

# Technological Change and Employee Performance in Private Universities in Nigeria: An Empirical Analysis

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## Abstract

*This study investigates how technological advancements affect employee satisfaction at private universities in North-Central Nigeria, particularly regarding digital infrastructure, process automation, and job redesign. A descriptive survey research design was utilised to collect data from 543 participants across seven private institutions via a structured questionnaire. Statistical analyses, including multiple regression, were performed to assess the relationship between technology and employee satisfaction. The results indicated a significant positive effect of digital infrastructure implementation on employee satisfaction ( $\beta = 0.229$ ,  $p = 0.001$ ), suggesting that effectively integrated technology enhances job performance and engagement. Additionally, process automation proved to have significant positive outcomes ( $\beta = 0.409$ ,  $p = 0.003$ ), indicating that streamlining workflows alleviates administrative burdens and enhances organizational morale. Job redesign was also associated with increased employee satisfaction ( $\beta = 0.377$ ,  $p = 0.011$ ), as newly structured roles foster professional growth and job clarity. The model illustrates a 69.9% explanatory power regarding changes in employee satisfaction ( $R^2 = 0.699$ ,  $F = 22.392$ ,  $p < 0.001$ ), emphasising the important role of technological progress in the workplace. These findings are consistent with the Job Demands-Resources (JD-R) Theory, which elucidates how technology-driven changes influence employee well-being through job demands and the resources available. The research suggests that private universities should prioritise systematic improvements in digital infrastructure, enhance process automation with user-friendly systems, and adopt job redesign approaches that balance technological efficiency with employee flexibility to maintain job satisfaction during technological transitions.*

**Keywords:** Technological Change, Employee Satisfaction, Digital Infrastructure, Process Automation, Job Redesign, Private Universities, North-Central Nigeria.

## Introduction

The high development of technology has transformed institutional activities, and private universities have had to embrace digital technologies to enhance efficiency, competitiveness, and the quality of services. The application of new technology in management activities, pedagogy, and governance of institutions has transformed the conventional higher learning institution. Torre et al. (2021) maintain that technology innovation improves the efficiency of operations and intellectual capital, which leads to a dynamic and responsive working environment. Nevertheless, Aktan and Toraman (2022) warn that speedy technological transformation will most probably invoke strong challenges such as resistance, stress, and uncertainty in workers, especially where implementation is not provided with explicit directions and adequate support. Digital competence, institutional adaptation policies, and decision-making participation determine how much the university workers are capable of accepting the changes (Aktan & Toraman, 2022; Al-Fugala et al., 2024).

Technology-driven transformation spreads to the workforce of a university in a very meaningful way, touching work processes, organisational culture, and general morale of the employees. As noted by Drosos et al. (2021) and Abd-Aziz et al. (2021), once technology change is comprehensively understood, it creates a more efficient staff, less bureaucracy, and a culture of ongoing learning, which all resonate to a high-engagement workforce. Conversely, McGuinness et al. (2023) indicate that the adoption of new technologies brings about redundancy of skills, overburdened work, and heightened risk of job loss. At private universities, the application of computerized administrative systems, online learning platforms, and performance monitoring tools has transformed the conventional expectations of work, forcing the workers to continuously update their skills. Boulagouas et al. (2021) point out that workers' satisfaction in the face of such change directly relies on having formal training programs, open communication, and organizational support systems.

As these trends unfold, the study examines the effects of technological transformation on the people themselves at work in private universities, focusing on three primary areas: digital infrastructure implementation, process automation, and technology-driven job redesign. These areas are the basic technological shifts that similarly influence work productivity, professional advancement, and institutional viability. Al-Fugaha et al. (2024) also present that ineffective technology adoption could force the workplace to work around adopted technologies and could harm job satisfaction, job performance, and commitment in the workplace. McGuinness et al. (2023) noted that ineffective tech implementation can cause organizational dislocations, thereby igniting more dissatisfaction and less commitment to work. Sapta et al. (2021) observe that firms that successfully implement new technologies, in conjunction with an adaptive and flexible work culture, are likely to provide employee morale and institutional resilience.

Given the preceding, this study offers empirical evidence on technological innovation and transforming employee experience within private universities and presents best practices for digital transformation management. As the research draws a link between technological change and employee satisfaction, the research would enlighten administrators of universities concerning the value of systematic implementation, staff development, and participative change efforts. The structure of the study is as follows: a review of theoretical and empirical literature on technological change and worker well-being, a methodology section describing data collection and analysis procedures, a discussion of major findings, and a conclusion with recommendations for job satisfaction in the context of technological change.

## 2.0 Literature Review

### Technological Change

Technological change represents the creation of innovative production and service strategies that align with an organisation's evolving objectives. These advancements are crucial to organizational transformation, affecting work dynamics, operational efficiency, and employee well-being. Torre et

al. (2021) highlight that such technologies improve intellectual capital and institutional effectiveness via automation and digitalization. However, Wanyama and Rotich (2018) warn that quickly adopting new technologies can disrupt workflows, create uncertainties, and lower employee morale, particularly if workers are not adequately trained for the shift. The rapid digitalization in private universities- including online learning tools, computerized administration, and AI-enhanced academic functions- requires employees to adopt new work practices. Proponents (like Aliane & Zakariya, 2023; McGuinness et al., 2023) underscore the advantages of increased efficiency and lower operational costs associated with these changes, while critics express concerns over worker alienation, job displacement, and heightened workloads due to intensified performance expectations prompted by digitalisation.

Technology students often assess technological changes based on their effects on work motivation and organizational atmosphere. Sapta et al. (2021) argue that integrated technology fosters a culture of innovation within organisations, improving job satisfaction and flexibility by minimising repetitive tasks. On the other hand, McGuinness et al. (2023) assert that technological shifts may result in skills displacement, as employees struggle to meet new technological demands, leading to job insecurity and dissatisfaction. Furthermore, Aliane and Zakariya (2023) point out that employees' willingness to adapt significantly impacts their ability to learn and thrive in technology-driven environments. In contrast, Al-Fugaha et al. (2024) suggest that inadequate training and weak institutional support can cause employees to feel frustrated, demotivated, and resistant to technology. As universities implement advanced digital tools, the crucial challenge lies in balancing innovation with employee well-being to prevent technology-related stress.

A key aspect of technological change is its psychological and cognitive effects on employees. Abd Aziz et al. (2021) discuss the issue of “technostress,” where excessive use of digital technology overwhelms workers, adversely impacting their mental well-being and job satisfaction. Similarly, Aktan and Toraman (2022) reveal that educators facing significant shifts like online education are more susceptible to burnout, decreased productivity, and increased likelihood of early retirement. This supports the argument that poorly managed digital transformations lead to resistance rather than engagement (Drosos et al., 2021). Organizations that overlook the psychological effects of digitalization risk alienating their workforce, resulting in a conflict between technological efficiency and employee contentment.

Apart from technological preparedness, the importance of governance and strategic planning towards digitalization has also been discussed abundantly. Al-Fugaha et al. (2024) opine that universities without formal policies for technology implementation are most likely to experience implementation failure, hence creating frustration and operational inefficiencies. Conversely, institutions with policy on technological change, participatory decision-making, and employee commitment have smoother transits with limited resistance. Whilst technology has transformational power, its success to enhance employee satisfaction is in the institution's ability to facilitate transition, address workers' fears, and build inclusive culture that encourages efficiency as much as employees' well-being.

In Private Universities, digital Infrastructure implementation is a needful part of IT development, which defines the digital Infrastructure implementation in education i.e. the use, development and integration of digital tools for improving processes. According to Wanyama and Rotich (2018), inadequate investment in technologies and uneven distribution of digital resources lead to marginalization, frustration, and disengagement for some employees. Without such an update, the digital divide threatening organizations looms: a tech-savvy cohort of staff perched atop a people-less space invader while another half is fighting with outdated formats Furthermore, Sapta et al. (2021) noted that digital infrastructure alone will not suffice to reach optimum performance; employees will increase their stress levels, and their level of job satisfaction will decline if they lack technical support and continuous training.

Process automation is another element of technological transformation that seeks to minimize manual workload and improve workflow consistency to increase operational efficiency. Torre et al. (2021) were that automation in universities—such as electronic grading systems, automated payroll processing, and automated record keeping—relieves administrative burdens, allowing university workers to redeploy their efforts to higher value-added activities. Boulagouas et al. (2021), on the other hand, claim that too much dependence on automated systems could delegitimize work processes and result in making worker roles less autonomous and more dissatisfactory. Drosos et al. (2021) also point out that poorly executed automation can lead to accountability gaps, as employees are excluded from decision-making. Absent transparency of communication and phased introduction, workers could view automation as a threat to job security rather than a tool to enhance productivity. The redesign of jobs driven by technology is a crucial element affecting employee satisfaction at universities experiencing digital transformation. Al-Fugaha et al. (2024) point out that employees often resist new job models when universities reshape roles to incorporate digital technology. McGuinness et al. (2023) warn that displacing skills due to technological advances can heighten job insecurity, particularly for those lacking retraining and advancement opportunities. Additionally, Aktan and Toraman (2022) address the issue of technostress, highlighting that employees increasingly experience anxiety as their reliance on information technologies grows and job demands become less predictable. AbdAziz et al. (2021) underscore institutions' need to implement structured training programs and support systems that facilitate effective adaptation to new technological settings. The preceding indicates that the effectiveness of technology initiatives in private universities can be ascertained through managing its digital infrastructure, process automation and job redesign. Technological advancements can promise increased efficiency, productivity, access to information and processes, and overall innovation; yet, with innovation comes the responsibility to implement inclusive policies to protect the well-being of employees.

### **Employee Satisfaction**

Considering the importance of employee satisfaction, several theories have been developed to understand the determinants and consequences of employee satisfaction. Rabiou et al. (2024) described employee job satisfaction as an organization's action to create a supportive environment for employees' overall well-being linked to internal or external role needs. Recognizing the factors influencing satisfaction and implementing improvement strategies fosters motivation, achievement, and productivity. Nurudeen et al. (2021) believe that employee satisfaction is an emotional response influenced by organizational conditions, payment scales, and social relationships between individuals in the organization, and so, it is an affective element. Conversely, Bah et al. (2024) identified inner aspects (career development and job autonomy) and outer incentives (remuneration, organizational culture, and recognition programs). This is consistent with Herzberg's Two-Factor Theory, which states that motivation factors (such as achievement or career advancement) will lead to satisfaction in the job. In contrast, hygiene factors (such as poor working conditions and poor supervision) will lead to dissatisfaction. Nevertheless, this approach has faced criticism for ignoring individual disparities, career paths, and workplace settings (Popoola & Fagbola, 2023).

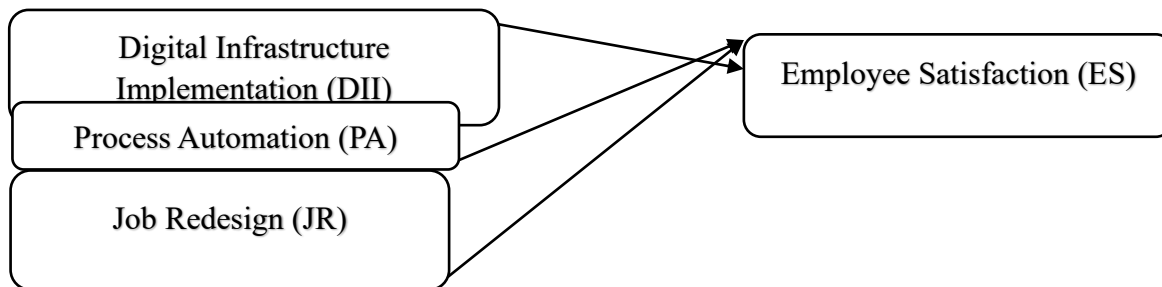
As stated by Okolocha (2021), employee satisfaction can be perceived as an unstable metric since it is simultaneous with changes in leadership, shifts in the economy, and organizational re-engineering. It also implies that the various components of employee satisfaction are subject to continual bargaining between us as proprietary units and employment contracts, resulting in its incredible reactivity to changes in the structure of organizations and their operations. An alternative view connects employee satisfaction to the psychological contract established between employees and employers. Valentine et al. (2024) assert that satisfaction primarily depends on the recognition or breach of the psychological contract as perceived by employees in terms of job security, career

advancement, and respect from the organization. Nwachukwu et al. further bolster this view: perceptions of alignment between an employee's skills, values, and job demands lead to higher engagement and job satisfaction, while misalignment yields the opposite (Bardesi et al.).

There is, however, a debate in the academic world about whether workplace structure or organizational culture influences employee satisfaction more. Okolocha et al. (2021) and Majekodunmi and Olajide-Arise (2024) argue that such office work is customary in hierarchical organizations and curtails independence and creativity, resulting in lower satisfaction. Conversely, Agubosim et al. (2023) argue that this largely rests on the organizational culture established through leadership style, managerial communication, and responsiveness to employees' concerns—all combined, the quality of the workplace environment. These contrasting views emphasize the complexity of job satisfaction, which is determined by a set of institutional mechanisms and the ways in which academic leadership and organizational policies interact.

Moreover, technology transition is a crucial part contributing to employee satisfaction in today's innovative world. Rahi et al. (2022) demonstrate that these technological shifts can be disruptive and engender job insecurity, resistance against the deployment of novel organizational forms, heightened stress levels, and issues related to work-life balance; presenting an ambivalent mix of positive and negative outcomes for employee well-being. The importance of job design is further highlighted by Vlachopoulos (2021), who contends that particularly high levels of autonomy, variety, and career development opportunities lead to increased employee job satisfaction compared to rigidly defined, monotonous jobs. This study embodies the role of technological advancements—specifically, the implementation of digital infrastructures, automation of processes, and redesign of jobs—which remain pivotal in determining the level of satisfaction among employees of private universities in North-Central Nigeria. These shifts affect the ways that workers engage with their workspaces, either amplifying productivity and involvement or activating stress and resistance among workers, depending on how they are administered and integrated into the hierarchies of institutions.

**Fig. 2.1: Conceptual Framework**



**Source:** Researcher's concept, 2025

**Fig 2.1** above shows the linear relationship between technological change measured by digital infrastructure implementation, process automation, job redesign and employee satisfaction among the private universities in North Central Nigeria.

### Theoretical framework

Job Demands-Resources (JD-R) Theory investigates the interaction between job demands (such as workload, complexity, and stressors) and job resources (including support, autonomy, and development opportunities) and their effects on employee well-being. The adoption of process automation by private universities to enhance administrative and academic tasks may alter employee demands and resources (Bakker et al., 2023). Automation can free up employees from routine administrative tasks, allowing them to focus on strategic and creative activities, which can increase their job satisfaction (Bakker & Demerouti, 2024). However, if automation leads to role ambiguity,

increased monitoring, or heightened performance expectations, it might also contribute to job strain and burnout.

Job Demands-Resources (JD-R) Theory is the most suitable for this research as it explains the effects of digital infrastructure, process automation, and job redesign on employee satisfaction in private universities in Afghanistan. The JD-R model suggests that changes in the workplace can act as job resources that enhance employee engagement and satisfaction or as job demands that elevate stress and dissatisfaction levels. Enhancing digital infrastructure and embracing technological changes can alleviate administrative burdens through process automation, creating a more task-oriented environment with increased resource availability, leading to higher satisfaction levels (Bakker et al., 2023). Sapta et al. (2021) note that when employees receive sufficient training and support, they tend to leverage these changes to promote their professional growth, autonomy, and reduce bureaucratic inefficiencies.

Conversely, if technological advancements introduce role ambiguity, excessive oversight, or raise performance expectations, they may become job demands that induce stress and dissatisfaction (Bakker & Demerouti, 2024). Redesigns that misalign with employees' skills and preferences can cause job insecurity, competency gaps, workload imbalances, and diminished morale (McGuinness et al., 2023). Thus, the JD-R Theory elucidates why some employees perceive technological change as empowering while others see it as disruptive. This understanding is vital as private universities undergoing technological transformation must find a balance between the conflicting pressures of workload and resources. Institutions should implement training programs, inclusive decision-making processes, and supportive infrastructure to alleviate potential negative impacts and create work environments where employees feel competent and valued.

### **Empirical Review**

Zemo et al. (2022) investigated the effects of technological change and employee well-being on worker performance in manufacturing firms in Kaduna State, Nigeria. They tested two hypotheses through a cross-sectional research design, collecting data from 332 respondents using structured questionnaires. The analysis, conducted with structural equation modeling (Smart PLS2), confirmed that both technological change and employee well-being significantly enhance job performance. This finding indicates that adopting new technologies and prioritizing employee health positively influences productivity. The study recommends that manufacturing companies upgrade their technologies and enhance employee welfare to improve overall performance.

Dapper et al. (2022) explored the impact of technological change on training within Nigerian public organizations, specifically focusing on five state parastatals in Rivers State. Utilizing a descriptive survey design, they selected 80 respondents through purposive sampling. The data analysis using t-tests (SPSS 20.0) produced highly significant results ( $p=0.001$ ,  $0.002$ ,  $0.000$ ), confirming that technological advancements are transforming training effectiveness, efficiency, and post-training outcomes. The study suggests that incorporating ICT knowledge into training is essential for adapting to the evolving workplace, ensuring seamless and rapid knowledge transfer.

Obiabumuo (2024) investigated the role of technological advancements in employee engagement within Nigeria's media sector. The study assessed the level of adoption and the impact of the technological determinism theory on engagement. Findings indicate that organizations with higher technological adoption exhibit more engaged employees, who view innovation as a means of skill development and job enrichment. The research emphasizes the need for organizations to adopt a comprehensive approach that aligns technological innovation with workplace culture and leadership practices to maintain consistent employee engagement and motivation.

Adeniyi (2024) studied how workplace technology influences job satisfaction in the food and beverage sector in Lagos, Nigeria, using Herzberg's Theory of Job Satisfaction. The mixed-method research design involved conducting 38 interviews alongside surveys of 447 employees from two

companies. The findings indicated through one-way ANOVA that technology significantly affected satisfaction in Firm A (with increased technology linked to decreased satisfaction), while it had no significant effect in Firm B. It advocates for structured training programs to help employees adapt to technological changes, fostering confidence and competence, ultimately enhancing overall satisfaction.

Madu et al. (2025) examined the influence of technological changes on employee performance through survey research design. They analyzed data collected from validated questionnaires using chi-square tests before and after implementing technology measures, confirming a significant positive correlation between technology and employee productivity. The researchers recommend that organizations support employees in transitioning to new technologies, actively mitigating resistance to harness potential gains. Organizations are urged to expedite this adaptation process to cultivate a flexible working environment, empowering employees to take ownership of technology transitions while emphasizing productivity and efficiency.

The previously discussed empirical reviews highlight existing research on technological change in Nigeria. However, there is a lack of published studies addressing the impact of technological change on employee satisfaction within private universities in North-Central Nigeria. Thus, this gap presents an opportunity for further investigation, which this study aims to fulfill.

## Methodology

The current research employed a descriptive survey study design to investigate impact of technological change on employee satisfaction in private universities in the context of some selected private universities in North-Central Nigeria. The population of interest was 3,315 workers in seven selected private universities comprising 1,411 academic staff and 1,904 non-academic staff. An equation of Cochran (1997) was used to estimate an amount of 600 respondents and Browler's proportional allocation formula to ensure balanced representation. The disbursal techniques for research tools involved simple random and convenience sampling, whereas for large-scale data collection at economic cost, a structured Likert scale questionnaire was employed. A pilot study in one Nasarawa State university validated construct validity by Pearson correlation analysis and strong internal consistency by Cronbach's Alpha coefficient (0.951). The impact of digital infrastructures implementation, process automation, and jobs redesign on employees' satisfaction was quantified by multiple regression analysis, whose pre-estimation tests such as correlation analysis established relationships between variables. Hypothesis testing at 0.05 level of significance assisted statistical accuracy in determining whether technological change plays a contributory role towards employees' satisfaction in private universities.

## Model Specification

A multiple regression model was employed to statistically estimate how technological change affect employee satisfaction in private universities in North-Central Nigeria. In the model, there is interaction of employee satisfaction (dependent variable) and the technological change variables: digital infrastructures implementation, process automation, and jobs redesign (independent variables). The model is specified below:

$$ES = \beta_0 + \beta_1 DI + \beta_2 PA + \beta_3 JD + \epsilon \quad \text{--- (I)}$$

### Where:

- ES = Employee Satisfaction (Dependent Variable)
- $\beta_0$  = Intercept (Constant Term)
- $\beta_1, \beta_2, \beta_3$  = Regression Coefficients
- DI = Digital Infrastructure Implementation (independent variable)
- PA = Process Automation (independent variable)
- JD = Job Redesign (independent variable)

- $\varepsilon$  = Error Term

## Results and Discussion

This section presents the results of the descriptive and inferential statistics of the responses obtained from the 543 out-of-the 600 administered questionnaires.

**Table 1: Descriptive Statistics**

| Variable | N   | Minimum | Maximum | Mean   | Std. Deviation |
|----------|-----|---------|---------|--------|----------------|
| DII      | 543 | 0.7785  | 1.1530  | 0.9393 | 0.06455        |
| PA       | 543 | 0.8377  | 1.1432  | 1.0796 | 0.06813        |
| JD       | 543 | 0.8081  | 1.2220  | 1.0593 | 0.07464        |
| ES       | 543 | 0.7588  | 1.2023  | 0.9631 | 0.06774        |

**Source: Author's Computation, 2025**

According to Table 1, the distribution of the technological change variables – digital infrastructure implementation, process automation, and job redesign, and employee satisfaction among the respondents from the private universities in the North-Central region of Nigeria can be described using the following descriptive statistics. First, based on the mean values, it can be seen that, unlike the other variables under consideration, with a relative average of “1.0796”, the highest is for process automation. This may indicate that the processes associated with the various aspects of automation are relatively more prominent than in the other areas. The mean value was also high for job redesign, and “1.0593” may indicate that there was a significant adjustment for work roles and responsibilities. In the case of digital infrastructure implementation, the mean was the lowest at “0.9393”, which may mean that the universities have made the least infrastructure-related changes when compared to those in automation and other areas. Finally, the average for employee satisfaction is “0.9631”. While on average, it appears to be on a good level, with the mean higher than a half, standard deviation values can indicate variability, making job redesign have the highest spread at “0.07464”. In that sense, the results can suggest that the universities are indeed undergoing modernization, albeit to varying degrees regarding the predictor and the corresponding satisfaction variable.

**Table 2: Correlation**

|     | ES    | DII   | PA    | JD    |
|-----|-------|-------|-------|-------|
| ES  | 1.000 |       |       |       |
| DII | 0.701 | 1.000 |       |       |
| PA  | 0.699 | 0.554 | 1.000 |       |
| JD  | 0.727 | 0.639 | 0.586 | 1.000 |

**N = 543**

**Source: Author's Computation, 2025**

The table 2 with correlation matrix gives an insight of the relation of employee satisfaction (ES) to the technological change variables such as digital infrastructure implementation (DII), process automation (PA), job redesign (JD). These outcomes show that all experiences of technological change have a positive association with employee satisfaction, meaning that employee satisfaction increases with increases in any of the technological change variables. Job redesign (JD) shows the highest correlation with ES (0.727) meaning any modifications in job roles and responsibilities have the most relation with satisfaction. Following it closely is digital infrastructure implementation (DII) at 0.701, meaning that the presence of the right digital tools is paramount to employee experience. On the other hand, Process automation (PA) has the least correlation with ES (0.699); while a strong correlation, it clarifies that automation efficiency promotes functionality but slightly less than other vertical axis features like Infrastructure upgrading or job roles changes (PA to ES = 0.699). The variables of technical change also show some moderate intercorrelations, with the highest



relationship (0.639 encountered between DII and JD—implying that in general infrastructure enhancement goes parallel with job reform). In summary, the findings shine a light on the interrelationship of technological developments and their cumulative effects on employee satisfaction.

### 3. Regression Analysis

**Table 3: Model Summary**

| Model | R     | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1     | 0.714 | 0.699    | 0.682             | 1.448                      |

**Predictors:** (Constant), DII PA JD

**Dependent Variable:** ES

The model summary consists of data that helps better understand how predictors include one, digital infrastructure implementation (DII), second, process automation (PA), and third, job redesign (JD), are able to predict employee satisfaction (ES). The statistics are shown in Table 3. The R-value of 0.714 indicates a strong positive correlation of all of the predictors with employee satisfaction. The R-Square value of 0.699 implies that around 69.9% of the variance in employee satisfaction is accounted for by the collective impact of the three variables concerning technological change, reflecting a strong model fit. With an Adjusted R-Square of 0.682, we confirm that even with the adjustment for the number of predictors, the model is sufficiently valid in explaining the variation of employee satisfaction. (S.E. 1.448). The model indicates a considerable predictive capability of how technological changes can influence employee satisfaction in private universities in North-Central Nigeria.

**Table 4: ANOVA**

| Model             | Sum of Squares | df  | Mean Square | F      | Sig. |
|-------------------|----------------|-----|-------------|--------|------|
| <b>Regression</b> | 704.355        | 3   | 234.785     | 22.392 | .000 |
| <b>Residual</b>   | 5714.129       | 545 | 10.485      |        |      |
| <b>Total</b>      | 6408.139       | 549 |             |        |      |

**Dependent Variable:** ES

**Predictors:** (Constant), DII PA JD

ANOVA table tests if the regression model contributes towards explaining the variability of employee satisfaction (ES). Then, the regression sum of squares (704.355) as given by the ANOVA table, denotes how much these explanatory factors: DII, PA, and JD-- distinctly account for the variance in ES. The residual sum of squares (5714.129) indicates remaining unexplained variance. The F-statistic of 22.392 reflects a significance level of 0.000 ( $p < 0.05$ ) which means that the model is statistically significant indicating that the independent variables have a joint impact on employee satisfaction. A high F-value confirms the above postulation that predictors added significantly to explaining the variance in ES, thus, supporting the assertion that technological changes have led to the increased employee satisfaction among private universities in North-Central Nigeria.

**Table 5: Coefficients**

| Model             | Unstandardized Coefficients |            | Standardized Coefficient | t     | Sig.  |
|-------------------|-----------------------------|------------|--------------------------|-------|-------|
|                   | B                           | Std. Error | Beta                     |       |       |
| <b>(Constant)</b> | 4.055                       | 0.192      |                          |       | 0.000 |
| <b>DII</b>        | 0.229                       | 0.037      | 0.301                    | 6.189 | 0.001 |
| <b>PA</b>         | 0.409                       | 0.045      | 0.389                    | 8.889 | 0.003 |
| <b>JD</b>         | 0.377                       | 0.058      | 0.363                    | 6.501 | 0.011 |

### **Dependent Variable: ES**

#### **Source: Author's Computation, 2025**

Table 5 presents the coefficients table, illustrating the individual impacts of digital infrastructure implementation (DII), process automation (PA), and job redesign (JD) on employee satisfaction (ES). The constant (4.055) represents the average ES value when all independent variables are zero. Notably, the positive and statistically significant coefficients for DII ( $B = 0.229$ ,  $p = 0.001$ ), PA ( $B = 0.409$ ,  $p = 0.003$ ), and JD ( $B = 0.377$ ,  $p = 0.011$ ) demonstrate that each of these technological change elements positively influences employee satisfaction. Among the predictors, PA has the highest standardized effect on ES ( $\beta = 0.389$ ), followed closely by JD ( $\beta = 0.363$ ) and DII ( $\beta = 0.301$ ). Given the substantial t-values, these variables are strong predictors of ES. This indicates that effective technological adaptation strategies, such as automation and work restructuring, are essential for enhancing employee satisfaction in private universities located in North-Central Nigeria.

### **Testing Hypothesis**

The following null hypotheses ( $H_0$ ) are using the regression results:

**$H_{01}$ :** Digital infrastructure implementation (DII) has no significant effect on employee satisfaction in private universities in North-Central Nigeria.

The t-table value for a one-tailed test at 0.05 ( $\alpha$ ) is 6.189 and thus confirms that Digital Infrastructure Implementation (DII) positively impacts employee satisfaction (ES) ( $B = 0.229$ ,  $p = 0.001$ ).  $H_{01}$  (there is no significant effect of digital infrastructure implementation on employee satisfaction) is rejected because the p-value is less than 0.05. This indicates that better digital infrastructure in private universities leads to better employee satisfaction, perhaps in efficiency improvement, administrative alleviation, and digital resource access.

**$H_{02}$ :** Process automation (PA) has no significant effect on employee satisfaction in private universities in North-Central Nigeria.

As per the regression results, process automation (PA) has a positive and significant relationship ( $B = 0.409$ ,  $t = 8.889$ ,  $P = 0.003$ ) with employee satisfaction. The p-value being less than 0.05 also means the null hypothesis ( $H_{02}$ ) which states that automation at the process level has no significant impact on employee satisfaction, is rejected. Automating administrative and academic processes in the private university can lead to improve employee satisfaction.

**$H_{03}$ :** Job redesign (JD) has no significant effect on employee satisfaction in private universities in North-Central Nigeria.

The results, as shown in Table 3, indicate that job redesign (JD) exerts a significant effect on employee satisfaction, where B is equal to 0.377 and the t-value is equal to 6.501, leading to the rejection of the null hypothesis when the p-value is 0.011. Since the p-value is below 0.05, the null hypothesis ( $H_{03}$ ), which asserts that job redesign does not significantly affect employee satisfaction, is rejected. The second implication is that employees have demonstrated positive job satisfaction when job roles are reconstructed in accordance with changing technology; in my opinion, this is attributed to better job characterisation, along with enhanced opportunities and work-life balance.

### **Conclusion and Recommendations**

The research finds that implementing digital infrastructure is strongly and positively linked to employee satisfaction in private universities. Universities that embrace current digital practices and improve the IT background and connectivity among the workforce also improve workplace efficiency and reduce employees' negative job experiences. However, inadequate training and weak support systems to fight against technostress may diminish the effectiveness of such initiatives and frustrate the employees. Poor digital initiative implementations without orientation or failure to respond to the

jugular infrastructural needs of workplaces establish barriers for the workers to increase their productivity, reduce job clarity, and increase dissatisfaction among the workers.

Process automation significantly impacts worker satisfaction. It reduces administrative workloads, minimises redundancy, and enhances job experiences for both academic and non-academic staff. Universities with effective and streamlined automation systems report higher employee engagement and performance, alleviating bureaucratic delays and procedures. However, automation that lacks proper human oversight, training, or role adjustments may jeopardise job security, alter experiences, and diminish morale. Therefore, employees must be involved in the automation decision-making process to align objectives with the workforce's needs and interests.

Job redesign also impacts employee satisfaction. It significantly changes work roles and responsibilities to meet technological developments. Job redesign increases employee satisfaction by motivating them to develop updated efficiency, communication, and proficiency. Job redesign without the agreement of the employees may generate role vagueness, work allocation, and unresponsiveness. The university must always allow job redesigns to improve technological innovation and motivation.

### Recommendations

Given the conclusions, this study recommends that:

- i. Private universities should enhance their digital infrastructure alongside offering adequate technical support and continuous educator training. This approach facilitates smoother adaptation to new technologies in daily operations for staff, minimising tech-related stress and improving job satisfaction.
- ii. The process automation approach should be gradual and collaborative, with active employee involvement in decision-making. Effective communication and training about automated systems will facilitate a seamless operation, minimising resistance and enhancing efficiency while also mitigating potential negative effects on job satisfaction.
- iii. University job redesign efforts must match employee skill enhancement and workload management. Employees can adapt to the evolving technological environment through flexible work structures and career growth opportunities while avoiding burnout, thus maintaining their motivation and job satisfaction.

### Contribution to Knowledge

This research greatly enhances the understanding of the connection between technological change and employee satisfaction in Nigeria's private universities. It examines three aspects of technological change: the implementation of digital infrastructure, process automation, and job redesign, and their effects on employee satisfaction in the private universities of north-central Nigeria. The findings aim to enrich knowledge within Nigeria's private universities by updating curricula, encouraging research, supporting faculty development, engaging students, reforming administrative practices, and promoting community involvement. Effectively managing these changes is vital for fostering continuous improvement and innovation in educational practices and research at private universities. Additionally, the study assessed how employee satisfaction influences organisational performance, significantly contributing to human resource management. It offers valuable insights for practitioners and educational institutions in Nigeria regarding organisational change and employee performance.

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