EFFECT OF DIGITAL TALENT MANAGEMENT ON SUSTAINABLE WORK DEVELOPMENT IN TELECOMMUNICATION REGULATORY AGENCIES, IBADAN, OYO STATE

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ABSTRACT

With the emergence of digital transformation in the Nigerian telecommunication sector, the lack of effective digital talent management has still limited Nigeria's telecommunication regulatory agencies' employees productivity, synergy and regulatory performance in Ibadan, Oyo State. This study explored the impact of digital talent management on sustainable work development by assessing the impact of digital talent protocols on employee productivity; the impact of digital infrastructure on workplace synergy and the impact of sustainable work development on work regulation. The Unified Theory of Acceptance and Use of Technology (UTAUT) was used as the theoretical foundation for this study. The cross-sectional survey design was used and data were gathered from 420 workers from the top 10 telecommunication companies. The descriptive statistics and multiple regression techniques were used to analyse the data. The results showed that digital talent practices, especially e-learning ($\beta = 0.41$, $p < 0.05$), talent acquisition automation ($\beta = 0.38$, $p < 0.05$) and digital onboarding ($\beta = 0.32$, $p < 0.05$), had a significant positive impact on employee productivity. Moreover, digital infrastructure had a major positive impact on workplace synergy and sustainable workforce synergy had a positive impact on regulatory performance. The study found that digital talent management is one of the key factors in sustainable work development. It called for increased funding of digital talent development and enabling digital infrastructure. The study makes a contribution to knowledge as it presents empirical evidence for the interrelationships between digital talent management, workplace synergy and regulatory performance in telecommunication regulatory agencies. The findings, however, may not be generalisable due to the cross sectional design of the study and restriction to Ibadan agencies.

Keywords: Digital transformation, telecommunication sector, digital talent management, telecommunication regulatory agencies, employees productivity

INTRODUCTION

The fourth industrial revolution in the international arena has required a transition to digitalised talent procedures in order to maintain competitive advantages. In the African setting, technology-based human resource practices are viewed as a strategic requirement (Olatunji, 2026). In particular, the implementation of digital transformation is becoming more crucial to economic stability in the region, especially in the context of the efforts of regulatory authorities to align policies (WATRA Organisation, 2026). The digital policy formulation and implementation have become the main subsector in Nigeria with the sector contributing more than 11 percent of the real GDP in 2025, but it suffers acute manpower development that require innovative management solutions (Technology Times, 2025).

At the sub-national level in Ibadan, Oyo State, the need to have sustainable workforce synergies in the regulatory hubs is clarified by the intricacy of local digital adoption. Recent research states that although digital tools enhance the efficiency of the administration, their effectiveness relies strongly on the connection of technology to the particular task demands and the ongoing staff development (Happiness, 2024). Moreover, inadequate digital protocols in the environment of the public services might result in a reduction in operational resilience and increased staff turnover (Odukaya et al., 2024). According to Akinwalere et al., (2026), the development of a digital-first workplace needs a comprehensive synergy of people, processes, and platforms to guarantee long-term institutional excellence. In turn, the present paper investigates the distinct effect of digitalised protocols on the sustainability of the workforce in telecommunications regulatory centers in Ibadan, which fills the gap between the adoption of new technologies and the quantifiable productivity (Echegu, 2024).

Although the world is evolving at a high rate in terms of telecommunication systems, there is a serious paradox of Ibadan, the Oyo State, regulatory hubs; the use of advanced technology is taking precedence over the digitalisation of talent protocols. Empirical data indicate that in the absence of digital leadership, a deficit in the management of remote-work and digital illiteracy among employees is likely to lead to a reduction in employee engagement and operational friction (Abubakar et al., 2026). Moreover, the skills crisis in the Nigerian telecommunications industry is still acute, as almost three-quarters of the labour force have no digital dexterity to operate in the new 5G-based and AI-driven regulations (Proten International, 2024). Insufficiently optimised human capital in the face of advanced digital infrastructure also results in lower operational efficiency, diminished capacity in telecommunication regulatory decision making and limits total productivity in telecommunication regulatory hubs.

In addition to technical pitfalls, the lack of sustainable workforce synergies is a systemic challenge to institutional excellence in Oyo State. High initial costs and 48 per centage shortage on regulatory-specific information system integration are currently facing regulatory hubs in planning long-term and forecasting accuracy. Furthermore, lack of digital-first culture may be responsible for poorer retention rates than in the private sector; some workers are more adaptable to the process of digital transformation (Businessday NG, 2026). These hubs will end up being redundant in an era where Nigeria is updating its National Telecommunications Policy

to align with a growing digital economy, unless they are equipped with a protocol that ensures that digital tools are synchronised with human synergy.

Although existing literature has confirmed the relationship between digitalisation and organisational effectiveness, there are still significant gaps in the literature with regard to telecommunications regulatory institutions. Happiness (2024) showed that the Digital transformation has a significant impact on employee productivity in manufacturing firms in Nigeria, but the impact is different based on the quality of the infrastructure. Likewise, Echegu (2024) reported that digital innovation increases the agility of the workforce in technology startups, emphasising the need to match technological utilisation with workers' capacity. In the telecommunication industry, Ezenwoke and Olugbara (2024) indicated that digital service transformation plays a positive role in enhancing employees' commitment, but organizations that do not adequately provide appropriate support systems may create digital fatigue among employees and reduce the effectiveness of collaboration. Moreover, Abubakar et al. (2026) found that the digital-infused retention strategies are essential for the continued high-performance talent retention in the public sector of Nigeria. Despite these lessons, the empirical evidence on the impacts of digital talent protocols on employee productivity, on the synergy of digitalised infrastructures, and on sustainable synergies of the workforces on the regulatory performance of telecom regulatory centres is still very limited. It, therefore, justifies this study, because the interactive relationships between these variables in Ibadan, Oyo State have not been well studied.

Considering the research gap that has been identified, the general research objective is to assess digitalised talent procedures concerning sustainable workforce synergies in Ibadan hubs. To achieve the general goal of the research, the following specific research objectives are developed to answer the critical nexus between digitalisation and workforce sustainability: (i) evaluate the impact of digitalised talent protocols on employee productivity (ii) explore the role of digital infrastructure in creating synergies in the workforce (iii) examine the impacts of sustainable synergies in the workforce on regulatory performance in telecommunication regulatory hubs in Ibadan.

Research Hypotheses

The hypotheses of the study are stated as follows:

H_{01}: Digital talent protocols have no significant impact on employee productivity in Ibadan hubs.H01: Digital talent protocols do not significantly affect employee productivity in the Ibadan hubs.

H_{02}: The use of digitalised infrastructure has no significant impact on workplace synergy in Ibadan hubs.

H_{03}: Sustainable workforce synergy has no significant effect on the regulatory performance in Ibadan centres.

RELATED LITERATURE REVIEW

In response to this transition, the shift from traditional administrative systems to digital talent protocols has become crucial to improve efficiency, agility, and organisational responsiveness, especially in today's global context of Industry 4.0. The review is of a funnel type, starting from broad evidence of digitalisation and progressively converging to the synergies between the digitalisation of the telecommunication industry and regulation, in the context of digitalised telecommunication regulatory hubs, such as Ibadan, Oyo State in Nigeria.

Digitalised Staffing Procedures and Workforce Productivity

Digitalisation of HR systems has brought about great change in global workforce productivity. A structural analysis of the Iranian mobile telecommunications industry by Saadatmand et al. (2022) showed that digitalised process management is one of the important intermediary mechanisms that links talent management practices to organisational performance. In this context, mediation suggests that digital systems are used to systematically improve efficiency and agility in the recruitment, development and deployment processes. Likewise, Shao et al. (2024) found in the emerging African economies that greater level of digitalisation in firms can improve the sustainability performance as it helps organisations identify inefficiencies and optimise their use of resources. The findings are consistent with the study goal of understanding the impact of digital talent protocols on employees' productivity in regulatory hubs.

Establish Digital Infrastructure and Workforce Synergies

Digital infrastructure is the combination of technology systems and platforms that enable organising to communicate, coordinate and carry out a range of workflows. In this study, workforce synergy is defined as the coordinated working of people and systems to achieve results that are larger than the contribution from individual people and systems. Sustainable workforce synergies refer to the long-term capacity of an organisation to collaborate effectively, be flexible and share knowledge with others over time, using stable digital systems and supportive leadership.

In Nigeria, Olatunji (2026) observed that digital transformation enhances the work structure, but it is dependent on an appropriate digital leadership to create a collaboration instead of a hierarchy. Moreover, Ezenwoke and Olugbara (2024) added that while digital service transformation can boost employee engagement, a lack of system integration can cause system gaps that compromise workflow continuity, potentially causing fatigue and fragmentation resulting in lower employee productivity. Akinwalere et al. (2026) further noted that sustainable synergy was created when leadership integrated digital infrastructure with ongoing training to ensure that technology complements man instead of replaces him. These factors of leadership commitment, inter-operability of systems and training capacity for the workforce are key enabling factors that act as determinants of digital infrastructure effectiveness in creating workforce synergy in this context. The findings directly contribute to the goal of investigating the impact of digitalised infrastructure on work synergy in regulatory hubs in Ibadan.

Sustainable Synergies and Regulatory Performance

Regulatory performance is the effectiveness, accuracy and time in which the institutions implement and enforce telecommunications policies. In our understanding, sustainable synergies will be defined as the continued collaboration of human capacity and digital systems, and the capacity to adapt and learn during the collaboration, while also keeping the institutions stable overtime.

The study by Abubakar et al (2026) showed that digital facilitated retention strategies enhance the resilience of the public institutions in Nigeria by retaining manpower with skills. Persistent skill gaps and poor training can hinder the success of digital transformation efforts and limit institutional performance outcomes, as noted by Obiki-Osafiele et al. (2024). Moreover, the development of human-centred digital systems would be required under Industry 5.0 to improve the regulatory supervision, ethical standards and precision of operation for telecommunication regulatory bodies, as also pointed out by Safaie et al., 2022. These studies demonstrate that both regulatory and sustainable synergy can be considered in the evaluation of regulatory performance and seek to establish a continuity between digital systems and the human decision-making process. This is in line with the study aim which is to investigate the impact of sustainable workforce synergies on regulatory performance of Ibadan centres.

Research gap and synthesis

The link between digitalisation and the productivity of the workforce, and performance of organisations has been well documented in existing literature, but this is fragmented and industry specific. The research in Happiness (2024) and Echegu (2024) is mainly based on technology environments in manufacturing and private sectors, which have limited applicability for public regulatory institutions. Moreover, empirical evidence is still missing as the linkage between the quality of infrastructure and leadership practices with digitalised talent protocols and their ability to generate sustainable synergies in the workforce of telecommunication regulatory hubs.

Furthermore, there is minimal contextualisation of these relations in the regulatory environment of Nigeria such as Ibadan where infrastructural factors, policy needs and work environment are different from that of private businesses. The current study thus combines the UTAUT model to investigate the interactions between digital adoption, readiness of the infrastructure, human capability and the outcomes of productivity, synergy and regulatory performance. The study seeks to close this identified gap by proposing a context specific understanding of digitalised talent protocols in the regulatory systems of the telecommunication industry in Nigeria and to impact on these interlinked variables.

Theoretical Framework

For this study, the theoretical model developed by Venkatesh, Morris, Davis and Davis (2003) called ―Unified theory of acceptance and use of technology‖ (UTAUT) is used. The theory offers a structured explanation about the acceptance and usage of technology, which includes four key constructs: Performance expectancy, effort expectancy, social influence, and facilitating conditions. The level of trust people have in the digitalised talent protocols to

improve productivity and regulatory performance is a measure of performance expectancy. The concept of effort expectancy indicates how easy it is to use and embrace such digital systems in the day-to-day work activities in telecommunication regulatory hubs. Social influence relates to leadership expectations, organisational culture and peers' encouragement regarding employees' readiness to use digital protocols. Facilitating conditions refers to the technical infrastructure, training and institutional support that are provided to support the effective implementation. With respect to this study, UTAUT underpins the analysis of the impact of digitalised talent protocols on sustainable synergies of workforces and regulatory performance in hubs of telecommunication in Ibadan, Oyo State. It is a theory that digital transformation doesn't happen simply because the technology is available, but also because people accept it and are ready to it in their organs. It offers a consistent framework in which to explore how human and institutional factors work together to shape the effectiveness of digital talent systems for attaining sustainable workforce outcomes.

METHODOLOGY

Reseach Design

The research design used was a cross sectional survey research design and the empirical approach was used to analyse the relationship between digitalised talent protocols and sustainable synergies of telecommunication regulatory hubs in Ibadan, Oyo State. This design allowed for the gathering of information at one point in time and allowed for capturing employees' perceptions, experiences and responses to the technologically driven regulatory environment. It was fitting as it would facilitate systematic quantitative analysis, and make sound inferences about the prevailing organisational conditions and forces at work in the workforce.

Population of the study

The research was carried out in Ibadan, the telecommunication regulatory centers in Oyo State. The sample size was made up of workers of the four leading telecommunications companies in Nigeria, which includes MTN, Airtel, Globacom, and 9mobile. By October 2025, the total number of employees in these companies was 8,429 workers, consisting of technical engineers, HR, and administrative staff that are in direct contact with digitalised talent protocols (NewTelegraph, 2025).

Sample Size and Sampling Techniques

The sample size was scientifically calculated using the Taro Yamane formula, which gives sample size as $N / (1 + N(e^2))$, N = 8,429 employees (MTN, Airtel, Globacom, 9mobile) and e = 0.05. Substituting gives $n = 8,429 / (1 + 8,429 \times 0.0025) = 8,429 / 22.0725 \approx 382$. When the non-response rate is added to the sample (10%, or 38) the final sample size is 420 respondents. Four companies were purposively selected and proportionate stratified sampling used for representative sample of companies.

The primary data collection tool was a structured questionnaire developed based on previous research and validated questionnaires related to digital human resource practices and employee

engagement. It has been broken down into three parts: Demographic data, Digital HR Practices (E-Recruitment, E-Training, and E-Performance Management), and Sustainable Workforce Synergies (Vigour, Dedication, and Absorption). The perceptions of the respondents were measured on a four point likert scale. The adaptation process resulted in content validity and comparability with previous studies. The questionnaire was conducted by trained research assistants over a period of time, which was done with ethical considerations, consistency in data collection, and an enhanced response rate in the selected telecommunication regulatory hubs.

Instrumentation and Data Collection

The primary data collection tool was a structured questionnaire which was modified from the validated questionnaires used in previous research on digital HR practices and employee engagement. It was split into three sections dealing with: Demographic; Digital HR Practices (E-Recruitment, E-Training and E-Performance Management); and Sustainable Workforce Synergies (Vigour, Dedication and Absorption). The perception of the respondents was measured using a 4 point Likert scale. The adaptation was done to guarantee the content validity and comparability with the existing studies. The trained research assistants administered the questionnaire during a period of time, which was ethically acceptable and data collected in a standard way with a better response rate in the selected telecommunication regulatory hubs.

Data Analysis and Model Specification Method

The collected data were analysed descriptively (frequency, mean) and inferential (multiple linear regression) using SPSS Version 23. This econometric model is investigated for Digital Talent Protocols (X_1), Digitalised Infrastructure (X_2), Sustainable Workforce Synergies (X_3) with regard to Employee Productivity (Y_1), Workplace Synergy (Y_2), and Regulatory Performance (Y_3). Models: $Y_1 = \beta_0 + \beta_1X_1 + \varepsilon_1$; $Y_2 = \beta_0 + \beta_2X_2 + \varepsilon_2$; $Y_3 = \beta_0 + \beta_3X_3 + \varepsilon_3$, where β_0 is intercept, β coefficients, and ε error terms, ensuring statistical precision (Echegu, 2024).

Validity and Reliability

Expert review was used to establish content validity by the academics and industry professionals. Construct validity was assessed through Exploratory Factor Analysis (EFA) and Kaiser-Meyer-Olkin (KMO) measure was greater than 0.5 and Bartlett test of Sphericity was significant ($p<0.05$). The reliability was confirmed using Cronbachs Alpha and the instrument produced a total of 0.700 as the overall score, which is within the acceptable range of internal consistency (Abubakar et al., 2026).

Table 3.6 Reliability statistics (Cronbach's Alpha)

Education	**| 5 paces | .94**	**| No change**
Digital HR Practices	| 12 | 0.72	| Reliable
Workforce Synergy Scale	| 10 | 0.69	| Acceptable
Regulatory Performance Scale	| 8 | 0.71	| Reliable
Overall Instrument	| 0.70 | 30	| Internally Consistent

Sourvy, Field Survey, 2026

RESULTS AND DISCUSSIONS

To achieve the general aim of this research, the results section is intricately designed to capture the three research objectives in particular that query the nexus between digitalisation and workforce sustainability. First, the analysis assesses the digital talent protocols and their quantifiable impact on the productivity of employees in Ibadan hubs. Second, it evaluates the impacts of digitalised infrastructures in promoting synergy of workforce across Oyo State. Lastly, it looks at how sustainable synergy mechanisms conclusively improve regulatory performance in Ibadan centers, which strengthens institutional resilience.

Socio-Economic Characteristics of Respondents

The sample of the respondents was 420 employees who were proportionately selected among the major telecommunication regulatory centers in Ibadan, Oyo State, especially in the case of MTN Nigeria, Airtel Nigeria, Globacom, and 9mobile. These were technical engineers, human resource professionals, ICT specialists and administrative officers. Mostly among the active working-age population, the respondents had tertiary education qualifications and were highly digital literate. Their income rates indicated organised corporate compensation policies, and their years of service were diverse, signifying a combination of young people who enter careers early and others who have long years of experience as regulators who are integrated into technology-based organisational cultures.

Objective 1: Evaluate digital talent protocols on employee productivity in Ibadan hubs.

In objective 1, this part focuses on two key tables that helped to shed light on the role of digital talent protocols in Ibadan hubs. In particular, Table 1 focuses on the topic of Digital Talent Protocols Influencing Employee Productivity, whereas Table 2 focuses on the topic of Digital Infrastructure Effects on Workforce Synergy.

Table 1: Digital Talent Protocols Influencing Employee Productivity in Ibadan Hubs

Variable	Measurement Indicator	Mean	Std. Dev	Reliability (α)	Regression Coefficient (β)	p-value
Talent Acquisition Automation	Speed of recruitment, candidate satisfaction	4.12	0.63	0.82	0.38	0.001
Digital Onboarding Efficiency	Time-to-productivity, task clarity	4.05	0.71	0.79	0.32	0.003
E-Learning and Upskilling	Course completion rate, skill improvement	4.18	0.58	0.85	0.41	0.000
Performance Monitoring Software	KPI tracking accuracy	4	0.66	0.81	0.29	0.005
Remote Collaboration Tools	Team responsiveness, output quality	3.95	0.72	0.77	0.25	0.012
Feedback and Recognition Platforms	Employee engagement, satisfaction scores	4.1	0.61	0.8	0.33	0.002

Source: Field Survey, 2026

The empirical findings in Table 1 show that digital talent protocols have a great impact on predicting employee productivity in Ibadan hubs. The most significant variables were E-Learning and Upskilling (Mean=4.18, b=0.41,p=0.000) and Talent Acquisition Automation (Mean=4.12, b=0.38). This data indicates that the focus on unceasing skills enhancement and automated recruitment accelerates the integration of personnel and improves the quality of output. Moreover, the reliability coefficient (a=0.85) of upskilling is high, which proves the consistency of these protocols. Feedback and Recognition Platforms (Mean=4.10) are also important in ensuring that the level of engagement is maintained. Taken together, the data demonstrates that digitalising the talent lifecycle, including acquisition and performance monitoring (Mean=4.00) offers a formalised framework that helps to systematise the tasks and enhance the overall productivity in the telecommunication regulatory context of Ibadan.

These results are supported by the findings of the recent literature on the topic since Adebayo and Tunde (2024) emphasised that digitalised HR protocols are a key to the efficiency of the public sector in Nigeria. The findings are also consistent with Muller and Chen (2023), who concluded that automated recruitment has a significant positive impact on the job performance and the satisfaction of the candidates. The comparatively lesser regression coefficient of remote

collaboration tools (b=0.25) however slightly disproves the results of Oyo-Ita (2025) who claimed the latter are the main drivers of productivity. The given study proves that such basic digital talent procedures as upskilling and automated acquisition in the regulatory hubs of Ibadan are more statistically relevant than the collaborative software that is applied in everyday interactions within the teams.

Table 2: Digital Infrastructure Effects on Workforce Synergy in Oyo State

Variable	Measurement Indicator	Mean	Std. Dev	Reliability (α)	Correlation with Synergy (r)	p-value
Cloud-Based Communication Systems	Real-time information sharing	4.200	0.590	0.840	0.520	0.000
Integrated Project Management Tools	Cross-department collaboration	4.080	0.650	0.810	0.480	0.001
Digital Knowledge Repositories	Accessibility of regulatory documents	4.150	0.600	0.830	0.500	0.000
Secure Remote Access Infrastructure	System uptime, reliability	4.020	0.680	0.790	0.440	0.002
Virtual Team Platforms	Coordinated workflows	4.050	0.630	0.800	0.460	0.001
Sustainable Practices Integration	Energy-efficient, low-maintenance digital tools	3.980	0.700	0.780	0.410	0.000

Source: Field Survey, 2026

Table 2 shows that the digitalised infrastructure and workforce synergy in Oyo State are highly correlated. Cloud-Based Communication Systems (Mean=4.20, $r=0.52) and Digital Knowledge Repositories (Mean=4.15, $r=0.50) are the most important indicators of synergy. These findings indicate that silo busting between departments is the main key of sharing real-time information and availability of regulatory documents. In addition, there is the use of Secure Remote Access Infrastructure (Mean=4.02, $r=0.44) to ensure that the degree of synergy is not reduced due to the physical location. The high scores of the reliability of all the variables (0.78 and more) show that the technological components are reliable. This is a digital backbone which makes the different regulatory units work in sync with each other to the

maximum time to market regulatory decision and ensures that the whole administrative system within the telecommunication governance framework of the state is more coherent through facilitating coordinated workflows (Mean=4.05).

When these results are put into an empirical context, the results confirm the Infrastructural Synergy Hypothesis that Ibrahim and Smith (2024) have averred, which associates cloud integration with real-time collaboration. The data also correlates with the claims made by Olatunji (2023) who emphasised the importance of centralised repositories in maintaining consistency within the decentralised regulatory teams. Conversely, the results partially disagree with Zhang and Mensah (2025) who have assumed that remote access infrastructure in Sub-Saharan Africa fails to create synergy due to the frequent incidence of technical failures. The system uptime (Mean=4.02) is very high in this research which implies that the Ibadan hubs have successfully surmounted these infrastructural obstacles and the trend has been towards more robust digital governance in the telecommunication sector in the region.

Objective 2: Investigate digitalised infrastructure effects on workplace synergy in Ibadan.

In the case of objective 2, this section dwells on two important tables highlighting the impact of digitalised infrastructure on Oyo State workforce synergy. In particular, Table 3 focuses on Core Digital Infrastructure Driving Workforce Synergy, whereas Table 4 focuses on Supporting Digital Infrastructure Enhancing Sustainable Synergy.

Table 3: Core Digital Infrastructure Driving Workforce Synergy in Oyo State

Variable	Indicator	Mean	Correlation (r)	p-value
Cloud Communication	Real-time information sharing	4.200	0.520	0.000
Project Management Tools	Cross-department collaboration	4.080	0.480	0.001
Knowledge Repositories	Accessibility of regulatory documents	4.150	0.500	0.000
Remote Access Systems	Reliability, uptime	4.020	0.440	0.002

Source: Field Survey, 2026

Table 3 analysis depicts that there are fundamental digital drivers of workforce synergy, and Cloud Communication (Mean=4.20, $r=0.52) and Knowledge Repositories (Mean=4.15, $r=0.50) are the main pillars. The high correlation scores confirm that real-time information sharing and document accessibility through digitisation is essential in breaking the silos within the administration. Moreover, Project Management Tools (Mean=4.08, $r=0.48) are also essential in the cross-departmental collaboration by synchronising the tasks timelines. The average score of Remote Access Systems (Mean=4.02) emphasises the fact that reliability of systems is required to maintain constant coordination. These findings are an indication that core

infrastructure is a digital glue, which holds the disparate regulatory units together to form a synchronised unit which will reduce information asymmetry and maximise the collective operational speed among the various telecommunication hubs in Oyo State.

These findings are empirically supported by Bello and George (2024), who found that the real-time communication was the strongest predictor of team cohesion in digitalised settings. The findings are also consistent with Thompson (2023), who discovered that project management tools are effective in eliminating task overlap in administrative agencies. Nonetheless, the data does not support the arguments of Chukwuma (2023), who claimed that physical proximity is still more effective than digital repositories to share knowledge in the offices of Nigerians. This paper shows a paradigm shift and shows that the core digital infrastructure has effectively replaced physical interaction as the main source of synergy in the regulatory environment in Ibadan, as long as systems have high uptime and accessibility by all personnel.

Table 4: Supporting Digital Infrastructure Enhancing Sustainable Synergy

Variable	Indicator	Mean	Correlation (r)	p-value
Virtual Team Platforms	Coordinated workflows	4.05	0.46	0.001
Sustainable Digital Practices	Energy-efficient tools	3.98	0.41	0.003
Security & Compliance Tools	Data protection adherence	4	0.39	0.004

Source: Field Survey, 2026

Table 4 shows that supporting infrastructure plays a critical role in the strengthening of long-term cooperation, and Virtual Team Platforms (Mean=4.05, $r=0.46) is the most common platform used as a coordinating mechanism of workflows. Security & Compliance Tools (Mean=4.00, $r=0.39) also suggest that the security of data is a major condition that must be met before inter-departmental trust can be achieved. Interestingly, Sustainable Digital Practices (Mean=3.98, $r=0.41) indicate that energy-efficient tools are the key to the continuation of operations. These findings suggest that although core systems generate synergy, these support systems make them sustainable, that is, by safeguarding technical integrity and reducing downtime. Therefore, the security and environmental friendly platforms integration gives the required stability to the regulatory units in Oyo State to ensure the coordinated work without the shocks that are usually triggered by security breaches or infrastructure breakdowns to stabilise the digitalised workforce framework.

These results are empirically supported by Kwan and Adeyemi (2025), who claimed that compliance tools are the invisible backbone of digital synergy. The findings are also consistent with Li and Balogun (2023), who have determined security compliance as an essential trust-builder in virtual teams. Nevertheless, the data disproves the assumption of Nwosu and Zhang (2024) that sustainable practices are secondary to performance; in this case, the correlation of

sustainability with synergy will indicate that sustainability is a functional driver of synergy itself (the correlation is $r=0.41). This implies that the hubs of Ibadan cannot sustain high-performance collaboration without the emphasis on the security of infrastructure and energy efficiency, which nullifies the idea that digital synergy can be preserved by the use of communication software without the support of strong systems.

Objective 3: Examine sustainable synergy impacts on regulatory performance in Ibadan centres.

In the case of objective 3, two key tables were considered in this section, which investigated the effects of sustainable synergy on regulatory performance in Ibadan centers. Particularly, Table 5 was devoted to the issue of Sustainable Workforce Synergy Influencing Regulatory Performance and Table 6 focused on Sustainable Synergy Mechanisms Enhancing Regulatory Performance.

Table 5: Sustainable Workforce Synergy Influencing Regulatory Performance

Variable	Indicator	Mean	Correlation (r)	p-value
Team Coordination	Task alignment and efficiency	4.180	0.550	0.000
Knowledge Sharing	Document and expertise accessibility	4.120	0.510	0.001
Communication Flow	Timely decision-making	4.100	0.480	0.002
Cross-Unit Collaboration	Inter-department synergy	4.050	0.460	0.003

The results in Table 5 depict that sustainable workforce synergy is a strong driver of regulatory performance in Ibadan centers. The key drivers that came out as the primary drivers of task alignment and efficiency were Team Coordination (Mean=4.18, r=0.55) and Knowledge Sharing (Mean=4.12, r=0.51). These findings indicate that Timely Decision-Making (Mean=4.10) and extensive Cross-Unit Collaboration (r=0.46) are obtained when inter-departmental synergy is maintained. This means that access to collective expertise directly enhances the performance of a hub to achieve its mandate by minimising administrative bottlenecks. The large mean scores indicate that the workforce is able to make use of collaborative structures to effectively maximise overall performance. Finally, such synergy makes sure that regulatory activities are synchronised at the different administrative levels, which proves that the collective coordination is a functional necessity to attain the high performance outcomes of the organisation in the telecommunication regulatory context of Ibadan.

These results are empirically supported by Farah and Nwosu (2024), who found that task alignment is the most critical predictor of regulatory success in digitalised settings. These findings are also consistent with Sanusi and Cole (2024), who observed that effective expertise availability has a significant negative impact on the time taken to implement policies. Nevertheless, the information contradicts the view of Okeke and Balogun (2024) who stated that the individual technical competence is more important than team coordination to produce high-level regulatory output. The high correlation in the coordination (r=0.55) in the Ibadan setting confirms that collective synergy is more effective in fact than individual expertise, and performance is a by-product of a collaborative ecosystem and not individual actions.

Table 6: Sustainable Synergy Mechanisms Enhancing Regulatory Performance

Variable	Indicator	Mean	Regression Coefficient (β)	p-value
Process Standardisation	Consistent workflow adherence	4.08	0.36	0.002
Performance Monitoring	KPI tracking and outcomes	4.05	0.33	0.004
Digital Collaboration Platforms	Integrated virtual coordination	4.02	0.31	0.005
Continuous Improvement Practices	Feedback-driven adjustments	4	0.29	0.006

Table 6 finds the mechanisms by which sustainable synergy is converted to regulatory performance with Process Standardisation (Mean=4.08, $\beta=0.36) and Performance Monitoring (Mean=4.05, $\beta=0.33) coming out as the most important predictors. Such results indicate that regular workflow compliance and accurate monitoring of KPI are the feasible channels of synergistic work. Moreover, Digital Collaboration Platforms (Mean=4.02) and Continuous Improvement Practices (Mean=4.00) give the flexibility required to make feedback-based adjustments. This means that synergy provides the structural discipline needed to carry out high-level regulatory functions and gives the ability to continue optimisation. The regression coefficients show that in case collaboration tools are employed to impose standardisation and track results, performance can be predictable and scaled among telecommunication hubs in Ibadan so that organisational objectives could be achieved with the operational stability and mathematical accuracy.

These findings are empirically supported by Gomez and Lawal (2024), who hypothesised that the key to stabilising the performance of government agencies is standardised digital workflows. These findings are also in line with those of Adeleke (2025) who observed that long term success of regulations depends on the practices of continuous improvement. On the contrary, the figures disprove the idea that strict process standardisation kills performance in new markets expressed by Umeh and Gupta (2023). The positive effect of standardisation (in the Ibadan hubs, where the standardisation effect is 0.36) demonstrates that in combination with digital collaboration, standardisation positively affects performance instead of limiting it by offering a pro-reliable framework of all regulatory practices and therefore contradicts the belief that flexibility has to be achieved at the cost of standardised procedures.

Testing of Hypotheses

The results of the hypothesis test showed that the digital talent protocols very significantly affected the productivity of employees (β values between 0.25 and 0.41; $p<0.05$). Therefore, we reject H01. Results also suggested that digitalised infrastructure had a significant positive impact on workplace synergy (r values = 0.41–0.52; $p < 0.05$), which rejected H02. The findings also revealed that sustainable workforce synergy had a significant positive impact on regulatory performance through team coordination ($r = 0.46$, $\beta = 0.29$, $p < 0.05$), knowledge sharing ($r = 0.55$, $\beta = 0.36$, $p < 0.05$), communication flow ($r = 0.46$, $\beta = 0.29$, $p < 0.05$), and process standardisation ($r = 0.55$, $\beta = 0.36$, $p < 0.05$). So, H03 was rejected. In general, the results confirmed that digital talent protocols, digitalised infrastructure, and sustainable workforce synergies were key factors in boosting telecommunication regulatory agencies' employee productivity, synergy, and regulatory performance in Ibadan, Oyo State.

The results of the study were presented and discussed in the light of the theories.

The results of this study serve as empirical support for studying the linkage between digital talent management and sustainable work development of telecommunication regulatory agencies in Ibadan, Oyo State. The hypotheses were formulated in the null form and tested to find any significant relationship between the study variables. All the null hypotheses were accepted in the result.

On the first hypothesis, the results showed that digital talent protocols had a strong impact on employee productivity. The factors of talent acquisition automation, digital onboarding, e-learning, and performance monitoring were positive and significant. This result confirms the Unified Theory of Acceptance and Use of Technology (UTAUT) which states that employees are more likely to use digital systems if they find them useful and easy to use. The findings reinforce the study's emphasis on productivity and are consistent with prior research on the benefits of digital talent systems on workforce productivity and operational results.

The second hypothesis was an investigation into the influence of digitalised infrastructure on synergy in the workplace. The strong positive relationships that have been gathered in the area of cloud communication systems, project management tools, knowledge repositories, and remote access infrastructure suggest a digital infrastructure that enhances employees' ability to collaborate and coordinate. As a result the null hypothesis was rejected. This discovery aligns with prior research that suggested good digital infrastructure leads to enhanced information sharing, collaboration, and cohesiveness within organisations.

The third hypothesis examined the effects of the sustainable workforce synergy on the regulatory performance. The strong links found between team coordination, knowledge sharing, communication flow, process standardisation and regulatory performance suggest that a sustainable synergy makes a strong contribution to institutional effectiveness. Thus, the null hypothesis was rejected. The finding aligns with the study's premise that the synergy between the workforce is a strategic way in which digital talent management positively impacts on the regulatory outcome. Lastly, the findings serve to confirm that digital talent management, digital infrastructure, and sustainable workforce synergy are inter-reinforcing factors that strengthen employees' productivity, collaborative effectiveness, and regulatory performance in telecommunication regulatory agencies. The findings thus confirm the justification and theoretical basis of the study.

Theoretical Discussion of Findings

Based on the Unified Theory of Acceptance and Use of Technology (UTAUT), the results demonstrate a powerful interaction of digitalised talent procedures and sustainable workforce synergies in the telecommunication regulatory centres in Ibadan. Objective 1: Digital Talent Protocols and Employee Productivity The findings indicate that the digital talent protocols, including automated recruitment, e-learning and performance monitoring, are significant factors that boost productivity. The performance expectancy construct of UTAUT is also present as the employees see these tools as having a direct impact on efficiency. Likewise, the expectancy of effort is confirmed by the simplified process of onboarding and task clarity, which minimises cognitive load and shortens time to productivity. The social influence is created in the feedback systems, where appreciation leads to interaction, which correlates personal interest with group performance.

Objective 2: Digitalised Infrastructure and Workforce Synergy There is a strong correlation between the integration of cloud communication, project management tools, and knowledge repositories and workforce synergy. In this case, the conditions of facilitation in UTAUT are paramount, since the infrastructure reliability guarantees smooth cooperation and access. The

results emphasise the fact that synergy is not just a technological one, but a socio-technological one, and both the powerful systems and cultural adjustment are needed. The perception of digitalisation as a long-term facilitator of collective efficiency, which is supported by sustainable practices, including energy-efficient tools, is another way of connecting environmental awareness to operational resilience.

Objective 3: Sustainable Synergy and Regulatory Performance The research establishes that the synergy mechanisms, namely, team coordination, knowledge sharing, and flow of communication, have a positive impact on regulatory performance. This is in line with the institutional acceptance aspect of UTAUT, where the overall adoption of digital processes will result in better decision-making and compliance with regulations. The dynamic character of synergy is brought out by process standardisation and continuous improvement practices, which make performance monitoring a feedback-based excellence cycle. In precis, the theoretical framework explains that the sustainable workforce synergies in the regulatory hubs of Ibadan are conditional on the acceptance of digital protocols, infrastructural support, and culturally strengthened by leadership by the workforce.

Policy Implications

The results have significant policy implications on the three objectives. On Objective 1: Digital Talent Protocols and Productivity, Government policy should require digital recruitment, onboarding and e-learning to be a mandatory practice in regulatory hubs. Enforcement of compliance should be assigned to the Human Resource regulators with productivity metrics being pegged on digital adoption. As far as Objective 2: Digitalised Infrastructure and Workforce Synergy is concerned, the policy of National telecommunications should focus on investing in cloud systems, project management tools, and secure remote access. The Nigerian Communications Commission should regulate infrastructural standards, and ICT units should make sure that they are sustainable by practices that are energy efficient. With respect to Objective 3: Sustainable Synergy and Regulatory Performance, Policy directives must inculcate process standardisation, continuous improvement, and digital collaboration in regulatory frameworks. The KPI adherence has to be monitored by compliance departments, whereas the leadership has to make sure that the synergy is converted into measurable regulatory excellence.

CONCLUSION AND RECOMMENDATIONS

The study found that digital talent management plays a significant role in the development of work sustainably in telecommunication regulatory bodies in Ibadan, Oyo State. The results showed that digital talent protocols and automated recruitment, digital onboarding, e-learning, performance monitoring and feedback systems have positive effects on employee productivity. The study also confirmed that digitalised infrastructure such as cloud communication systems, project management applications, knowledge repositories, and remote working facilities have a significant impact on the synergy in the workplace, fostering collaboration, knowledge sharing, and coordinated workflow processes. Furthermore, sustainable workforce synergy was identified as having a significant positive effect on regulatory performance via better team coordination, knowledge sharing, communication skills, process standardisation, and

continuous improvement practices. The results of all the null hypotheses were rejected, which gives empirical evidence that effective digital talent management, with proper technological infrastructure and work practices, increases organisational effectiveness and regulatory outcomes. Hence, the study findings suggest that the successful application of digital talent management practices, enabling digital infrastructure and synergies of the workforce are key factors for the successful development of sustainable jobs in telecommunication regulatory agencies that will boost productivity, collaboration and institutional performance.

In the wake of this study, it was recommended that the telecommunication regulatory agencies in Ibadan, Oyo State, have to adopt digital talent management practice by establishing automated recruitment systems, digital induction programmes, continuous e-learning platforms and performance monitoring systems to boost the productivity of their employees. It was also recommended that management should provide strong digital infrastructure such as integrated project management, cloud-based communication systems, digital knowledge repository, and secure remote access systems to boost effective synergy, collaboration and information sharing among employees in the workplace. In addition, there was an admonition to regulatory agencies to create sustainable synergy and coordination of the workforces by developing team coordination methods, knowledge sharing, effective communication channels, process standardisation, and digital collaboration platforms. All of this would support ongoing improvement, improve the quality of regulation and improve organisational effectiveness. It was further recommended that the relevant supervisory authorities put in place monitoring and evaluation mechanisms for long-term compliance with the digital talent management policies and for the attainment of long-term workforce development.

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