Human-Centric Automation in Banking: A Conceptual Review of Employee Experience in Digital Work Environments

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Abstract

The Central Bank of Nigeria's cashless policy and fintech disruption have accelerated automation in Deposit Money Banks, reshaping digital work environments and employee experience. Yet extant literature treats automation as monolithic and privileges customer outcomes over employee well-being. This conceptual review advances a human-centric framework for understanding how specific dimensions of automated systems affect employee experience in Nigerian banking. Drawing on Job Demands-Resources Theory and Sociotechnical Systems Theory, the paper disaggregates automated systems into technological infrastructure, process automation, process efficiency, and task completion rate. Employee experience is conceptualised across three dimensions: Employee Engagement, Mental Well-being, and Employee Retention. Ten propositions articulate a dual-path model in which infrastructure and efficiency function as job resources enhancing engagement and well-being, while automation extent and task completion rates function as job demands increasing technostress and turnover intention. The framework is contextualised for Tier-2 Deposit Money Banks in Lagos State, where infrastructure instability, youth unemployment, and sociotechnical misfit amplify negative effects. Implications for Central Bank of Nigeria policy, bank management, and future empirical research are discussed. Sustainable digital transformation in African banking requires joint optimisation of technical and social systems, positioning employee experience as strategic to automation success.

Keywords: *Human-Centric Automation; Employee Engagement; Technostress; Job Demands-Resources Theory.*

1.0 Introduction

Digital transformation has changed banking from a branch-based service to platform-based ecosystems. In Nigeria, Deposit Money Banks (DMBs) have deployed core banking upgrades, Robotic Process Automation (RPA), artificial intelligence chatbots and biometric systems to meet Central Bank of Nigeria (CBN) cashless policy targets and beat fintech competition from Opay, PalmPay and Kuda (CBN, 2023). The electronic transactions rose from N3.85 trillion in 2012 to N611 trillion in 2024 showing an unparalleled penetration of automation (NIBSS, 2025).

However, the conversation around automation is customer biased. Industry reports praise lower transaction costs, 24/7 service and financial inclusion. The academic literature discusses technology adoption, customer satisfaction and profitability. The person who actually implements, maintains

and lives automation on a day-to-day basis is still on the periphery. This neglect is consequential. PricewaterhouseCoopers (2024) noted that 68% of Nigerian bank employees suffer from dashboard anxiety due to automated performance monitoring, and 22% of Tier-2 bank staff leave every year citing automation-related stress specifically as their reason for departure. The national unemployment rate is 33.3% and that of youth unemployment in Lagos is 37.1% (NBS, 2025; LBS, 2025). The psychosocial risks of job insecurity induced by automation are acute (Deloitte, 2025; Oladipo, 2022).

The problem is conceptual and contextual. Studies treat automation as unidimensional technology use, masking the fact that technological infrastructure, process automation, process efficiency and task completion rate are different constructs with different effects on employees (Tarafdar, Cooper, & Stich, 2019). Stable infrastructure could be a job resource and reduce cognitive load, while aggressive task completion rates could be a job demand and increase burnout (Bakker & Demerouti, 2017). In context, Nigerian scholarship is skewed towards Tier-1 banks — Access, Zenith, and GTBank — which have strong IT budgets and change management capability (Agusto & Co, 2025). EcoBank, FCMB, Sterling Bank, Stanbic IBTC and Wema Bank are examples of Tier-2 DMBs that automate under resource constraints, infrastructure instability and centralised human resource structures. Daily power outages of 8-12 hours in Lagos Mainland branches such as Ikeja, Surulere and Oshodi (World Bank, 2024) are turning automation from an enabler into a stressor.

Theoretical frameworks in place are inadequate. The Technology Acceptance Model (TAM) explains adoption but not post-adoption well-being (Davis, 1989). The Job Demands-Resources (JD-R) Theory explains mechanisms, but needs to be contextualised for the African digital work environments (Bakker & Demerouti, 2017). Design misfit is explained by sociotechnical systems (STS) Theory but is less used in Nigerian banking (Trist & Bamforth, 1951). There is no existing framework that integrates these perspectives to explain how specific dimensions of automation affect employee engagement, mental well-being and retention in resource-constrained banks. The central theoretical puzzle motivating this paper is that JD-R, STS, and TAM were each developed for, and largely tested in, resource-rich organisational contexts, and none of them explains why a single automation dimension can function simultaneously as a resource and as a demand within one resource-constrained banking environment. Existing theory neither disaggregates automated systems finely enough to capture this duality, nor specifies the boundary conditions under which infrastructure and efficiency operate as resources while automation extent and completion targets operate as demands. The paper's intended theoretical contribution is a disaggregated, dual-path framework that addresses this puzzle for Tier-2 Nigerian banking.

This paper addresses three research questions: (i) How to conceptually disaggregate automated systems for HRM research? (ii) What are the theoretical pathways through which the dimensions of automation affect employee experience? (iii) What propositions drive human-centered automation in tier-2 banking in Nigeria?

2.0 Literature Review

2.1 Automated systems in banking: From technology to work systems

An automated system denotes a technological configuration that performs tasks with little human intervention (Tarafdar et al., 2019). In banking, the scope of automation includes front-office (ATMs, electronic onboarding services), middle-office (automation via RPA in compliance), and

back-office (core banking). DMBs in Nigeria underwent three automation waves as follows: (i) 2004-2012: deployment of ATMs and core banking; (ii) 2013-2019: adoption of Internet banking and mobile banking due to cashless policy enforcement; and (iii) 2020-present: automation through RPA and AI applications, especially chatbots and intelligent ATMs (Deloitte, 2025).

The paper distinguishes four distinct dimensions of analysis. The first dimension is Technological Infrastructure, which measures the quality, reliability, and integration level of hardware, software, and computer networks. In the case of Nigeria, infrastructure quality is determined through system uptime, latency, and disaster recovery ability (Adeyeye et al., 2023). The infrastructure constitutes the bedrock of the automation process; poor infrastructure means all automation turns into a source of stress. The second dimension, Process Automation, refers to the level of process automation via RPA and other algorithm-based processes, including cheque clearing, loan processing, etc. High levels of automation correlate with job insecurity and de-skilling (Akinyemi et al., 2021). Third, Process Efficiency measures outcomes such as reduction in cycle time, error rates and cost per transaction. Efficiency reduces role overload when the gains are shared with employees rather than converting it into higher targets (Oguegbe & Edosomwan, 2019; Genty et al., 2025). Fourth, Task Completion Rate (TCR) is a management-defined KPI, such as transactions per employee per hour. Techno-overload is created by automated dashboards that enable real-time monitoring (Tarafdar et al., 2019), and dashboard anxiety has been documented among Nigerian bank staff (PricewaterhouseCoopers, 2024).

2.2 Employee experience in digital work environments

Employee experience reflects perceptions of interactions across physical, technological, and cultural environments (Morgan, 2017). This paper focuses on three dimensions critical in banking. Employee Engagement is a positive work-related state of vigour, dedication, and absorption (Schaufeli, Bakker, & Salanova, 2006). Engaged employees deliver superior customer service. Oludayo et al. (2018) confirmed that engagement predicts retention in Nigerian banks. Mental Well-being refers to the absence of technostress, anxiety, and burnout. Technostress includes techno-overload, techno-invasion, techno-insecurity (job loss fear), and techno-uncertainty from constant system updates (Tarafdar et al., 2019). Adeyeye et al. (2023) found technostress prevalent among Lagos bank employees. Employee Retention refers to intent to remain versus turnover intention. Tier-2 banks lose approximately one in five staff annually across all causes (Agusto & Co, 2025). This overall turnover figure is consistent in magnitude with, but not identical to, the 22% automation-attributed attrition rate reported in Section 1: the PricewaterhouseCoopers (2024) figure isolates automation-related stress as one specific driver within the broader annual turnover captured by Agusto & Co (2025). Osibanjo et al. (2014) established that well-being predicts retention in Nigerian firms.

2.3 Empirical Gaps in the Nigerian Context

Nigerian studies reveal contradictions. Oladipo (2022) found automation improved customer satisfaction, but 61% of employees feared displacement. Adeyeye et al. (2023) linked system downtime to technostress. Oguegbe and Edosomwan (2019) linked digital platforms to reduced burnout. These contradictions arise from: (i) aggregation bias treating all banks as similar; (ii) construct bias measuring automation as binary adoption; and (iii) outcome bias focusing on satisfaction and performance rather than well-being and engagement.

Although Tier-2 DMBs are unique, they have not been well studied. While they service SMEs in Alaba, Computer Village and Balogun markets, they spend 35-45% less than Tier-1 banks to achieve the same level of automation (Agusto & Co, 2025). Infrastructure issues in Lagos Mainland are causing system crashes in peak hour, leading to customer frustration and added stress for staff. To date, no study classifies the dimensions of automation and examines both path effects on engagement, well-being, and retention in Tier-2 contexts.

3.0 Theoretical Framework

3.1 Job Demands-Resources Theory

According to JD-R Theory (Bakker & Demerouti, 2017), job characteristics have two dimensions: demands (sustained effort and strain) and resources (stimulating growth and helping to achieve goals). Technological Infrastructure and Process Efficiency are here potential job resources: stable systems, reduced cycle-time lessen the cognitive demands and augment competence. Job demands include Process Automation and Task Completion Rate; high automation can lead to job insecurity and aggressive targets can lead to workload overload. In Nigeria, Oguegbe and Edosomwan (2019) applied JD-R to understand the phenomenon of burnout in banks in Lagos State, while Akinyemi et al. (2021) applied JD-R to elucidate the relationship between technology-induced skill obsolescence and disengagement.

3.2 Sociotechnical Systems Theory (STS)

STS Theory (Trist & Bamforth, 1951) states that organisations have a technical and social system, and that both systems must be optimised. Optimising the technical system alone, without corresponding attention to the social system, produces suboptimisation of the whole. Nigerian studies cover Egbuta (2020) who noted that there was a sociotechnical misfit in green banking adoption, as well as Falola, Osibanjo and Ojo (2014) who suggested that technology cannot work without human consideration. Ojo (2018) reported that in Nigerian firms there was an increase in the rate of turnover when technology was improved without job redesign.

3.3 Technology Acceptance Model (TAM)

Perceived usefulness and ease of use are the factors according to TAM that influence technology acceptance (Davis, 1989). The Extended TAM adds computer self-efficacy as a boundary condition (Venkatesh, Thong, & Xu, 2012). TAM describes boundary conditions as the employees who have low self-efficacy evaluate the automation as a demand, whereas those with high self-efficacy evaluate it as a resource.

3.4 Theoretical Integration

JD-R Theory is the theory that connects automation dimensions to employee outcomes. The sociotechnical fit of Tier-2 banks is the focus of STS Theory, which allows the organisational context to be revealed. TAM offers an individual appraisal condition for which there is an explanation of the different reactions of employees to the same stimulation from automation. The three frameworks are combined to provide a consistent explanatory logic for the propositions stated in Section 4. The paper's distinct theoretical contribution is not the three lenses individually but an emergent construct visible only when they are combined: a differential appraisal mechanism whereby sociotechnical misfit in a resource-constrained environment determines whether a given automation dimension is experienced as a resource or a demand, an appraisal further conditioned

by individual digital self-efficacy. This boundary condition is not predicted by JD-R, STS, or TAM in isolation.

3.5 Limitations of the Review Method

There are five caveats to this conceptual review. Firstly, there may be publication bias because studies with no significant results are less likely to be published (however a grey literature search was carried out to minimise, but not remove this bias). Second, language bias is present due to the fact that only English-language studies were included; potentially relevant French-language literature from Francophone West Africa was not included. Third, few of the studies specifically sampled Tier-2 banks, and inferences are often made from a broad commercial bank sample. Fourth, as a review conceptually, no meta-analytic effect sizes are given, the propositions have to be empirically tested. Fifth, the propositions were derived through narrative synthesis rather than a systematic (e.g., PRISMA-type) review protocol, and there is a risk that sources were selected because they fit the proposed model, introducing possible confirmation bias into this conceptual review.

4.0 Conceptual Framework and Propositions

4.1 The Human-Centric Automation Framework

The Human-Centric Automation Framework for Banking is shown in Fig.1. It presents a dual-path model with the automation dimensions as independent variables, the employee experience dimensions as mediating outcomes, and employee retention as a distal outcome. The resource path links Technological Infrastructure and Process Efficiency to enhanced engagement and well-being. The demand pathway is between Process Automation and Task Completion Rate and is associated with decreased well-being and engagement. The two approaches each aim to achieve the strategic goal of employee retention.

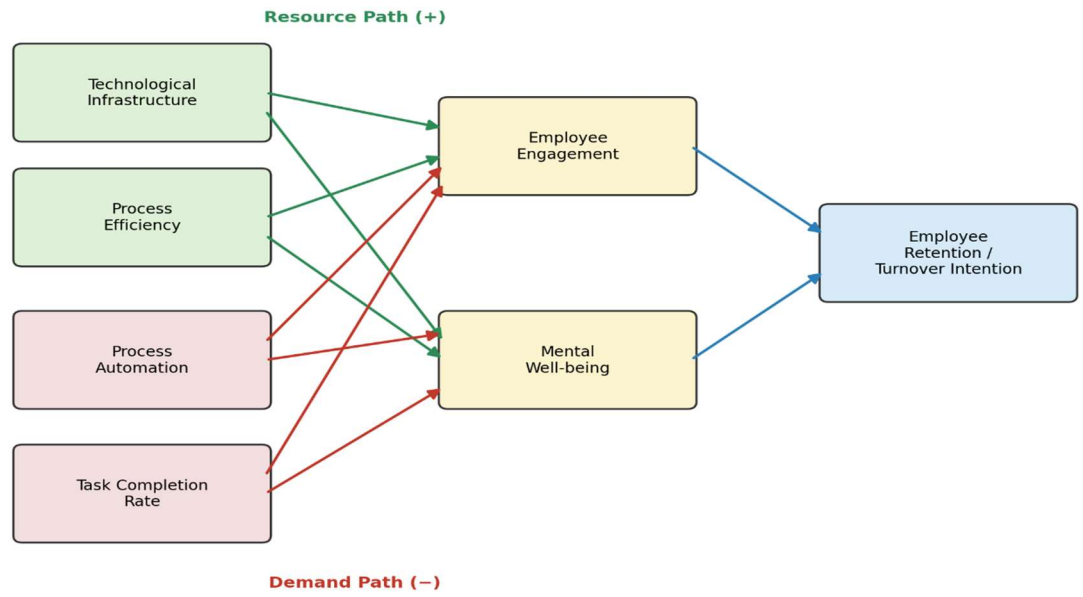

Fig. 1. *Human-Centric Automation Framework for Banking (Dual-Path Model) — path diagram. Green arrows denote the resource path; red arrows denote the demand path.*

Table 1. Human-Centric Automation Framework for Banking (Dual-Path Model) — summary of path mechanisms and associated propositions

Automation Dimension	Path & Mechanism	Employee Experience Outcome
Technological Infrastructure	RESOURCE PATH (+) Stable systems reduce cognitive load (JD-R). STS: Technical-social joint optimisation.	(+) Employee Engagement (+) Mental Well-being => Employee Retention (P1, P2, P9, P10)
Process Efficiency	RESOURCE PATH (+) Cycle-time reduction raises competence & dedication (JD-R). Efficiency gains shared with staff.	(+) Employee Engagement (+) Mental Well-being => Employee Retention (P3, P4, P9, P10)
Process Automation	DEMAND PATH (-) Deskilling + techno-insecurity (JD-R). STS: Sociotechnical misfit in Tier-2 banks.	(-) Mental Well-being (-) Employee Engagement => Turnover Intention (P5, P6, P9, P10)
Task Completion Rate	DEMAND PATH (-) Dashboard anxiety + unrealistic targets. TAM: Low self-efficacy amplifies demand appraisal.	(-) Employee Engagement (-) Mental Well-being => Turnover Intention (P7, P8, P9, P10)

Source: Adapted from Bakker & Demerouti (2017); Trist & Bamforth (1951); Davis (1989).

4.2 The Resource Path

Proposition 1: The higher the technological infrastructure, the higher the level of employee engagement.

A stable core banking system minimizes frustration in the system, allowing more energy to be devoted to customer service. According to the JD-R Theory, resources can promote vigour (Bakker & Demerouti, 2017). In Nigeria, evidence from Adeyeye et al. (2023) revealed that when the system is down, employees of banks in Lagos state were likely to disengage.

Proposition 2: Technological infrastructure is positively related to mental well-being.

Networks are unstable and this breeds insecurity and puts staff in a position of being drawn into customer frustration. Reliable infrastructure helps to eliminate techno-overload and techno-uncertainty (Tarafdar et al., 2019). Generators are a major source of technostress in Lagos Mainland branches where power outages are 8-12 hours a day, (World Bank, 2024).

Proposition 3: Process efficiency is positively related to employee engagement.

Faster cycles leads to more empowering and dedicated employees. Oguegbe & Edosomwan (2019) uncovered that efficiency gains were achieved, but were shared fairly among personnel, thereby decreasing exhaustion.

Proposition 4: Process efficiency is positively related to mental well-being.

Efficiency reduces queue lengths and time pressure which are a big issue in high traffic branches in Lagos (PricewaterhouseCoopers, 2024).

4.3 The Demand Path

Proposition 5: Process automation is negatively related to employee engagement.

Staff deskilled by automation of tasks, which are not new. With high unemployment in Nigeria, workers who have lost their skills feel redundant and are less committed and energetic (Akinyemi et al., 2021).

Proposition 6: Process automation is negatively related to mental well-being.

Automation creates techno-insecurity (fear of job loss) and brings in techno-invasion (surveillance) with higher level of anxiety (Tarafdar et al., 2019). The unemployment rates among the young population reached 37.1% in Lagos (LBS, 2025), making their anxieties regarding job displacement even more acute.

Proposition 7: Task completion rate is negatively related to employee engagement.

Unrealistic transaction goals will tax staff, leading to decreased vigour. Targets often don't take into consideration local situations in Lagos like network delays and power outages, and therefore are not achievable in many Mainland branches.

Proposition 8: Task completion rate is negatively related to mental well-being.

The problem with automated dashboards is, they cause dashboard anxiety (PricewaterhouseCoopers, 2024). Staff do not take breaks when the system is down and work to targets, which is also a pattern seen in techno-overload (Tarafdar et al., 2019).

4.4 Retention Outcomes

Proposition 9: Employee engagement is positively related to employee retention.

In line with the JD-R motivational process (Schaufeli & Bakker, 2010), employees who are engaged report lower levels of turnover intention. This relationship has been validated by Oludayo et al. (2018) in Nigerian banks.

Proposition 10: Mental well-being is positively related to employee retention.

The JD-R health impairment process involves that strain can trigger exhaustion and that this exhaustion can result in turnover (Bakker & Demerouti, 2017). Osibanjo et al. (2014) found this pathway to be substantiated in Nigerian service companies.

5.0 Results and Discussion

5.1 Theoretical Implications

This framework contributes to the development of HRM scholarship that can be seen in three ways in the African context. First, it provides a context for JD-R theory in an environment where resources are limited and infrastructure is unstable; in other words, infrastructure is not the given baseline, but instead is an important resource. Second, it operationalises the STS Theory for Nigerian banking with the identification of sociotechnical misfit as a structural amplifier of the demand path in Tier-2 banks. Thirdly, it incorporates TAM to provide an explanation for the appraisal heterogeneity, that is, for the different ways in which the same automation can be seen as a resource for some employees and a demand for others, depending on their digital self-efficacy.

5.2 Practical Implications

These propositions suggest that the CBN could consider requiring Employee Impact Assessments alongside technology audits. Regulators might also consider approving core banking system upgrades for Tier-2 DMBs only once infrastructure stability and social-system readiness can be

reasonably demonstrated. For Tier-2 bank management, the top-priority challenges are: (a) infrastructure investment comes before automation extend; (b) share the efficiency gains with target recalibration not the target escalation; (c) adjust the target for Mainland branches with power and network constraints, e.g., apply Lagos adjusted task completion rate; (d) Establishing Digital Relationship Officer positions to retrain employees whose jobs are being replaced by automation. A partnership between Lagos State and Tertiary institutions in Lagos setting up a Banking Digital Reskilling Fund, funded by 1% of tier-2 bank profit after tax, could help to mitigate the risk of automation and curb youth unemployment.

5.3 Limitations

This study is a conceptual study and does not support the propositions with empirical evidence. The framework is very context specific for Tier-2 DMBs in Lagos and will not be directly generalisable to Tier-1 banks, other states in Nigeria or other African banking contexts. Additionally, the propositions rely on the assumption of fairly constant relationships between the dimensions of automation and employee outcomes, but these relationships are likely to be dynamic and influenced by regulatory shifts, technological cycles, or macroeconomic shocks. Empirical studies should be conducted with a framework of longitudinal and multiple site studies.

5.4 Future Research Directions

The following directions are suggested. An empirical survey study to be conducted on employees in Tier-2 banks located on Lagos Island and Mainland branches, employing Structural Equation Modelling to test the dual-path model. Secondly, a comparative analysis of Tier-1 and Tier-2 banks in terms of the factors that make them different in terms of automation and other employee factors. Third, a longitudinal study of mental health before and after fundamental banking improvements. Fourth, a qualitative study on the life experiences of automation survivors in high-displacement branches. Fifth, to assess digital self-efficacy, union presence and branch location as moderating variables for the suggested relationships.

6.0 Conclusion

Human-centric automation is not against technology; it is for sustainability. In this paper, we show that automated systems have a two-sided impact on employee experience. Optimisation of the Technological Infrastructure and Process Efficiency can improve engagement and mental well-being, which can contribute to retention. Process Automation and Task Completion Rate have a negative impact on well-being and engagement when they are not used within the context of social system adaptation, driving turnover intention. In the Tier-2 Nigerian DMBs with limited infrastructure and resources, sociotechnical misfit contributes to the demand path and has measurable impact on staff.

It is not about banning automation, but about optimising together in Africa banking. Technical systems need to be complemented by job redesign and reskilling, setting realistic performance targets, and providing mental health support. Only then will the digital transformation be able to contribute to both economic development and the dignity of the African worker — the double mandate of human-centred management.

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