., & Mason, C. (2010). Leader vision and the development of adaptive and proactive performance: A longitudinal study. *Journal of Applied Psychology*, 95(3), 174–182.
- Griffith, J. (2004). Relation of principal transformational leadership to school staff job satisfaction, staff turnover, and school performance. *Journal of Educational Administration*, 42(3), 333–356. <https://doi.org/10.1108/09578230410534667>
- Hameduddin, T., & Lee, S. (2019). Employee engagement among public employees: Examining the role of organizational images. *Public Management Review*, 23(3), 1–25. <https://doi.org/10.1080/14719037.2019.1695879>
- Hanelt, A., Bohnsack, R., Marz, D., & Antunes Marante, C. (2021). A systematic review of the literature on digital transformation: Insights and implications for strategy and organizational change. *Journal of Management Studies*, 58(5), 1159–1197.
- Huang, J., Henfridsson, O., Liu, M. J., & Newell, S. (2017). Growing on steroids: Rapidly scaling the user base of digital ventures through digital innovation. *MIS Quarterly*, 41(1), 301–314.
- Huang, J. L., Ryan, A. M., Zabel, K. L., & Palmer, A. (2014). Personality and adaptive performance at work: A meta-analytic investigation. *Journal of Applied Psychology*, 99(2), 162–179.
- Hund, A., Wagner, H., Beimborn, D., & Weitzel, T. (2021). Digital innovation: Review and novel perspective. *Journal of Strategic Information Systems*, 30, 101695.
- Kohli, R., & Melville, N. P. (2019). Digital innovation: A review and synthesis. *Information Systems Journal*, 29(1), 200–223. <https://doi.org/10.1111/isj.12193>
- Kohli, R., & Melville, N. P. (2018). Digital innovation: A review and synthesis. *Information Systems Journal*, 16(3), 1–24.
- Kreitner, R., & Kinicki, A. (2010). *Organizational behavior* (9th ed.). McGraw-Hill.
- Kundu, S. C., & Lata, K. (2017). Effects of supportive work environment on employee retention: Mediating role of organizational engagement. *International Journal of Organizational Analysis*, 25(4), 703–722. <https://doi.org/10.1108/ijoa-12-2016-1100>
- Melati, D., Juniyansah, A., & Yagin, N. (2024). The effect of digital transformation on improving employee performance at PT Bank Rakyat Indonesia. *HUMANIS: Humanities, Management and Science Proceedings*, 5(1).
- Meyer, M., Roodt, G., & Robbins, M. (2011). Human resources risk management: Governing people risks for improved performance. *SA Journal of Human Resource Management*, 9(1), 1–12.
- Nambisan, S., Lyytinen, K., Majchrzak, A., & Song, M. (2017). Digital innovation management: Reinventing innovation management research in a digital world. *MIS Quarterly*, 41(1), 223–238.
- Nambisan, S., Lyytinen, K., & Yoo, Y. (2020). Digital innovation: Towards a transdisciplinary perspective. In S. Nambisan, K. Lyytinen, & Y. Yoo (Eds.), *Handbook of digital innovation* (pp. 2–12). Edward Elgar Publishing.
- Pradhan, R., & Jena, L. (2017). Employee performance at workplace: Conceptual model and empirical validation. *Business Perspectives and Research*, 5(1), 1–17. <https://doi.org/10.1177/2278533716671630>
- Schaufeli, W. B., Bakker, A. B., & Salanova, M. (2006). The measurement of work engagement with a short questionnaire: A cross-national study. *Educational and Psychological Measurement*, 66(4), 701–716. <https://doi.org/10.1177/0013164405282471>

- Singh, N., Shrivastava, A., & Pednekar, B. (2021). Impact of digitalisation on employee performance in banking sector. *Manthan: Journal of Commerce and Management*, 8, 92–109.
- Sri Annisa, E. S., & Lumbanraja, P. (2024). Impact of digital transformation on banking employee performance with self-efficacy as a mediator. *Problems and Perspectives in Management*, 22(4), 523–531.
- Tokede, K. (2025). Despite challenges, Zenith Bank, GTCO, UBA, Ecobank records 4.38tn PBT in 2024. *ThisDay Newspaper Ltd*.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425–478.
- Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly*, 36(1), 157–178.
- Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems*, 28(2), 118–145.
- Yoo, Y., Boland, R. J., Lyytinen, K., & Majchrzak, A. (2012). Organizing for innovation in the digitized world. *Organization Science*, 23(5), 1398–1408.