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Influence of Operational Agility on Employees' Performance in Pharmaceutical Industries in Kwara State

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Abstract
Poor operational agility has been recognised as a factor affecting employees' performance. Adequate technological infrastructures, innovative capabilities, and digital transformation systems are reported to enhance workers' performance. This study examined the influence of operational agility on employees' performance. A descriptive survey was used. The population was 435 staff of Tuyil Pharmaceutical, Ilorin. The sample was 208 employees, calculated using Taro Yamane's formula for sample size determination. A structured "Operational Agility and Employee Performance Questionnaire (OAEPQ)" was used for data collection. The reliability of the adopted questionnaire was assessed at Cronbach's Alpha (α) with a reliability score of 0.86. Data analysis was conducted using frequency and percentage to present the answer to the research question. Regression Analysis was used to test the research Hypothesis at a 0.05 significance level. Findings showed that adaptation to technological infrastructures. Innovative capabilities and deployment of product delivery systems exert little influence on employee performance. Adopting modern IT applications for dynamic business operation processes increased employee activity efficiency. Digital transformation of systems improved employees' efficiency, showing a greater influence on employees' performance. Based on the findings, the study concluded that digital transformation and adopting modern IT applications for dynamic business operation processes strongly influence employees' performance. The study recommends that employers ensure more adaptation to technological infrastructures, enhance the innovative capabilities of employees and implement massive deployment of product delivery systems to customers.

Keywords: *Employee Performance, Operational Agility, technology Infrastructure, Innovative Capabilities, Digital Transformation.*

INTRODUCTION

Operations Agility is when the organisation teams apply principles to understand, map, and continuously improve the processes that deliver and support business solutions (Teece, 2023). Susanto (2023) noted that technological facilities, innovation capabilities, modern IT, digital delivery systems, agile teams and leadership affect employees' performance. Furthermore, an organisation can swiftly adjust to evolving circumstances and secure a competitive edge by embracing agility. This fosters a dynamic business framework that facilitates prompt and effective decision-making. Performance improvement in operational terms is exciting when it can influence the industry's competitive position. Employees' performance hinges on making well-informed business decisions and implementing effective marketing strategies. It also encompasses the speed at which activities are carried out in the business. However, considering differential execution speeds requires higher-order concepts associated with agility (acceleration of variety change) and factors that hinder or help agility execution (Teece et al., 2017). Organisations without operational agility usually relapse in delivering value to their customers and lose most of them to the competitive business enterprise.

Lack of operational agility makes it difficult to respond or adapt to innovation changes, which could result in not meeting customers' demands compared to similar organisations. Moreover, operational inefficiency of an organisation is responsible for poor response in a record time to modern technological innovations, and poor performance may serve as a demoralising factor, resulting in poor employee performance. The consequences of the inability of the Pharmaceutical industries to adapt quickly to modern technology infrastructures, innovation capacities, modern IT applications, drug delivery systems, and digital transformation of systems will affect employees' performance. Hence, the paper examined operational agility and its effect on employees' performance.

Statement of the Problem

In recent years, the pharmaceutical sector in Nigeria has faced increasing pressure to adapt to rapidly changing technological, economic, and customer demands. The COVID-19 pandemic has intensified the urgency for this transformation, fluctuating market dynamics, and the global push toward digitalisation. Despite these pressures, many pharmaceutical companies operating in Nigeria continue to struggle with rigid organisational structures, outdated delivery systems, and limited adoption of modern IT infrastructure—challenges that directly impact employee productivity and service delivery. In Kwara State, pharmaceutical industries such as Tuyil Pharmaceuticals play a significant role in healthcare delivery and employment generation. However, anecdotal observations and preliminary reports reveal persistent concerns regarding employee inefficiency, slow response to innovation, and limited digital integration in operational processes. These challenges have been partly attributed to inadequate operational agility, defined as the firm's ability to rapidly respond and adapt to internal and external changes with minimal disruptions. According to Onuorah and Bosso (2024), many Nigerian firms still rely heavily on manual operations, suffer from bureaucratic bottlenecks, and show a poor culture of innovation adoption, which hinders their ability to respond swiftly to market or environmental changes. Furthermore, Ezejiofor and Ezekwesili (2021), in their study of pharmaceutical companies in Anambra State, identified structural rigidity and lack of technological integration as significant obstacles to improving employee performance in the pharmaceutical sector. These structural inefficiencies are not only affecting workforce

productivity but are also endangering customer satisfaction and corporate competitiveness. While global studies have suggested that operational agility—through digital transformation, modern IT applications, and innovative capabilities—can significantly improve employee performance (Teece, 2023; Warner & Wäger, 2019), there remains a paucity of empirical research within the Nigerian context, especially in Kwara State, that explores this relationship. More so, many existing studies have approached employee performance without considering how digital or agile operational practices directly influence day-to-day activities and task efficiency within pharmaceutical settings. Thus, a clear research gap exists in understanding how operational agility mechanisms, such as adaptation to technological infrastructure, deployment of modern IT applications, innovative capacity, and product delivery systems, affect employee performance in Nigerian pharmaceutical firms. Without empirical evidence to address this relationship, management decisions regarding digital investment and workforce development may remain poorly informed. This study, therefore, seeks to address this critical gap by examining the influence of operational agility on employee performance in selected pharmaceutical industries in Kwara State. The goal is to generate evidence-based insights to guide organisational reforms, improve employee output, and enhance competitiveness in Nigeria's pharmaceutical landscape.

Literature Review

Agility is a new theory of strategic changes for which organisations react quickly, study the dynamic business environment to respond to these changes within a limited time frame and respond appropriately due to the market forces and uncertainty (Palanisamy et al., 2021). Operational agility is quick adaptation to new opportunities with the potential to improve operational efficiency (Cegarra-Navarro & Martelo-Landroguez, 2020). Effective operational agility begins from the top organisation hierarchy, using a solid organisation structure that can impact the performance of employees. Parrill (2023) noted that organisational strategies include enhancing mobility and encouraging cross-functional assignments. Employee performance is the accumulated result of organisational activities (Daft & Marcic, 2019). Miles (2022) described employees' performance as the ability of an organisation to reach its goals and optimise results. In today's workforce, employee performance can be defined as a company's ability to achieve goals in a state of constant change. Employee's performance is the level of effort contributed to the organisation's productivity in a given task. Employee performance depends on working environments, organisation hierarchy, retention packages, and service conditions. The working environment contributes a lot to the workers' psychological well-being, thereby influencing the level of work performance. Also of significant influence on employee performance is the nature of formalisation, internal and external boundaries and layers in the organisational hierarchy, which have a significant positive effect on the employee's performance (Nosike et al., 2021; Nwosu, 2020; Bekanwah et al., 2020). In addition, conditions of service for the employee further enhance the workers' performance. Ezejiofor and Ezekwesili (2021) revealed that working conditions and formalisation positively impact pharmaceutical company employee performance. Employee's performance can also be measured by employee retention and growth, culture and collaboration, resiliency and change and financial performance (Miles, 2022). The timely response of the organisation to the needs of the

customers, competitiveness, and technological innovations are great predictors of employees' performance.

Technology Infrastructures

Technological infrastructures refer to the physical and virtual systems, networks, and platforms that enable the operation, management and exchange of data, information, and services. Technological infrastructures include hardware, software, networks and databases, Internet, phone networks, remote servers, storage and applications, and physical and computational systems integration. The benefits of technological infrastructures to improve employees' performance are increased efficiency, improved productivity, enhanced collaboration, cost savings, better decision-making and competitive advantage (Hermawan & Suharnomo, 2020). Impact on globalisation enables companies of all sizes to do business with customers worldwide. Faster and meaningful technology adoption is critical for accelerating business growth, but it is vital for survival in this era of cut-throat competition and demanding customers. No matter the size of an enterprise, technology has tangible and intangible benefits at all stages of its growth. Timely performance measurement of the existing technology stack and further investment in technologies that push the business towards growth have become essential for an organisation's success. Technological advances have completely restructured organisations by making their business processes more efficient and fluid than ever, and particularly, information and communication technology (ICT) has become an essential tool to support and sustain the business (Hermawan & Suharnomo, 2020). Abdullahi et al. (2019) stressed that information and communication Technology has been acknowledged as the building block for any organisation to maximise profit, ensure customer satisfaction, and minimise cost.

Innovation Capacities

Innovative capabilities refer to the ability of individuals, organisations, or systems to generate, develop, and implement novel and valuable ideas, products, services, or processes. Types of innovative capabilities are creating new or improved products, improving existing processes or developing new ones, developing new or improved services, changing or creating new business models and transforming organisational structures or culture. Innovation is perceived as the least important compared to Leadership, Workforce and Technology capabilities. The role of organisational agility as a key driver to generate superior performance in international markets in the era of technological transformation and how the degree of such impact is affected by the absorptive capacity of companies (Chulkov, 2019; Upadhaya et al., 2020; Cho et al., 2022).

Modern IT Capability

Information Technology (IT) capability is an organisational capability that enables organisations to acquire, deploy, combine, and reconfigure IT resources (Werder & Richter, 2022). Gong and Ribiere (2023) showed that the organisational agility in achieving digital transformation has not been addressed from a holistic conceptual perspective. IT applications have been used to improve the productivity of employees and management of the organisations (Peansupap & Walke, 2019; Feeny & Willcocks, 2020).

Digital Transformation of Systems

Consequently, with substantial changes, such as a digital transformation, individuals can confidently manage the situation, thus averting emotional distress, resignation and physical ailments. Similarly, Feng et al.'s (2023) findings indicate that in China, most Chinese enterprises have enhanced their adaptability through procedural, distributive, and interactional fairness fostered by the triad of institutional influences. In Africa, only 10% of new businesses survive for over a decade in South Africa (Govuzela & Mafini, 2023). Studies reveal that most small enterprises in Nigeria fail within the first 5 years of operation (Ade et al., 2020). This may be attributed to the issues of inadequate agility. Nisara et al. (2023) asserted that innovation directly impacts organisational agility.

Theoretical Review

The first theory adopted was the dynamic capabilities theory. The dynamic capability model views a strategically agile firm as one that can re-align its day-to-day routines to match the changes in the macro-environment. Dynamic capability focuses on continuous change while adapting to environmental stimuli. Teece (2023) showed that innovation, including digital transformation, corporate entrepreneurship and organisational behaviour, also contributes to the theoretical soundness of the dynamic capabilities framework (Cannas, 2021; Chirumalla, 2021; Ellström et al., 2021; Jantunen et al., 2018; Soluk & Kammerlander, 2021; Warner & Wäger, 2019; Witschel et al., 2019). Dynamic capabilities are the organisation’s ability to integrate, build, and reconfigure internal and external resources/competences to address and shape rapidly changing business environments (Teece et al., 2017). The goal is to generate abnormal returns. As noted above, dynamic capabilities measure the capacity to align and realign, and resources/competences are integrated and reintegrated to stay tuned to the business environment. Sensing, seizing, and transforming are particular attributes of firms that enable them to evolve and co-evolve with the business environment. Such capabilities are critical to long-term profitability (Teece et al., 2017). The theory of dynamic capabilities is relevant to this study because the management of an organisation must be ready to improve employees’ performance. The second theory was human relations management theory by Elton Mayo, an Australian psychologist from Harvard University. Mayo conducted a series of experiments, which are now known as the Hawthorne Studies or the Experiments. Human relations theory is a school of organisational thought focusing on worker satisfaction, informal workplace organisations, and influencing employees’ productivity. Elton Mayo's contribution to management was mainly in employee management. The theorist discovered that social and relational forces positively impact employees’ productivity. Theory also noted that although finances are motivators, positive work relationships weigh more. Omodan et al. (2020) assert that the relevance of the human relations theory is practical in crisis management.

The third theory reviewed was bureaucratic management theory by Max Weber. According to Max Weber's idea of bureaucratic management, an organisation must be hierarchical and have well-defined rules to govern it and its members. He also believed that employees work for each level of management (Burter & Hartzell, 2021). In light of this, Dynamic Capability Theory (DCT) is adopted. The theory emphasises an organisation's capability to orchestrate activities, resources, or assets within the system's global specialisation and co-specialisation. In addition, the theory also stresses the ability of an organisation to

integrate, build, and reconfigure internal and external competencies to address a rapidly changing business environment. Dynamic Capability Theory encourages agile organisations to adapt quickly to modern innovation to achieve operational efficiency. An empirical review of the study variables was conducted. Fatafta et al. (2019) investigated the effect of information technology on employees' performance in Jordanian pharmaceutical companies in Jordan. The findings confirmed that quality management capabilities partially mediate information technology's effect on employee performance. Abdullahi et al. (2019) determined the impact of information communication technology on organisational employees' productivity in the Nigerian banking industry. This indicates that hardware components, software components, and networks significantly and positively impact organisational productivity in the Nigerian banking industry. Another survey study by Nnamani and Nwoha (2019) examined the effects of technological changes on employees' performance in Enugu State. The study revealed that rapid technological changes have positively and significantly contributed to the profit of manufacturing firms in Enugu State.

Yauri (2021) investigated the impact of IT on the performance of employees of the Nigerian Immigration Service (NIS) Kebbi State Command. The findings revealed a positive relationship between information technology and employees' performance, in the survey study of Li et al. (2021), who assessed the influence of ICT on employees' performance (OP) using 297 employees from agriculture cooperatives in Côte d'Ivoire. The results showed that ICT has a profound positive effect on OP. A quantitative study determined the effects of adaptation of IT on organisational agility among online fashion retailers (Tjhin et al., 2023). A structural approach to the Equation Model (SEM) was used for analysis. The results indicate that the adoption of IT infrastructure affects employees' performance. The impact of innovation agility on airline employees' performance in Thailand, using email and in-person surveys from 250 employees. The results showed that innovation agility directly impacts employees' agility. Likewise, a survey research by Bertram and Okeke (2023) examined organisational structure and performance of pharmaceutical firms in Anambra State, Nigeria. The study revealed that the organisation's dynamic structure significantly positively affected employees' performance in pharmaceutical firms in Anambra State, Nigeria. From the literature, it can be deduced that organisational agility is the timely response of an organisation to the dynamic business environment, customer demands, competitiveness and quick adaptation to the ever-changing technological innovations to keep the business going. In addition, the literature revealed that for an organisation to be agile, effective operational agility must be met. An organisation's agility relies substantially, if not solely, on its employees. Therefore, employees' performance is complementary and significant in achieving an agile organisation.

RESEARCH METHOD

This study examined the influence of operational agility on employees' performance. A descriptive survey was used. The population was 435 staff. The sample was 208 employees, calculated using Taro Yamane's formula for sample size determination. A structured "Operational Agility and Employee Performance Questionnaire (OAEPQ)" was used for data collection. The questionnaire was a five-point Likert scale type, which is: Strongly Agreed (5), Agreed (4), Undecided (3), Disagreed (2) and Strongly Disagreed (1). R= 5n5+4n4+3n3+2n2+n1/5n. The reliability of the adopted questionnaire was assessed at Cronbach's Alpha (α) with a reliability score of 0.86. Data analysis was conducted using

frequency and percentage to present the answer to the research question. Regression Analysis was used to test the research hypothesis at a 0.05 significance level. This model was specified for the effect of operational agility (OA) on organisational performance as expressed as: EP f(DTS, PDS, IC, TI, MIT). (2) EP Employee's Performance in equation 2 is expected as the dependent Variable for Y in equation 2.1. Y Bo + B1x1 + B2x2 + B3x3 + B4x4 + B5x5 + e... (2.1). The model specification of operational agility is a function of digital transformation systems (DTS), product delivery systems (PDS), innovative capabilities (IC), technological infrastructures (TI) and modern IT application (MIT). Where, Bo Constant/the intercept point of the regression line and the Y-axis: B1 slope of the estimated parameters, and i = 1 to 5. X1 Digital Transformation Systems (DTS). X2 Product Delivery Systems (PDS). X3 = Innovative Capabilities (IC). X4 Technological Infrastructures (TI) and X5 Modern IT Application (MIT). eostochastic term (which reveals the strength of B_1X_1+...+BnXn)

RESULTS AND DISCUSSION

Table 1.

Connection between Operational Agility and Employee Performance

S/N	Operational Agility	5	4	3	2	1	Mean	Sdt.	Rank
1	Tuyil is flexible to technological infrastructures that can enhance employees' performance	41	64	55	29	19	3.38	1.210	3rd
2	Tuyil adopts modern IT applications for dynamic business operation processes, which increase employees' efficiency of activities, reduces transaction time and/or costs	32	43	45	53	35	2.92	1.324	5th
3	Tuyil deploy the drug delivery system.	46	70	33	34	25	3.38	1.316	4th
4	The combined use of a digital transformation system to improve separation and purification efficiency is available.	82	42	46	27	11	3.75	1.248	1st
5	Tuyil has Innovative capabilities.	78	66	18	21	25	3.73	1.372	2nd

Table 1 shows the response on operational agility and its influence on employees' performance in Tuyil Pharmaceutical Industry, Ilorin, Kwara State. The results showed that the combined use of digital transformation of the system to improve separation and purification efficiency is available (Ranked first). Adoption of innovative capabilities applications (Rank

2nd) highlights the impact of leveraging technology to streamline operations, reduce costs and improve the efficiency of employee activities. The emphasis on modern IT solutions (Rank 5th) suggests that the company's operational processes are more dynamic, directly boosting employee productivity. Adaptation to technological infrastructures (Rank 3rd), the company's ability to adapt quickly, allows employees to benefit from tools that can improve their work. This indicates a supportive work environment where technology is embraced. Tuyil deploy Drug Delivery System (Ranked fourth). This result implies that digital transformation to improve efficiency is the digital overhaul of systems, which fosters efficiency and positively impacts the speed and accuracy of employees' work. This result indicates that operational agility plays a significant role in enhancing employees' performance in Tuyil Pharmaceutical. Overall, the rankings suggest that Tuyil's operational agility approaches, particularly through modern technology adoption and system integration, significantly influence and enhance employees' performance.

Table 2.
Measures of Employee Performance

S/N	Employee's Performance	5	4	3	2	1	Mean	Sdt.	R
1.	Tuyil mandates employees to complement each others to enhance performance	32	43	45	53	35	2.92	1.324	5th
2.	Tuyil has gained more customer patronage in the market	41	64	55	29	19	3.38	1.210	3rd
3.	Tuyil offer adequate and commensurate reward and compensation to motivate employees	32	43	45	53	35	2.92	1.324	7th
4.	Tuyil conducts regular performance appraisals to ensure a standard level of performance from us	54	56	12	35	51	3.13	1.566	4th
5	Tuyil mandates us to undergo trainings that help develop our expertise	72	43	17	45	31	3.38	1.506	2nd
6	Employees respond to customers' demands as fast as possible in Tuyil	32	43	45	53	35	2.92	1.324	6th
7	Employees offer quality services and products to customers in Tuyil	104	15	10	46	33	3.53	1.630	1st
8	Employees make themselves available to customers, when necessary, in Tuyil	32	43	45	53	35	2.92	1.324	8th

Table 2 shows measures of employees' performance. Employees offer quality services and products to customers in Tuyil, which is ranked first. Tuyil mandates staff to undergo training that helps develop their expertise, which is ranked second. Moreover, Tuyil has gained more customer patronage in the market and is ranked third. Tuyil conducts regular performance appraisals to ensure a standard level of performance from staff ranked fourth. Tuyil mandates employees to complement each other to enhance performance, ranked 6th, and Tuyil offers adequate and commensurate rewards and compensation to motivate employees, ranked seventh. In contrast, when necessary, employees make themselves available to customers in Tuyil, which is ranked eighth.

Test of Hypothesis

HO_1: Adopting operational agility does not significantly influence employee performance in Tuyil Pharmacy, Ilorin, Kwara State.

Table 3.
Model Summary of the Influence of Operational Agility on Employees' Performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.883[a]	.780	.771	3.10195	.248

The model summary shows that R.883 indicates a strong relationship between the independent variable (Operational Agility, OA) and the dependent variable (Employee Performance, EP) in Tuyil Pharmaceutical. R Square value of. 780 (78.0%) of the variation in employees' performance can be explained by operational agility. In other words, operational agility significantly influences how well employees perform. The remaining 22.0% of employees' performance is influenced by other factors not captured in this model. Adjusted R Square of .771(77.1%) accounted for the number of predictors in the model and suggests that operational agility explains 77.1% of the variation in employees' performance when considering all items of operational agility. This still shows a substantial impact, confirming that operational agility plays a significant role in determining employees' performance. In conclusion, the data suggests that operational agility is a key factor in enhancing employees' performance at Tuyil Pharmaceutical, though other external factors also contribute to employee outcomes.

Table 4.
ANOVA of the Influence of Adoption of Operational Agility on Employees' Performance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.250	5	1.650	8.042	.000[b]
	Residual	41.442	202	.205		

Total	49.692	207	

Table 4 shows that the F-calculated is 8.04, and the significance value is .00 at 0.05. Since the significant value of 0.00 is less than the 0.05 significance level (t.cal 8.04; p.<0.05). The hypothesis was hereby rejected. This implies that the adoption of operational agility has a significant impact on employees' performance. Since operational agility significantly influences employees' performance, there is a need to know each indicator's contribution level.

Table 5.
Regression Coefficients of Operational Agility on Employees' Performance

Model		B	Std. Error	Beta	t	p-value	95.0% Confidence Interval for B	
							Lower Bound	Upper Bound
1	(Constant)	1.266	.178		7.102	.000	.914	1.617
	Tuyil's adaptation to technological infrastructures that can enhance employees' performance	.001	.025	.003	.049	.961	-.049	.051
	Tuyil has innovative capabilities to assist employees in carrying out routine activities	.016	.026	.040	.609	.543	-.036	.068
	Tuyil adopts modern IT applications for dynamic business operation processes, which has increased employees' performance	.132	.025	.355	5.312	.000	.083	.180
	Tuyil deployed the product delivery system	.018	.025	.050	.741	.460	-.031	.068
	Digital transformation systems	.051	.026	.129	1.971	.050	.000	.102

Table 5 shows the Beta (β) value of the contribution level of each operation agility indicator to employees' performance. Results showed that adaptation to technological infrastructures enhanced their employees' performance (β=.003). Tuyil has innovative capabilities that assist them in routing activities (β=.040). Adopting modern IT applications for dynamic business operation processes increased employees' efficiency of activities (β=.355).

The deployment of product delivery systems (β=.050). Tuyil. Digital transformation of systems improved employees' efficiency (β=.129). This implies that digital transformation contributed 12.9% to the employee performance, and adopting modern IT applications for dynamic business operation processes contributes about 35.5% to employees' efficiency of activities. The study shows that the adoption of operational agility has a significant influence on employees' performance. The adoption of operational agility has a strong influence on employees' performance. This result is supported by Nisara et al. (2023), who submitted that innovation is perceived as the least important compared to leadership, workforce, and technology capabilities.

Discussion of findings

The findings of this study revealed that operational agility significantly influences employee performance in the pharmaceutical industry, particularly within Tuyil Pharmaceutical, Ilorin. Among the dimensions of operational agility examined, adopting modern IT applications (β = 0.355) and digital transformation systems (β = 0.129) had the most substantial positive impact on employee performance. Other dimensions—technological infrastructures, innovative capabilities, and product delivery systems—showed weaker, less significant influence. The regression analysis confirmed that 78% of the variation in employee performance is explained by operational agility, affirming a strong relationship between these constructs. This study's findings align with those of Tjhin et al. (2023) and Abdullahi et al. (2019), highlighting that IT infrastructure and technological adaptation impact employee output and productivity. Similarly, Nnamani and Nwoha (2019) found that rapid technological changes have enhanced profitability in Nigerian manufacturing firms. However, the results contradict Li et al. (2021), whose study in Côte d'Ivoire found that ICT adoption had an insignificant effect on employee performance, suggesting that contextual factors, such as organisational readiness or sector-specific dynamics, may influence outcomes. The results reflect a broader trend in modern business: digitalisation redefines operational effectiveness and workforce efficiency. In fast-paced sectors like pharmaceuticals, where precision, speed, and regulatory compliance are critical, digital agility becomes not just a value-add but a necessity. The strong influence of modern IT applications and digital transformation on performance suggests that employees thrive in environments where systems support faster decision-making, reduce manual processes, and provide real-time access to information. This reinforces that human performance is deeply intertwined with technological enablement in knowledge-driven industries.

The observed results are likely due to Tuyil Pharmaceutical's strategic emphasis on technology adoption and operational modernisation, as revealed in their internal processes. Employees benefit from efficient systems that streamline tasks, enable collaborative work, and reduce response times. However, the relatively weaker impact of innovation capacity and infrastructure suggests that while technology is being deployed, there may be gaps in fostering a culture of innovation or upgrading legacy infrastructure to support these innovations effectively. This also highlights that technology alone does not guarantee high performance—its strategic alignment with organisational goals and employee competencies is crucial. Given these insights, several actions are needed moving forward. Firstly, organisations must move beyond simply acquiring technology to integrating digital transformation strategies that align

with employee workflows. This includes building internal capacities through continuous training and developing a culture that rewards innovation and flexibility. Secondly, companies must review and modernise existing infrastructure to ensure it supports the new digital tools. Thirdly, performance measurement frameworks must be aligned with agility indicators to track the real-time impact of operational changes. Lastly, future research should investigate sectoral differences, longitudinal outcomes, and mediating variables (e.g., employee engagement or organisational culture) to deepen understanding of how and why agility translates into performance outcomes.

CONCLUSION

This study explored the influence of operational agility on employee performance within Tuyil Pharmaceutical Industry, Ilorin, Kwara State. Unlike prior studies that reported limited or no significant influence of technological adaptation on organisational outcomes, this study provides compelling evidence that specific elements of operational agility, particularly digital transformation systems and the adoption of modern IT applications, significantly and positively impact employee performance. While previous literature emphasised general agility or innovation in broader terms, this research identified distinct operational mechanisms (e.g., digital platforms for purification processes and dynamic IT applications) that directly contribute to employee efficiency, task execution, and customer responsiveness. One of the most notable findings diverging from past studies is the quantified contribution of each operational agility component. Regression analysis showed that adopting modern IT applications contributed 35.5%, and digital transformation systems contributed 12.9% to employee performance variance, which are statistically significant. In contrast, components like technological infrastructure and product delivery systems showed marginal influence, offering a nuanced understanding of what drives employee effectiveness in a pharmaceutical context. The conceptual contribution of this study lies in its context-specific model linking operational agility dimensions to performance outcomes in the Nigerian pharmaceutical sector. Methodologically, the study demonstrated the utility of integrating regression modelling with empirical employee feedback to pinpoint which aspects of agility have the highest performance leverage. Practically, this research provides a diagnostic framework for industry leaders seeking to prioritise agility investments that yield measurable employee performance gains. Therefore, beyond affirming a correlation, this study offers a strategic blueprint for operational agility as a performance enabler in dynamic, innovation-driven environments. Based on the study's findings, recommendations provide a holistic framework for enhancing operational agility, clearly focusing on leveraging technology, empowering employees, and reshaping organisational culture to optimise performance outcomes in the pharmaceutical industry.

1. Pharmaceutical firms should prioritise integrating advanced digital tools in their operational workflows. This includes automating repetitive tasks, adopting enterprise resource planning (ERP) systems, and digitising manufacturing and quality control processes to enhance operations' speed, accuracy, and consistency.
2. Companies should invest in up-to-date IT infrastructure and software for real-time data analysis, seamless communication, remote access, and process tracking. These systems enable quicker decision-making and empower employees to work more efficiently.
3. Organisations should institute continuous professional development programs focused on building digital literacy, adaptability to IT systems, and skills in managing agile work

environments. Training should be periodic and hands-on to ensure optimal utilisation of new technologies.

4. Management should create a culture encouraging innovation through brainstorming sessions, research funding, employee suggestion schemes, and reward systems for implemented ideas. Collaborative innovation platforms within departments can foster creative problem-solving.
5. Firms should focus on streamlining supply chains, implementing real-time tracking systems, and automating packaging and distribution processes to ensure timely delivery and customer satisfaction.
6. Management should adopt agile organisational structures that support cross-functional collaboration, decentralised decision-making, and responsiveness to change. Agile leadership training for managers can help foster a workplace environment that supports fast adaptation and encourages employee engagement.
7. Pharmaceutical firms should develop internal policies that institutionalise agility, such as flexible work arrangements, fast-track innovation review processes, and adaptive budgeting systems that can support rapid shifts in operational needs.

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