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# Assessing the Impact of Digital Transformation on Human Resource Management in Nigerian Tertiary Institutions: A Measurement Model (Digital HRM Impact Assessment Framework (DHIAF)) Proposal

MARY BIVWIERE ASABOR, CAROLINE ALORDIAH
University of Delta, Agbor, Nigeria

**Abstract.** The digital transformation of Human Resource Management (HRM) practices has become imperative for enhancing administrative efficiency, service delivery, and institutional competitiveness within Nigerian tertiary institutions. This study introduces the Digital HRM Impact Assessment Framework (DHIAF), an integrative model that combines the Technology Acceptance Model (TAM), Diffusion of Innovation Theory, Resource-Based View (RBV), and Socio-Technical Systems Theory to holistically assess the impact of digital HRM initiatives. The framework delineates five core dimensions: Recruitment and Selection, Training and Development, Performance Management, Employee Engagement and Communication, and HR Administrative Efficiency. Each dimension encompasses specific sub-dimensions and indicators designed to capture the multifaceted effects of digitalization on HRM processes. The study also proposes a theoretical validation approach, including pilot testing and factor analyses, to ensure the reliability and validity of the measurement model. The discussion highlights anticipated benefits such as improved efficiency and service delivery, while acknowledging potential challenges like technological infrastructure deficits and resistance from non-tech-savvy staff. Policy implications underscore the need for national mandates on digital HRM adoption, capacity-building programs, and strategic partnerships with technology providers. The study concludes by emphasizing the necessity of strategic planning, leadership commitment, and sustained investment to successfully navigate the digital transformation of HRM in Nigerian universities.

**Keywords:** Digital HRM; Nigerian tertiary institutions; Human Resource Management; Digital transformation; Technology Acceptance Model; Measurement model.

## 1. Introduction

Human Resource Management (HRM) has undergone remarkable evolution over the past century, both globally and within the Nigerian context. Initially conceived as a set of administrative functions concerned primarily with personnel management, record-keeping, and compliance with labour laws, HRM has progressively transformed into a strategic cornerstone vital to organisational growth, innovation, and sustainability (Amalia, 2024). Globally, the trajectory of HRM reflects the broader socio-economic transitions: from the industrial age, through the knowledge economy, to the present digital era characterised by pervasive technological advancements (Wahdaniah et al., 2023).

In Nigeria, although the maturation of HRM followed a somewhat different pace, shaped by colonial legacies, post-independence development challenges, and more recent globalisation pressures, tertiary institutions have emerged as crucial spaces where HRM practices mirror and adapt to broader national and global trends (Ismail Al-Alawi et al., 2023).

The dawn of Industry 4.0 and the integration of Artificial Intelligence (AI), big data analytics, cloud computing, and other digital technologies have significantly redefined the nature of work and organisational management (Alordiah, 2023a; Zhang, 2023). These digital disruptions are not merely augmenting existing HR processes but are fundamentally reshaping them—introducing predictive analytics in recruitment, automating routine administrative tasks, enabling remote work arrangements, and redefining performance appraisal systems (Adiazmil et al., 2024). Within this global digitalisation movement, tertiary institutions occupy a dual role: they are simultaneously the creators of knowledge, driving innovation through research and teaching, and complex organisational entities requiring efficient, forward-thinking HRM systems

to manage their workforce. In navigating this landscape, effective HRM practices in universities are essential for attracting, developing, and retaining academic and non-academic staff who are instrumental to institutional success (Fu, 2021).

Despite the accelerating global integration of digital technologies in HRM, Nigerian tertiary institutions often find themselves lagging behind in both adoption and effective implementation (Kırılmaz, 2020). The hesitancy or delay in integrating digital tools into HRM processes can be attributed to a multiplicity of factors, including infrastructural deficiencies, limited financial resources, inadequate technological expertise, and resistance to organisational change (Gadzali et al., 2023). Consequently, HRM practices in many Nigerian universities continue to be characterised by bureaucratic inefficiencies, paper-based transactions, and a reactive rather than strategic approach to workforce management (Khatib, 2022).

Compounding this challenge is the absence of structured, context-specific models that systematically assess the impact of digital transformation on HRM processes in Nigerian tertiary institutions. Without such frameworks, efforts to understand, measure, and optimise digital integration in HRM remain fragmented and anecdotal.

This paper seeks to conceptually explore the impact of digital transformation on human resource management processes in Nigerian tertiary institutions. Specifically, it aims to illuminate how emerging digital technologies are influencing key HRM domains such as recruitment, onboarding, training and development, performance management, and employee engagement within the university setting. Furthermore, the paper proposes to develop a theoretical measurement model comprising key indicators that can be utilised to assess the depth, effectiveness, and outcomes of digital transformation initiatives in HRM practices across Nigerian universities.

The significance of this discussion is both practical and theoretical. Practically, the findings and propositions advanced herein offer valuable insights for university management teams, policymakers, and HR professionals seeking to navigate and harness the potentials of digital technologies for improved workforce management and institutional performance. Theoretically, the paper contributes to the broader body of literature on HRM and digital transformation by offering an African perspective, addressing the contextual particularities that shape technology adoption and integration within Nigerian tertiary institutions. It aspires to enrich academic discourse and stimulate further research into localised frameworks for understanding and measuring digital impacts on HRM in the global South.

## 2. Conceptual Clarifications

### 2.1 Understanding Digital Transformation

Digital transformation represents a comprehensive reconfiguration of organisational operations, culture, and stakeholder engagement through the strategic integration of digital technologies. This paradigm shift transcends the mere adoption of new tools, encompassing a fundamental reimagining of processes and value creation mechanisms (Benavides et al., 2020). Core elements integral to digital transformation include cloud computing, artificial intelligence (AI), big data analytics, and automation. Cloud computing facilitates scalable and flexible access to computing resources, enabling organisations to store and process vast amounts of data efficiently. AI introduces capabilities such as machine learning and natural language processing, allowing for intelligent decision-making and predictive analytics (Alordiah, 2023b; Gkrimpizi et al., 2023). Big data analytics empowers organisations to extract actionable insights from large, complex datasets, enhancing strategic planning and operational efficiency. Automation streamlines routine tasks, reducing human error and freeing up human resources for more strategic functions (Fernández et al., 2023).

The progression toward digital transformation can be delineated into three distinct stages: digitisation, digitalisation, and digital transformation. Digitisation refers to the conversion of analogue information into digital formats, laying the groundwork for subsequent technological advancements (Farias-Gaytan et al., 2023). Digitalisation involves the optimisation of existing processes through digital means, enhancing efficiency and accuracy. Digital transformation, the most advanced stage, entails a holistic overhaul of organisational structures and strategies, leveraging digital technologies to create new business models and value propositions (Alenezi, 2021). This evolution reflects a shift from technology as a supporting function to a central driver of innovation and competitiveness.

### 2.2 Defining Human Resource Management in Tertiary Institutions

Human Resource Management (HRM) within tertiary institutions encompasses a spectrum of functions aimed at attracting, developing, and retaining a competent workforce to fulfil the institution's academic and administrative objectives (Osegbue et al., 2025a; Giang et al., 2021). Core

HRM functions include recruitment and selection, onboarding, training and development, performance appraisal, employee retention, and exit management. Recruitment and selection processes are critical in sourcing qualified academic and non-academic staff, ensuring alignment with institutional goals. Onboarding facilitates the integration of new employees into the organisational culture and operational framework. Training and development initiatives are essential for enhancing staff competencies, adapting to pedagogical advancements, and fostering career progression. Performance appraisal systems provide mechanisms for evaluating employee contributions and informing decisions on promotions, rewards, and professional development. Retention strategies aim to maintain a stable and motivated workforce, while exit management ensures smooth transitions and knowledge transfer (Filho et al., 2023).

Tertiary institutions face unique HRM challenges due to their dual structure comprising academic and administrative staff, each with distinct roles, expectations, and career trajectories. Managing this diverse workforce requires tailored HR policies that accommodate varying job functions, performance metrics, and professional development needs (Osegbue et al., 2025b; Teixeira et al., 2021). Additionally, the decentralised nature of many universities, with faculties and departments operating semi-autonomously, complicates the standardisation and coordination of HR practices. This complexity necessitates robust HRM frameworks capable of balancing institutional coherence with departmental flexibility (Rof et al., 2020).

### 2.3 Nexus Between Digital Transformation and HRM

The intersection of digital transformation and HRM signifies a transformative shift in how human resources are managed, with technology serving as both an enabler and a catalyst for change. The integration of digital tools into HRM processes redefines traditional practices, fostering efficiency, transparency, and strategic alignment. For instance, e-recruitment platforms expand the reach and speed of hiring processes, while Learning Management Systems (LMS) facilitate continuous professional development through accessible, personalised training modules. Performance management systems leveraging big data analytics enable real-time feedback and objective evaluations, enhancing employee engagement and accountability (Bisri et al., 2023).

The benefits of digital transformation in HRM are multifaceted. Efficiency gains are realised through the automation of routine tasks, reducing administrative burdens and operational costs. Transparency is enhanced as digital systems provide clear, accessible records of HR processes and decisions, fostering trust and accountability. Employee satisfaction may increase due to streamlined services and opportunities for self-directed learning and career development. Strategically, digital HRM allows institutions to align human capital management with broader organisational goals, utilising data-driven insights to inform workforce planning and policy formulation (Shenkoya, 2023).

However, the transition to digital HRM is not without challenges. The digital divide poses a significant barrier, with disparities in access to technology and digital literacy among staff potentially exacerbating inequalities. Data privacy and security concerns arise as sensitive employee information is stored and processed electronically, necessitating stringent safeguards and compliance with regulatory standards. Technostress, the stress experienced due to the use of technology, can impact employee well-being and productivity, particularly if adequate support and training are lacking. Resistance to change is another critical factor, as staff may be hesitant to adopt new systems due to fear of obsolescence or disruption of established routines (Díaz-Garcia et al., 2022).

In the context of Nigerian tertiary institutions, these challenges are compounded by infrastructural limitations, budgetary constraints, and varying levels of institutional readiness. Addressing these issues requires a comprehensive approach that includes investment in digital infrastructure, capacity building for staff, and the development of policies that promote inclusive and ethical digital transformation. By navigating these complexities thoughtfully, tertiary institutions can harness the potential of digital HRM to enhance organisational effectiveness and fulfil their educational missions.

## 3. Review of Related Literature

### 3.1 Global Perspectives

The integration of digital technologies into Human Resource Management (HRM) practices has become a global phenomenon, with universities worldwide leveraging technological advancements to enhance administrative efficiency, employee engagement, and strategic decision-making. In developed countries, institutions have adopted comprehensive digital HRM systems that encompass various functions such as recruitment, performance appraisal, training, and employee self-service portals.

For instance, universities in the United States and the United Kingdom have implemented cloud-based

HR platforms that facilitate real-time data access, streamline administrative processes, and support data-driven decision-making. These systems enable institutions to manage large volumes of employee data efficiently, ensure compliance with regulatory requirements, and enhance transparency in HR operations. In Asia, universities have embraced artificial intelligence (AI) and big data analytics to predict workforce trends, identify skill gaps, and tailor professional development programmes accordingly (Núñez-Valdés, 2021).

A significant example is the deployment of Workday's AI-driven student engagement platform by many Australian colleges. This platform, created with contributions from 40 international universities, seeks to enhance student retention and experience while minimising expenses linked to obsolete, paper-based methods. The adoption of these technologies has enabled institutions to transition administrative attention from manual operations to strategic tasks, hence improving overall organisational efficiency (Gkrimpizi et al., 2024).

These international case studies emphasise the transformative capacity of digital technologies in Human Resource Management, showcasing the advantages of efficiency, transparency, and strategic alignment. Nevertheless, the effective execution of such systems necessitates substantial investment in infrastructure, ongoing personnel training, and a culture that fosters technological adaptation.

### 3.2 The Nigerian Context

Nigerian tertiary institutions encounter significant obstacles in implementing digital technologies for human resource management, unlike the worldwide trend. Although acknowledging the significance of digital transformation, several universities encounter infrastructure deficiencies, constrained financial resources, and insufficient digital competencies within HR staff (Khalid et al., 2017). Inadequate infrastructure, such as unreliable internet connectivity and frequent power outages, hampers the effective deployment of digital HR systems. Many institutions lack the necessary hardware and software resources, making it difficult to implement and sustain digital initiatives. Furthermore, limited financial resources constrain the ability of universities to invest in modern HR technologies and provide ongoing maintenance andt (Quý et al., 2023).

Inconsistencies in policy and a deficiency in strategic planning exacerbate the situation. The lack of explicit guidelines and frameworks for digital transformation in Human Resource Management results in disjointed efforts and subpar outcomes. Furthermore, there exists a considerable digital skills gap among HR personnel, many of whom lack the requisite competencies to effectively employ digital tools. This gap is intensified by inadequate training opportunities and insufficient institutional (Farias-Gaytan et al., 2021). Notwithstanding these challenges, certain Nigerian universities have progressed in incorporating technology into their administrative functions. For instance, Ahmadu Bello University established an online registration system, thereby diminishing administrative burdens and enhancing precision. Likewise, the University of Lagos launched a digital library, granting students convenient access to an extensive array of resources. These instances exemplify the potential for digital transformation in Nigerian higher education institutions, contingent upon the availability of requisite infrastructure, funding, and training (Katsamakas et al., 2024).

### 3.3 Existing Measurement Models for Digital Impact on HRM

Numerous frameworks have been established worldwide to evaluate the effects of digital transformation on human resource management. These models generally assess variables including technological preparedness, process efficacy, employee involvement, and organisational effectiveness. The Digital Maturity Model evaluates an organisation's digital competencies across multiple areas, such as strategy, culture, and technological infrastructure (Akour, 2022).

Nonetheless, these models are frequently tailored for corporate settings and may inadequately reflect the distinct attributes and challenges of human resource management in higher education institutions, especially within the Nigerian context. The distinct requirements of academic and administrative personnel, the decentralised structure of university operations, and the resource limitations encountered by Nigerian institutions demand a customised approach to assessment (Qasem et al., 2018).

At present, there is a deficiency of localised, institution-specific frameworks for evaluating the effects of digital transformation on human resource management in Nigeria. This gap obstructs universities' capacity to assess the efficacy of digital efforts, pinpoint areas for enhancement, and make informed decisions on future technological investments. It is imperative to develop a theoretical assessment model that accounts for the unique environment of Nigerian tertiary institutions to effectively guide digital transformation initiatives and improve HRM practices.

### 3.4 Theoretical Framework

Comprehending the complex effects of the digital revolution on human resource management (HRM) in Nigerian tertiary institutions requires an extensive theoretical framework. Numerous recognised theories provide significant insights into the adoption, dissemination, strategic usefulness, and socio-technical integration of digital technologies in human resource management.

**Technology Acceptance Model (TAM):** Developed by Davis (1989), the Technology Acceptance Model states that two key factors—perceived usefulness and perceived ease of use—determine an individual's desire to adopt a new technology. at the realm of HRM, TAM can clarify the preparedness and inclination of HR professionals at Nigerian institutions to embrace digital tools. Factors including the apparent improvement in job performance and the effort needed to utilise new systems affect acceptance levels. Understanding these attitudes is critical for devising interventions that support technology adoption among HR people (Qasem et al., 2018).

**Diffusion of Innovation Theory:** Proposed by Rogers (1962), this theory analyses the mechanisms, motivations, and velocity of the dissemination of novel ideas and technologies within a social system. It classifies adopters into five categories: innovators, early adopters, early majority, late majority, and laggards. Utilising this framework in Nigerian tertiary institutions can elucidate the stages and patterns of digital HRM practice adoption. Furthermore, it underscores the significance of communication channels (Zavyalova et al., 2022).

**Resource-Based View (RBV):** The Resource-Based View (RBV), proposed by Barney (1991), underscores the significance of an organisation's internal resources and competencies in attaining lasting competitive advantage. This approach in HRM highlights the strategic significance of human capital and HR systems. Digital HR solutions, when aligned with the VRIN criteria—valuable, rare, inimitable, and non-substitutable—can function as strategic assets that improve institutional performance. Nigerian institutions can distinguish themselves in the competitive educational scene by investing in distinctive and well-integrated digital HR systems (Khatib, 2022).

**Socio-Technical Systems Theory:** This theory, derived from the research of Trist and Bamforth (1951), promotes the simultaneous optimisation of social and technical systems in organisations. It asserts that effective technology implementation necessitates attention to both technical functionalities and social dynamics. This idea emphasises the necessity of integrating digital tools with organisational structures, workflows, and employee requirements within the HRM environment. Nigerian tertiary institutions should take a socio-technical strategy to ensure that digital transformation programmes are both technologically robust and socially acceptable, as well as sustainable (Kırılmaz, 2020).

### 3.5 Proposed Integrative Framework

To comprehensively grasp the effects of digital transformation on HRM in Nigerian tertiary institutions, it is essential to amalgamate the previously discussed ideas into a unified framework. This integrative approach facilitates a multi-faceted examination that encompasses individual, organisational, strategic, and socio-technical elements.

The Technology Acceptance Model offers insights into HR practitioners' attitudes and intentions about the adoption of digital tools at the individual level. By evaluating perceived utility and user-friendliness, institutions can discern obstacles to acceptance and formulate specialised training and support initiatives.

The Diffusion of Innovation Theory provides a framework for analysing the dissemination of digital HRM practices throughout departments and faculties at the organisational level. Comprehending the adoption curve and the traits of various adopter categories allows institutions to customise communication methods and utilise opinion leaders to enhance dispersion.
The resource-based view underscores the necessity of cultivating and utilising distinctive digital HR competencies that correspond with organisational objectives. By investing in digital tools that satisfy the VRIN standards, Nigerian universities can improve their competitiveness and adaptability in a swiftly changing educational landscape.

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## 4. Proposed Measurement Model – Digital HRM Impact Assessment Framework (DHIAF)

### 4.1 Conceptualizing the Digital HRM Impact Assessment Framework (DHIAF)

The shift from abstract notions to quantifiable entities is essential for systematic analysis in academic research. To thoroughly investigate the influence of digital transformation on Human Resource Management (HRM) operations in Nigerian tertiary institutions, it is essential to define "impact" using organised and empirically verifiable indicators. In the absence of a unified framework comprising dimensions, sub-dimensions, and indicators, efforts to evaluate digital transformation are likely to be anecdotal or too descriptive.

Thus, the suggested measuring model is conceptualised as a multidimensional construct including major HRM functional areas. Each dimension reflects a basic HR function that is theoretically and practically influenced by digital transformation. Within these dimensions, sub-dimensions capture specific processes or systems influenced by digital technology, and for each, a variety of operational indicators are given. This framework facilitates a thorough assessment of digital influence and establishes a foundation for future empirical validation and institutional comparison.

### 4.2 Core Dimensions of Impact

The measuring approach is structured on five fundamental characteristics that encompass essential HRM functions inside higher education institutions. These dimensions are systematically drawn from the existing literature and the contextual reality of Nigerian universities.

**Recruitment and Selection:** The incorporation of digital platforms into recruitment processes represents a significant transformation in human resource management techniques. E-recruitment systems enable wider accessibility, improved transparency, and increased efficiency (Al-Alawi et al., 2023).

This dimension will evaluate the degree to which universities utilise online application portals, automated applicant tracking systems, and digital interview platforms.

**Training and Development:** Digital Learning Management Systems (LMS) have transformed the methods of capacity-building delivery. This dimension emphasises the implementation of online training programmes, virtual workshops, and e-certification systems designed to improve staff competencies in a more digitalised setting (Gadzali et al., 2023).

**Performance Management:** The transition from conventional paper-based evaluations to digital performance rating systems signifies a significant area of transformation. This dimension analyses the use of technology to establish targets, track progress, do evaluations, and deliver feedback, so enhancing the objectivity and promptness of performance assessments.

**Employee Engagement and Communication:** Effective internal communication platforms are essential for promoting organisational commitment and unity. This component evaluates the use of digital instruments—such as intranets, employee portals, and workplace social networks—to communicate information, collect feedback, and engage personnel (Zhang, 2023).

**HR Administrative Efficiency:** Administrative functions such as payroll management, leave tracking, and record keeping have seen significant improvements through digitization. This dimension evaluates the extent to which HR administrative processes are automated, resulting in efficiency gains and error reductions.digitisation.

### 4.3 Sample Indicators

In line with the outlined dimensions, several specific indicators are proposed to facilitate measurable assessment:

**Percentage of HR Activities Performed Digitally:** This indicator quantifies the proportion of core HR tasks executed through digital platforms relative to manual processes, offering a snapshot of overall digital maturity.

**Staff Digital Literacy Levels:** This indicator evaluates the percentage of HR personnel adept in using digital tools, ascertained through certifications, training completion rates, or competence evaluations, acknowledging that the success of digital transformation hinges on user proficiency.

**Efficiency and Clarity of Recruitment Procedures Following Digital Transformation:** This indicator evaluates the duration from the vacancy announcement to the appointment decision, as well as qualitative assessments of process transparency as viewed by applicants and hiring committees.

**Employee Satisfaction with Digital HR Services:** Survey-based measures capturing staff satisfaction with digital HR systems—such as ease of access, reliability, and responsiveness—provide critical insights into the user experience.

**Data Security Incidents Related to HR Systems:** This indicator monitors the frequency and severity of data breaches or cyber incidents related to HR platforms, demonstrating the effectiveness of institutional risk management due to the sensitivity of HR data.

Each indicator is theoretically justified based on its relevance to assessing the effectiveness, efficiency, and sustainability of digital transformation in HRM practices.

### 4.4 Model Validation Approach (Proposed in Theory)

This paper is conceptual; however, it is essential to delineate a feasible trajectory for future empirical validation of the proposed model. A systematic multi-stage validation procedure is advised:

**Pilot Testing:** The initial implementation of the indicators in a select number of institutions would yield preliminary data to enhance the items and confirm contextual relevance.

**Exploratory Factor Analysis (EFA):** Exploratory Factor Analysis (EFA) will be performed to ascertain the underlying factor structures and to verify that the indicators are appropriately grouped around the intended dimensions.

**Confirmatory Factor Analysis (CFA):** Subsequently, CFA will be utilised to assess the goodness-of-fit of the proposed model, determining if the data corroborates the theoretical framework.

**Reliability and Validity Considerations:** Assessments of internal consistency (e.g., Cronbach's alpha), concept validity, convergent validity, and discriminant validity are crucial to confirm the psychometric robustness of the model.
The suggested measurement model can transition from conceptual formulation to an empirically verified instrument, providing significant utility for academics, policymakers, and institutional managers in the Nigerian tertiary education system, contingent upon the implementation of these methodological stages (see Table 1).

**Table 1:** Digital HRM Impact Assessment Framework (DHIAF)

| Dimension | Sub-Dimension | Sample Indicators |
|---|---|---|
| **1. Recruitment and Selection** | - E-recruitment platforms<br>- Digital applicant tracking systems | - Percentage of recruitment processes conducted digitally<br>- Average time-to-hire before and after digital implementation<br>- Applicant satisfaction scores regarding the digital recruitment experience |
| **2. Training and Development** | - Learning Management Systems (LMS)<br>- E-learning modules | - Number of training programs delivered via digital platforms<br>- Percentage of staff completing digital training modules<br>- Improvement in post-training assessment scores |
| **3. Performance Management** | - Digital performance appraisal tools<br>- Real-time feedback systems | - Percentage of staff evaluations conducted through digital platforms<br>- Frequency of performance feedback provided digitally<br>- Employee perceptions of fairness and transparency in digital appraisals |
| **4. Employee Engagement and Communication** | - Internal communication platforms<br>- Employee self-service portals | - Frequency of internal communications disseminated via digital channels<br>- Employee engagement survey scores<br>- Usage rates of self-service HR portals |
| **5. HR Administrative Efficiency** | - Digital payroll systems<br>- Electronic leave management | - Percentage of payroll processes automated<br>- Average processing time for leave applications<br>- Reduction in administrative errors post-digitization |

## 5. Critical Discussion

### 5.1 Anticipated Benefits of Digital HRM in Nigerian Tertiary Institutions

The incorporation of digital technologies into Human Resource Management (HRM) procedures in Nigerian tertiary institutions presents substantial potential for improving administrative efficiency. By automating routine functions like payroll processing, leave management, and personnel record maintenance, organisations may minimise manual errors and accelerate HR processes. This optimisation not only preserves time and resources but also enables HR professionals to concentrate on strategic initiatives that foster institutional growth (Alqarni et al., 2023).

Improved service delivery to both academic and administrative staff is another anticipated benefit. Digital platforms facilitate timely communication, enable self-service portals for employees to access

personal information, and support online training modules. Such tools empower staff members, foster transparency, and enhance overall job satisfaction (Strohmeier et al., 2021).

Furthermore, the adoption of digital HRM practices can strengthen the institutional reputation and competitiveness of Nigerian universities. In an increasingly globalized educational landscape, institutions that leverage technology effectively are better positioned to attract and retain top talent, secure research funding, and establish international collaborations. Digital HRM systems can also provide data analytics capabilities that inform decision-making and strategic planning, thereby aligning human capital management with institutional objectives globalised (Khatib, 2022).

**5.2 Potential Challenges and Barriers**

Despite the potential advantages, several challenges may impede the successful implementation of digital HRM in Nigerian tertiary institutions. Foremost among these is the deficit in technological infrastructure. Many institutions grapple with inadequate internet connectivity, outdated hardware, and insufficient IT support, which can hinder the deployment and maintenance of digital HR systems (Aravamudhan, 2021).

Cybersecurity risks also pose a significant concern. The digitisation of sensitive employee data necessitates robust security protocols to prevent unauthorised access, data breaches, and other cyber threats. Institutions must invest in cybersecurity measures and ensure compliance with data protection regulations to safeguard information integrity (Barišić et al., 2022).

Resistance from non-tech-savvy staff represents another barrier. Employees accustomed to traditional HR processes may exhibit reluctance to adopt new technologies, stemming from apprehension about change or lack of digital literacy. Addressing this resistance requires comprehensive training programmes and change management strategies that emphasise the benefits and ease of use of digital HRM systems (Theres, 2023).

Financial constraints for technology acquisition and maintenance further complicate the transition to digital HRM. Budgetary limitations may restrict the ability of institutions to procure necessary software, hardware, and training resources. Securing funding and demonstrating the long-term cost-effectiveness of digital HRM solutions are critical steps in overcoming this hurdle (Chapano et al., 2023).

**5.3 Policy and Practical Implications**

To facilitate the successful adoption of digital HRM, there is a pressing need for national policies that mandate and support the digitalization of HR processes in tertiary institutions. Such policies should provide clear guidelines, set implementation timelines, and allocate resources to ensure uniform progress across institutions.

Capacity-building programs for HR staff are essential to equip personnel with the necessary skills to operate digital systems effectively. Continuous professional development initiatives, including workshops and certification courses, can enhance digital literacy and foster a culture of innovation within HR departments.

Partnerships with technology companies can also play a pivotal role in supporting digital infrastructure. Collaborations can provide access to cutting-edge HRM solutions, technical support, and customized training, thereby easing the transition and ensuring sustainability. Such alliances can also facilitate knowledge transfer and the adaptation of global best practices to the local context.

**5.4 Future Directions for Research and Practice**

Future research should focus on empirical studies that validate and refine the proposed measurement model for assessing the impact of digital HRM in Nigerian tertiary institutions. Longitudinal studies can provide insights into the effectiveness of digital HRM practices over time, while comparative analyses can identify best practices and areas for improvement.

Exploring the role of leadership in successful digital HR transformation is another critical area for investigation. Leadership commitment, vision, and support are often determinants of the success of technological initiatives. Understanding how leadership influences the adoption and integration of digital HRM can inform strategies to foster organizational readiness and resilience.

In practice, institutions should establish monitoring and evaluation frameworks to assess the performance of digital HRM systems continuously. Feedback mechanisms, performance metrics, and regular audits can help identify challenges early and guide iterative improvements. Engaging stakeholders at all levels in the evaluation process ensures that the systems meet the needs of users and align with institutional goals.

While the transition to digital HRM in Nigerian tertiary institutions presents challenges, the anticipated benefits in administrative efficiency,

service delivery, and institutional competitiveness are substantial. Addressing infrastructural deficits, cybersecurity concerns, staff resistance, and financial constraints through comprehensive policies, capacity building, and strategic partnerships is imperative. Ongoing research and proactive leadership will further support the successful integration of digital HRM practices, ultimately enhancing the effectiveness and sustainability of human resource management in the higher education sector.

## 6. Conclusion

The digital transformation of Human Resource Management (HRM) practices has emerged as an indispensable strategy for modernizing Nigerian universities. As institutions strive to enhance administrative efficiency, service delivery, and global competitiveness, the integration of digital technologies into HR functions becomes paramount. This transformation is not merely a technological upgrade but a fundamental shift in managing human capital, aligning HR practices with contemporary organizational needs and expectations.

A critical aspect of this transformation is the development of contextualized measurement models that accurately assess the impact of digital HRM initiatives. Given the unique challenges and opportunities within the Nigerian higher education landscape, generic models may not sufficiently capture the nuances of local institutions. Therefore, there is an urgent need for tailored frameworks that consider specific institutional contexts, resource availability, and cultural factors influencing technology adoption and utilization.
In response to this need, the proposed Digital HRM Impact Assessment Framework (DHIAF) offers a comprehensive starting point for both theoretical exploration and practical application. By encompassing core dimensions such as recruitment and selection, training and development, performance management, employee engagement and communication, and administrative efficiency, the DHIAF provides a structured approach to evaluating digital HRM's multifaceted effects. This framework not only facilitates systematic assessment but also guides institutions in identifying areas for improvement and strategic investment.

While the prospects of digital transformation in HRM are promising, its successful adoption in Nigerian tertiary institutions hinges on several critical factors. Strategic planning is essential to align digital initiatives with institutional goals, ensuring that technology integration supports broader educational objectives. This involves conducting thorough needs assessments, setting clear implementation timelines, and establishing metrics for success.

Staff development is equally crucial, as the effectiveness of digital HRM systems depends on the users' proficiency and adaptability. Comprehensive training programs should be instituted to enhance digital literacy among HR personnel and other stakeholders. Such initiatives not only facilitate smoother transitions but also empower staff to leverage new technologies effectively, fostering a culture of continuous learning and innovation.

Leadership commitment plays a pivotal role in driving digital transformation. Institutional leaders must champion the adoption of digital HRM, demonstrating support through resource allocation, policy development, and active participation in change management processes. Their engagement signals the importance of the initiative, motivating staff and ensuring accountability throughout the implementation phases.

Sustained investment is necessary to maintain and upgrade digital HRM systems, addressing issues such as software updates, cybersecurity, and user support. Financial planning should account for both initial setup costs and ongoing operational expenses, recognizing digital HRM as a long-term commitment rather than a one-time project. Exploring partnerships with technology providers and seeking funding opportunities can alleviate financial burdens and enhance system capabilities.

Failure to proactively embrace digital transformation poses significant risks for Nigerian tertiary institutions. In an increasingly digital global education ecosystem, institutions that lag in adopting modern HRM practices may struggle with inefficiencies, reduced staff satisfaction, and diminished competitiveness. Moreover, the inability to attract and retain talent, coupled with suboptimal administrative processes, can impede academic excellence and institutional growth.

Finally, digital transformation in HRM is not a discretionary endeavour but a strategic imperative for Nigerian universities. By developing contextualised measurement models like the DHIAF, investing in staff development, securing leadership commitment, and ensuring sustained financial support, institutions can navigate the complexities of digital integration. Such efforts will position Nigerian tertiary institutions to thrive in the digital age, delivering enhanced value to stakeholders and contributing meaningfully to national development.

## 7. Recommendations

- The Federal Government of Nigeria, through the Ministry of Education and relevant agencies, should formulate comprehensive policies that mandate and guide the digital transformation of Human Resource Management practices across all tertiary institutions.
- University management must prioritise sustained investment in robust digital infrastructure, including cloud-based HR systems, cybersecurity protections, and data management platforms, to support efficient and secure HR operations.
- Targeted training programmes should be designed and implemented to enhance the digital literacy and technological competencies of HR personnel, academic staff, and administrative employees to ensure effective utilisation of digital HRM tools.
- University leadership must demonstrate unwavering commitment to digital innovation by championing HR digitalization initiatives, allocating resources appropriately, and establishing accountability mechanisms to monitor progress.
- Tertiary institutions should seek collaborations with reputable technology firms, consultancies, and development partners to support the acquisition, customisation, and maintenance of digital HR solutions.
- Institutions should adopt a phased approach to digital HRM implementation, beginning with pilot programmes in select units, followed by gradual scaling based on lessons learnt and system refinements.
- As HRM processes become increasingly digitised, universities must enforce stringent data protection policies and invest in cybersecurity solutions to safeguard sensitive employee information and institutional records.
- A structured monitoring and evaluation framework, grounded in the proposed Digital HRM Impact Assessment Framework (DHIAF), should be institutionalised to regularly assess the effectiveness, efficiency, and impact of digital HRM interventions.
- Universities should design and implement comprehensive change management programmes that address resistance from staff, communicate the benefits of digital HRM transformation, and foster a culture of innovation and adaptability.
- Academic researchers and university management should encourage empirical studies, seminars, and publications that document experiences, challenges, and best practices in digital HRM transformation in the Nigerian and broader African context.
- Universities should allocate a dedicated budget line for digital HRM projects, ensuring that financial constraints do not hinder the continuity and scalability of technology-driven HRM improvements.
- Specialised leadership development programmes should be initiated to cultivate digital champions within HR departments—individuals who can drive, sustain, and institutionalise digital innovations across human resource processes.

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