

**Digital Transformation, Work Environment and Administrative Staff Job Performance
in Federal Tertiary Institutions, South-west, Nigeria**

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Certification

This is to certify that Tajudeen Adisa JIMOH with matriculation number LCU/PG/002041 carried out this research work titled “Digital Transformation, Work Environment and Administrative Staff Job Performance in Federal Tertiary Institutions, South-west, Nigeria” in the Department of Information Management, Faculty of Communication and Information Sciences, Lead City University, Ibadan, Oyo State, for the award of Doctor of Philosophy (PhD) Degree in Office and Information Management and that this work has not been previously submitted.

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Dedication

This piece is dedicated to Almighty Allah, the true fountain of knowledge.

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Abstract

The dynamic nature of modern organisations as a result of evolving technologies, changes in structures, systems and human components of workplace, among others, emphasizes the importance of digital technology and work environment. The objective of this study was to examine the influence of digital transformation and work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. Mixed method research design was employed and the population comprised 5557 administrative staff of 14 federal tertiary institutions, out of which 373 were selected through systematic multi-stage sampling technique. Quantitative data were collected with a questionnaire tagged “Digital Transformation, Work Environment and Administrative Staff Performance Questionnaire” while qualitative data were collected through interview. Descriptive and inferential statistics were used for data analysis and the hypotheses were tested at 0.05 level of significance. It was found that digital transformation and work environment have significant combined influence on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria ($R=0.686$; $Adj.R^2=0.467$; $P=0.000<0.05$). Digital transformation was found to account for higher relative influence on job performance of the administrative staff ($R=0.715$; $Adj.R^2=0.507$; $P=0.000<0.05$) than work environment ($R=0.594$; $Adj.R^2=0.349$; $P=0.00<0.05$). It was also found that work experience has no significant moderating effect on the interaction of digital transformation with job performance of the administrative staff of federal tertiary institutions in South-west, Nigeria ($\Delta R^2=0.000$, $\Delta F=0.007$; $P=0.935>0.05$). The study concluded that the level of digital transformation activities and the conducive nature of workplace environment are critical factors that influence job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. It was recommended that the management of Federal tertiary institutions in South-West, Nigeria should intensify their digital transformation efforts and provide conducive work environment to their administrative staff with a view to improving their performance.

Keywords: Administrative Staff, Digital Transformation, Federal Tertiary Institutions, Job Performance, Work Experience, Work Environment

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Chapter One

Introduction

1.1 Background to the Study

Central to the viability, growth, success and survival of any organization is the human element, usually referred to as the workforce. Performance of the workforce remains an important and significant index in determining organizational performance. Job performance is consistently a topical issue to researchers, management practitioners, owners of business and organisations as success in any endeavour depends on how well people perform assigned roles. The fact that effective and efficient work teams meet deadlines, get things done, show good attitude, have mastery of their jobs and contribute to the organisation's bottom-line make organisations and their managers to rationally look for employees whose attitude and performance will guarantee the achievement of their mission.

Job performance reflects the accumulated value or result of the set of behaviours of employees, their skills, abilities and efforts in meeting job targets and fulfilling work expectations¹. It refers to measurable and changing behaviours, actions and engagement outcomes of employees that are linked to overall organizational performance and capable of contributing to goal achievement². Job performance has been conceptualized in different ways resulting its differing dimensions and measurement factors used by researchers, management experts and practitioners to describe and measure job performance. Specific and measurable indexes of job performance take cognizance of a number of factors with a broad consensus that job performance is a combination of task and contextual performance which are comprehensive dimensions that fully cover the full domains on which job performance is based³. Some other frameworks cover adaptive performance and similar components that do not fall into any of the generic dimensions of job performance⁴. The nature of jobs in modern

organisations require individuals who will exhibit desirable performance in their key roles and display positive characteristics that will make them fit in dynamic work environment¹. Thus, the present study adopts task and adaptive performance as measures of job performance.

Task performance, as an important dimension of job performance, refers to in-role behaviours which cover the formal job descriptions predicted by employees' abilities in the core job areas or responsibilities⁵. It is attributed to cognitive abilities that are enabled by task knowledge, task skill and task habits⁶. Thus, task performance is depicted by task and operational knowledge, problem solving ability, efficiency, task skills and expertise, work quality as well as oral and written communication. Beyond task performance, employees are expected to display remarkable level of adaptive performance to be able to adjust to changing circumstances and succeed in the face of new or evolving job demands and conditions⁷. Adaptive performance refers to individual employee's ability to adapt to dynamic work situations by adjusting behaviours to the dictates and demands of work situations, new events and changes in job-related tasks⁸. Changes in the methods for accomplishing tasks, technology, job assignment, restructuring of organizations, new roles and job processes demanding new learning, new technologies, among others, require employees' adaptability to be able to effectively cope in the ever-dynamic work environment of modern organisations⁹.

One of the prominent sectors for the economic, socio-cultural and technological development of a nation is the tertiary education sector which has the responsibility for nurturing critical thinking, life-long learning, innovations and breakthroughs in researches and transformation of people for productive living and economic growth. Administrative staff category is one of the classes of workers in tertiary institutions, whose members are found in departments and sections of the institutions to perform varying functions for the smooth running of the institutions and the accomplishment of goals. In developed countries, efforts on administrative modernization have yielded effectiveness and efficiency of administrative functions and job

performance in public organisations¹⁰. Such performance of administrative staff leads to desirable and enviable outlook of their tertiary education sector in terms of satisfactory service delivery, work ethics and standards, seamless admission and registration processes, effective and efficient personnel management, time-saving office administration, diligent salaries and wage administration, reliable information and records management practices, inter-organisation relationships^{11,12}. In Nigerian public tertiary institutions, administrative functions are often disparaged and job holders are alleged of performance requiring functional improvements. These are as a result of administrative ineptitude seen in poor service experience, reproachful work attitude, administrative inefficiency, unethical work practices and information management, unsatisfactory attention to students and clients' requests, inability to optimize technology use, and so on¹³. This derisive performance of the administrative staff portends far-reaching consequences on teaching, learning, capacity building and research objectives as well as global ranking of Nigerian public tertiary institutions.

Recent development and advancement in technology, digital applications and the consequent integration of digital processes and technologies offer the opportunity for improved work processes, flexibility and enhanced service delivery¹⁴. The pervasiveness of these technological transformations brought about rapid adoption and utilization of digital tools and restructuring of organisational activities and models of tertiary institutions, thus changing the features of administrative functions of tertiary institutions¹⁵. Digital transformation in administrative processes, methods, functions, other institutional components of tertiary institutions calls for review, redesign and realignment of work procedures, infrastructure and approaches in offering services¹⁶. Such transformation as a result of digital technology is responsible for the changes in how tertiary institutions carry out their activities and leveraging opportunities and possibilities¹⁵.

Digital transformation is a term used to denote technological potentials employed to effect changes in business or organizational models, the integration of emerging digital technologies into an organisation's operational, tactical and strategic activities¹⁷ with a view to creating more value, providing efficient and quality services and satisfying stakeholders and clients¹⁸. In the context of federal tertiary institutions, digital transformation is used to denote new ways of working, building new frameworks of administrative functions, service delivery and creating new forms of relationships to turn the government-owned tertiary institutions into enterprises in which digital technologies alter traditionally known methods, practices and procedures for administrative functions, efficiency and effectiveness in service delivery for stakeholders' benefit^{19,20,21}.

Previous researches and studies explored constructs such as digital technology, digital capability, digital strategies, technological level, organisational agility, degree of automation, innovative methods, digital skills and competence as indicators of digital transformation^{22,23}. The common elements of digital transformation are organisation, people, technology and process^{24,25}. This study builds on these elements to adopt transformational capability, digital capability and digital operations as measures of digital transformation.

Transformational capabilities refer to an organisation's abilities for flexibility, quick and timely implementation of changes by redirecting attention, renewing the organisation itself, changing promptly and adapting to new technology and emerging digital processes in operations and activities in response to changing demands and environment^{26,27}. Such capabilities are reflected in change leadership, innovation culture and digital agility of an organisation^{28,29}. Digital capabilities cover the availability and use of digital technologies, tools and applications as well as the digital competence and expertise of people driving an organisation's digital transformation³⁰. Digital operations describe the extent to which digitization and digitalization processes deliver efficiency of operations, use of

communication tools for collaboration and knowledge diffusion as well as seamless and continuous improvement in operational routines^{25,31}.

Another factor which researches underpin as having bearing on the quality and quantity of employees' work is the environment in which the work is performed³². With evolving work practices, procedures and models which result from technology usage for virtual communication, e-transactions, collaboration, e-learning, among others, institutions of higher learning are changing rapidly with a view to meeting new standards of performance, achieving learning outcomes and educational administration³³. The administrative staff in tertiary institutions, like their counterparts in all forms organisations, spend considerable part of their time within the workplace, their emotional condition, temperament, attitudes, disposition and essentially, job performance are likely to be influenced by a combination of factors of the work environment^{34,35}.

Work environment is defined as the settings, situations, conditions and circumstances under which people work²⁸. It refers to everything within a work organisation - interplay of systems, relationships, structures, tools, processes and other elements which involves the employee with the work itself³⁶. While work environment has been described to comprise many components and factors, some view it as comprising physical and behavioural components³⁷, others argued that it could be measured in terms of physical, technical, human and organisational components³¹. In this study, work environment is represented by physical and behavioural components as the dimensions of work environment.

The physical work environment is the tangible aspects of the workplace which are associated with employee's aptitudes to attach physically to the work. These include tools, equipment, building design, office and workspace layout, workstation set-up, furniture and fittings, temperature, ventilation, lighting, noise, vibration, radiation, air qualities, etc³⁸. The

behavioural component refers to the peers, colleagues, supervisors, team members and others with whom workers relate and which characterize pleasant and compassionate relationship and offers opportunity for the ventilation of ideas and knowledge, information dissemination, communication and co-worker support³⁹.

In the context of characteristics and make-up of individuals on a job or in an organisation, one important job and organisation-related personal factor which bears on the attitude, adaptability and performance of workers is the individual's years of service in an organisation^{40,41}. It is a personal factor used as a criterion for eligibility and match for employment consideration and relevant to most aspects of performance outcome of individual workers⁴². Work experience could be job or industry-specific and is usually measured in terms of the accumulated experience accrued to a worker in a particular organization or the overall experience gathered by a worker from other organizations⁴³.

This study focuses on digital transformation and work environment and examines their influence on the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria by putting into consideration and perspective, the moderating influence of work experience on the influence of digital transformation on the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

1.2 Statement of the Problem

Administrative personnel of federal tertiary institutions in Nigeria belong to an important workers category, performing administrative and support functions that are critical to the smooth running of the institutions. However, there have been criticisms and empirical evidences on undesirable performance of administrative staff in federal tertiary institutions, like other public enterprises, which are linked to poor service experience, delay in processing requests, poor attitude exhibition, unsatisfactory work habits, among others. If left

unaddressed, these may result into deteriorating and unsatisfactory performance outcomes, inefficiency cum service failure, unsatisfactory work impact and inability to connect with modern reality of work practices.

In federal tertiary institutions in Nigeria, the level of integration of digital tools and processes and the evolving work environment have brought about fundamental changes in the way administrative tasks are carried out. These changes have the potential to affect job performance of the administrative staff and also present several critical issues that require careful examination.

Several studies have been carried out on job performance, digital transformation and work environment^{10,13,29,38}. However, there is dearth of empirical studies on digital transformation and work environment in the context of federal tertiary institutions and with particular focus on administrative personnel. Available research evidence rarely explore job performance of administrative staff in tertiary institutions in terms of task performance and the extent to which employees are able to change and adapt to evolving work demands (adaptive performance). Also, studies on the relative and combined influence of digital transformation and work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria is perhaps, yet to be documented. Leaving such knowledge gap unfilled will not only hinder knowledge-based perspectives on digital transformation of public sector organisations but may also limit frontiers of knowledge on the variables, job demands and performance factors for administrative staff of public organisations in the era of technology-driven work models and service delivery. Hence, this study examined the impact of digital transformation and work environment on the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

1.3 Aim and Objectives of the Study

The aim of the study is to investigate the influence of digital transformation and work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. The objectives of the study are to:

- i) identify the level of job performance of administrative staff of federal tertiary institutions in South-west, Nigeria;
- ii) identify the level of digital transformation in federal tertiary institutions in South-west, Nigeria;
- iii) examine the work environment of administrative staff of federal tertiary institutions in South-west, Nigeria;
- iv) determine the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria;
- v) determine the influence of work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria; and
- vi) determine the combined influence of digital transformation and work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.
- vii) determine the moderating impact of work experience on the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

1.4 Research Questions

In pursuance of the objectives of this study, the following research questions were raised:

1. What is the level of job performance of administrative staff of federal tertiary institutions in South-west, Nigeria?
2. What is the level of digital transformation in federal tertiary institutions in South-west, Nigeria?
3. How conducive is the work environment of administrative staff of federal tertiary institutions in South-west, Nigeria?

1.5 Hypotheses

In line with the objectives of this study, the following null hypotheses were formulated:

- H₀₁: There is no significant influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.
- H₀₂: There is no significant influence of work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.
- H₀₃: There is no significant combined influence of digital transformation and work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.
- H₀₄: There is no significant moderating impact of work experience on the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

1.6 Significance of the Study

The findings of this study, when published, are expected to be of significant benefits to managements and administrative personnel of federal tertiary institutions in South-west, Nigeria as well as leaders and workers in other public tertiary institutions, public organisations and to the government, being the owner of public tertiary institutions and the largest employer of labour.

Management of federal tertiary institutions in South-west, Nigeria could use the result of this study to facilitate their employees' performance improvement efforts, assess their digital transformation level and conduciveness of their work environment. The study will be of help to management in the implementation of digital transformation, the need for relevant technological tools, conducive work environment and development of skills and expertise of administrative staff towards handling digital tools and application for effective job performance and by extension, all categories of workers for good functioning of institutional organs.

Administrative personnel of federal tertiary institutions in South-west, Nigeria might use this study as a guiding light to conduct self-assessment of their task performance level, extent of individual adaptability to emerging digital technologies and will be able to see the need for self-development and competence in the use of digital tools in the light of their administrative roles in order to perform creditably in the constantly changing digital workplace. Other categories of workers in federal tertiary institutions will see the need to connect with modern reality of workplace for effective and efficient performance of duties and the achievement of their institutional goals.

Public organisations may use this study as a precursor for employees' performance assessment in the digital era and the need for the provision of up-to-date technological and digital tools, training and retraining of workers, provision of conducive work environment to

facilitate employees' performance, quality service delivery ethos and the achievement of organisational goals.

Government as the largest employer of labour, through its regulatory and funding agencies, might build on the result of this study to recognize the need for the funding of federal tertiary institutions especially in the provision of digital tools and conducive workplace environment for staff with a view to energizing the tertiary education to achieve its goal and contribute to national growth.

The study sheds more light on each of the variables and sub-variables examined and serve as reference materials for future researchers who might be willing to carry out research on digital transformation, work environment, job performance and any or a combination of the measures of these variables in relations to federal tertiary institutions or other forms of work organisations.

The study contributes to existing body of knowledge conceptually, empirically and theoretically and in the review of previous research findings and practical application of theories used in the present study.

1.7 Scope of the Study

This study focuses on the impact of digital transformation and work environment on job performance of administrative staff of federal tertiary institutions in Nigeria. Digital Transformation, which is an independent variable was measured with digital transformative capabilities, digital capabilities and digital operation of the public tertiary institutions. Work Environment is the second independent variable and was represented by physical and behavioural work environment. Job Performance, being the dependent variable was measured in terms of task performance and adaptive performance.

Geographically, the study covered all the six universities, five polytechnics and three colleges of education owned by the Federal Government in South-west, Nigeria. The scope was limited to federal tertiary institutions in the Zone. State government owned tertiary institutions were excluded because of the differences in the working condition, funding, regulatory controls, among others between federal and state institutions and differences from one state institution to another. In all, the respondents are the administrative personnel who are senior registry staff (secretarial, executive, administrative and registrar cadres) in the different units of federal tertiary institutions in South-west, Nigeria.

1.8 Limitations to the Study

In carrying out this study, the researcher was confronted by a number of constraints which could have possibly hindered the completion and success the study. A significant constraint encountered in the conduct of this study was the attitude of staff in some of the Establishment Offices of the federal tertiary institutions covered to give data about their administrative staff and to officially attest to the conduct of the research by signing the attestation letter, while some put the researcher through much scrutiny before being allowed to administer the questionnaire, despite the letter of introduction presented for the purpose. Similar to this, was the attitude of some respondents in completing and returning the questionnaire administered to them. The busy schedule of the respondents, non-availability in their offices at times, and the reluctance to partake in the filling of the questionnaire were very demanding. The researcher assured the staff of the establishment offices of the strict use of data for research purpose only, appealed to the administrative staff for their support and exercised patience in the collection of the data. Efforts were also made to get the assistance of heads of sections, departments and units where the administrative staff work to facilitate timely response and cooperation

The engagement of the Registrars in interview was time consuming and required a lot of perseverance as a result of their schedule as principal officers in their respective institutions. However, the researcher was able to use persuasion to get the cooperation of the administrative staff and support of the Registrars and their representatives.

1.9 Operational Definition of Terms

Job Performance: The degree and level to which each administrative staff of federal tertiary institutions in Nigeria collectively and individually accomplish their job duties and the extent to which such is significant to the realization of institutional goal. This is measured in terms of task performance and adaptive performance.

Task Performance: The proficiency with which administrative staff of federal tertiary institutions perform the roles and functions that are recognized as core elements of their jobs.

Adaptive Performance: The ability and readiness of administrative staff of federal tertiary institutions in South-west, Nigeria to adapt and adjust to changes in their work role, methods, tools and the unpredictable changes in technology, culture and work environment.

Digital Transformation: The deployment of digital technologies in facilitating the activities, processes and operations of federal tertiary institutions in South-west, Nigeria that could enhance job performance of the administrative staff. This is measured by Transformational Capabilities, Digital Capabilities and Digital Competence.

Transformational Capabilities: The ability of federal tertiary institutions in South-west, Nigeria to respond to technological developments and change their operations and methods with ease by adopting digital methods, processes, tools and applications.

Digital Capabilities: These are digital technologies, tools, applications and resources in federal tertiary institutions that are required for driving the institutions' digital transformation.

Digital Competence: These are technology-related skills, expertise, knowledge, disposition and attitude required of administrative staff of federal tertiary institutions to perform their tasks, solve problems, communicate, manage information, collaborate, create and share digital content independently and appropriately.

Digital Operations Efficiency: Automated work processes and use of digital communication tools for collaboration, knowledge diffusion and continuous improvement in operational routines of administrative staff of federal tertiary institutions in South-west, Nigeria.

Work Environment: The totality of tools, equipment, social setting, physical conditions, relationship among people and the general conditions of the environment in which administrative staff of federal tertiary institutions in South-west, Nigeria perform their works. It is represented by Physical Environment and Behavioural Environment.

Physical Environment: These are physical components, lighting, tools, machines, office layout, work space and floor plans of work environment where administrative staff carry out their jobs in federal tertiary institutions in South-west, Nigeria.

Behavioural Environment: The aggregate attitude, communication, interactions, relationship and support by colleagues, subordinates and supervisors in administrative work group of federal tertiary institutions in South-west, Nigeria.

Work Experience: The number of years of experience in administrative job position which has accrued to an administrative staff in a federal tertiary institution in South-west.

Administrative Staff: Category of workers in federal tertiary institutions in South-west Nigeria who perform administrative functions such as office administration, records management, data capturing and storage, clerical services, secretarial functions, personnel management, salaries and wage administration, information management and general support for smooth running and effective functioning of institutional organs.

Senior Registry Staff: Senior staff of the Registry Department/Sections in secretarial, executive, administrative and registrar cadres of federal tertiary institutions in South-west, Nigeria.

Federal Tertiary Institutions: Public tertiary institutions in South-west, Nigeria – universities, polytechnic and colleges of education which are owned, funded and controlled by the Federal Government of Nigeria.

South-west, Nigeria: This is one of the six geo-political zones in Nigeria representing both geographic and political region of the country's southwest. It comprises Ekiti, Lagos, Ogun, Ondo, Osun and Oyo States.

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Chapter Two

Literature Review

This chapter takes a review of relevant literature on the subject and variables of this study.

The review is presented under the following major sub-headings:

2.1 Conceptual Review

2.1.1 Job Performance

2.1.2 Digital Transformation

2.1.3 Work Environment

2.1.4 Work Experience

2.2 Theoretical Framework

2.2.1 Campbell's Theory of Job Performance

2.2.2 Individual Adaptability Theory (I-Adapt Theory)

2.2.3 Digital Excellence Model

2.2.4 Person-Environment Fit Theory

2.3 Review of Empirical Studies

2.3.1 Digital Transformation and Job Performance

2.3.2 Work Environment and Job Performance

2.4 Conceptual Model

2.5 Summary of Gap in Literature Reviewed

2.1 Conceptual Review

2.1.1 Job Performance

Job performance remains a central focus of many literatures and research in management, organisational behaviour and psychology and has been of much interest to human resource specialists, business owners, government, educators and researchers. As a result, a number of factors have been used to discuss job performance by many researchers and scholars all over the world. This present study seeks to expand the existing body of knowledge through a review of concepts and themes relating to the variable.

Job performance literarily signifies how employees fulfill their job roles and carry out their assigned or expected tasks. It covers the effectiveness, quality, and efficiency of individual employee¹ and shows how the workers behave in the workplace and how well they carry out the job roles that have been assigned to them². The level of an employee's performance in comparison to others in similar job positions can be used to determine the quality of their job performance. Because it demonstrates how successfully a person is carrying out the demands of the job and can either be evaluated objectively or assessed more subjectively³. Job performance reflects the aggregate value or result of the set of behaviours, skills, abilities and efforts of employees in fulfilling their work expectations toward meeting the target or mandate that could facilitate the accomplishment of both long and short-term organisational goals^{4,5}. It specifies the dynamic behaviours, actions and engagement outcomes of employees which are often changing but a linked to overall organizational performance⁶.

The aggregate of an employee's activities and behaviours that support the organization's goals are referred to as job performance⁷. It is a construct explained in terms of behaviours of the worker rather than results, as results could be maximized by different factors at the expense of other things. Hence, it can be seen as job related behaviours of an employee that are

related to the goals of the employer or those actions or behaviours under the control of an individual worker, that support or facilitate the achievement of organization's goals, measured in terms of the proficiency level of the job holder⁸. Employees manifest a wide range of behaviours and a number of such behaviours or actions assist with the employee's obligations, while others which also affect the achievement of the organization's goal may not be categorised under duties and obligations of an employee⁹. Hence, performance on a job is the total expected value to the organization of the discrete behavioural episodes that an individual carries out over a standard period of time or an aggregated property of multiple, discrete behaviours that occur over some span of time which implies that job performance distinguishes between sets of behaviours carried out by different individuals and between sets of behaviours carried out by the same individual at different times¹⁰.

Job performance is a multidimensional variable that cannot be pointed or measured directly and it consists of multiple components, approaches, perspective and dimensions, which in turn, comprises of indicators that can be measured directly¹¹. It is described as scalable actions, behaviour and outcomes that employees engage in or bring about that are linked with and contribute to organizational goals⁶. There are three important factors necessary to generally define or assess job performance factors in terms of specific indicators - they signify what an employee do while at work, they can be rated in line with an employee's net impact on the realization of organizational objectives; and they should be superintended on by the employee himself¹².

Early works on the domains of work performance were separately carried out by K. Murphy and John Campbell in which the domains of generic work performance were specified. Work performance domain of Murphy was modeled with task behaviours, interpersonal behaviours (communicating and cooperating with others), downtime behaviours (work-

avoidance behaviours), and destructive/hazardous behaviours (behaviours that lead to a clear risk of productivity losses, damage, or other setbacks) as the dimensions and the framework of John Campbell proposed eight dimensions – job-specific task proficiency, non-job-specific task proficiency, written and oral communications, demonstrating effort, maintaining personal discipline, facilitating peer and team performance, supervision, and management and administration. According to Campbell, the dimensions are enough to adequately cover what is described as the latent structure of performance at a general level¹³.

In conceptualizing performance, there is the need to distinguish between the behavioural component of job performance and the outcome or result component. This is because performance constitutes the exact things an organization employs people to do and to do well and not defined by the action itself but by the judgemental and evaluative processes¹⁴. The behaviour refers to the action which an employee exhibits in the course of carrying out work while the outcome covers the consequence of individual's job or result of the individual's behaviour. Thus, the dimensions of behaviour and outcome are related and none is easy to conceptualize as performance without due consideration of the other¹⁵. This shows that performance is the expected organizational value of what people do. *Results* are states or conditions of people or things that are changed by what they do in ways that contribute to or detract from organizational effectiveness. Therefore, results are the route through which an individual's behaviour helps or hinders an organization in reaching its objectives, which is what makes it appealing to focus on results when considering individual performance¹⁰.

Job performance depicts the degree and level to which an individual worker accomplishes the task or job duties assigned to him and the extent to which such is significant or contribute to the realization of organizational goal¹⁶. As a result, employers and organisations seek competent individuals who can help an organization achieve its strategic objectives and

maintain its competitive advantage¹⁴. The level of performance of an employee is a result of two elements – first the abilities, skills and competence possessed by the employee and second, the motivation to use such abilities in the performance of assigned jobs. The effectiveness or otherwise of the performance often results from the combination of task-related elements and expected behaviours¹⁷.

Knowledge, experience, skills, abilities, awareness, values, motives, and requirements are the eight crucial personal characteristics that affect work effectiveness. These elements evolve as people get used to their jobs and are capable of changing over time¹⁸. The individual differences perspective explains the underlying factors responsible for differences between the job performance of individuals in the workplace on the assumption that such differences could be understood from the individual differences in abilities, personality, Cognitive ability, experience and the motivation that drives individuals¹⁹.

The individual differences perspective in job performance developed by Campbell describes how declarative knowledge, procedural knowledge and skills, and motivation are the three factors that affect an individual's performance. Declarative knowledge includes an individual knowledge about oneself, principles, facts and goals, and is predicated on a person's abilities, personality, interests, education, training or experience. Procedural knowledge and skills include "cognitive and psychomotor skills, physical skill, self-management skill, and interpersonal skill while motivation comprises choice to perform, level of effort, and persistence of effort⁶. Campbell does not make specific assumption about the predictors of motivation for performance¹⁵. The individual differences perspective implies the need for human resource and hiring personnel to give emphasis to the selection of individuals on the basis of their abilities, experiences, and personality so that high performing individual are employed and their good characteristics are enhanced through experience, exposure, training,

upskilling, etc¹⁵. This is because high performers change in positive ways – their knowledge increases, their experience broadens, their skills develop, their abilities improve, their awareness grows, their motivation strengthens, their needs expand and their values deepen” while underachievers are focus on the minimum acceptable requirements and not thinking about raising their level of performance¹⁹.

The situational perspective refers to factors in the individuals’ environment which stimulate and support or hinder performance and encompasses approaches which focus on workplace factors but also specific motivational approaches which follow¹⁵. Situational factors may be responsible for the tendencies of an employee to manifest behaviours that are capable of helping or weakening an organization’s effectiveness. By either interfering with or facilitating behavioural reactions, such situational conditions either make it simpler or more difficult for people to take activities that could promote or hinder organizational effectiveness. The availability of necessary materials and tools, for example, is a determinant of people’s probability of behaviour on the job with the tools and materials²⁰. Prevailing situation and economic conditions, for example, can have direct impacts on the volume of sales and organisation’s profit without any direct constrain or contribution to individual performance behaviours that is exhibited in the course of producing the goods or services affected by the economic and market condition. Hence, those situational factors that affect an individual’s behaviour are viewed as determinants of job performance¹⁰.

The foregoing reveals that in considering the workplace factors and their link to individual performance, there are situational factors that enhance or aid performance while others hinder performance. This perspective fall under the job characteristics model of Hackman & Oldham which suggests that job characteristics (that is, skill variety, task identity, task significance, autonomy, feedback) affect some critical inner or mental states such as

meaningfulness, accountability for job and project success, awareness of consequences, etc. The effect of this is predicated on individual attitude, work outcomes and a number of job design tenets, including the management of difficulties and unforeseen events, the compatibility of the design process with its goals, and the minimal specification of tasks, methods, and task allocations affect the performance behaviour^{15,21}.

The third perspective is the performance regulation which focuses on the performance process itself and explains it as “action process”. The interest is to determine what the performance process looks like and what happens when someone is performing without any consideration of the person or the situation in which the performance takes place¹⁵. The performance regulation perspective fall under the action theory approach and explains that performance process emphasizes the structural point and sequential elements of an action in a hierarchical organization. It is connected to goal setting and integrates five different components – the action theory, energetic regulation, emotional regulation, vitality regulation and self-image regulation which are the regulation types embedded in performance regulation approach and suggests that a positive change or improvement of the action process through goal setting improves performance. The perspective specifies that Individuals should be inspired to pursue long-term objectives and to participate in realistic planning, feedback gathering, and feedback processing. The approach is more interested in regulatory interventions from outside the individual that promote positive reinforcement performance than in internal mechanisms that regulate performance within an individual²².

Different kinds of employees’ behaviours are capable of contributing or hindering goal accomplishment in an organisation. Bringing all the many kinds of behaviour together will not reflect the appropriate index of performance unless the seemingly identical domains (task performance and contextual performance) of performance are put in separate perspectives²³.

Accordingly, some frameworks on job performance take cognizance of the factors by which job performance is categorized on specific and measurable levels, with the agreement that job performance comprises task performance, contextual performance and counterproductive work behaviour²⁴ while some frameworks emphasize adaptive performance in addition to other similar dimensions not classified into any of the three former generic dimensions²⁵.

Task performance refers to the effectiveness with which job holders execute their assigned tasks, that ensure the fulfillment of organization's vision while rewarding organization and individual proportionately²⁶. Task performance is made up of clear job behaviours, such as the core duties listed in the job description and requires higher level of cognitive ability. Therefore, the main factors that facilitate it are task knowledge (the principles or technical knowledge required to ensure job performance and the capacity to handle multiple assignments), task skill (the application of technical knowledge to complete tasks successfully without much supervision), and task habits (an innate ability to react to assigned jobs that either facilitate or impede performance)²⁷. This makes ability and prior experience to be the primary antecedents of task performance. Task performance is a significant dimension of an employee's performance which covers the formal job description and the requirements or personal characteristic competence needed to do the job as usually indicated in the direct or implied contractual agreement between the employer and the employee²⁵.

Task performance in an organizational setting refers to the agreement between the management and workers to complete tasks that have been assigned to them. Performance on entrusted tasks is divided into two categories: technical-administrative task performance and leadership task performance. Technical-administrative task performance refers to the standards of work that must be met when planning, organizing, and managing daily tasks using one's technical expertise, business judgment, and other factors²⁷, while goal setting,

performance standard, supervision, directing, monitoring, criticisms, motivation, feedback, etc. are grouped into leadership task performance domain²⁸. Other terms used to label task performance include technical proficiency, job-specific competence, task proficiency and in-role performance and it include, for example, work quantity, work quality, and job knowledge.

John Campbell performance model developed in 1990 comprises of hierarchy of factors depicting job performance – Job-specific task proficiency; non-job-specific task proficiency; communication proficiency; supervisory or leadership skill; and management or administrative proficiency as indices of task performance. Similarly, the taxonomies of job performance revised by Campbell and colleagues in 1993 comprises core technical proficiency, general soldiering proficiency, job-specific task proficiency, and non-job-specific task proficiency all of which are elements that relate to task performance⁹. This because some jobs have direct contribution to the organization's technical core through the conversion of raw inputs into finished products while other jobs may contribute by replacing or replenishing the inputs, distribution of the finished goods or provision of support which require behaviours and efforts that contribute to the technical core⁶.

As job descriptions for the same job may be different among organisations and jobs feature constant changes without any reflection in the agreed job description, these changes being reflected in job descriptions, the depiction of task performance to include only those behaviours listed in a job description could pose some limitations and measures of performance that depend on the content of a job description may not be accurate, hence task performance should be seen as actions and behaviours that contribute directly or indirectly to the production of a good or the provision of a service²⁸.

Task performance involves the combination of some performance aspects - task proficiency, task meticulousness, work discipline, work improvement, and readiness for innovation which reflects the behaviour of individuals on the job and the results of such behaviour²⁹. Hence, task performance is seen as the proficiency with which employees perform the roles and functions that are recognized as elements of their jobs or simply the activities that are directly linked to the implementation of the core tasks in a job. This implies that task performance is a measure of effectiveness employees' activities that are regarded as core part of their jobs³⁰.

The purview of job performance encompasses a range of employees' attitudes and behaviours which are not always necessary to accomplish job tasks, but are needed for effective and proper functioning of work teams and the organization.²⁶ The extent of engagement of a job incumbent in activities that define organization's social, structural and psychological contexts stimulates task activities that could facilitate organizational effectiveness³. Work behaviours such as team work, demonstrating extra efforts, showing enthusiasm, etc. which do not directly lead to goal accomplishment through the core technical performance but essentially contribute to the organization in positive ways are tagged organizational citizenship behaviour, contextual performance or extra-role behaviours and has become an essential aspect of overall job performance⁹.

Contextual performance is defined as including activities that improve organizational efficiency by influencing the social, psychological, and organizational environments and acting as a catalyst for task activities²³. It differs from task performance in that it consists of tasks that are not part of the formal job description but yet indirectly improve task performance, which improves an organization's overall performance. Hence, unlike task activities that are meant to lead, build and enhance the technical core itself, the activities embedded in contextual performance enhance the creation social environment necessary for

the functioning of an organisation's technical core³¹. The civic roles, support, imitative and extra efforts exhibited by employees as contextual elements of performance is regarded as being significant than the technical competence displayed³². With the growth of knowledge and information economy, employers' expectations of employees are increasing, and the competitive advantage of businesses depends more on workers who go above and beyond²⁶.

Five types of contextual activities or civic behaviours in Borman and Motowidlo model included "persisting with enthusiasm and extra effort to complete one's task activities; volunteering to carry out task activities that are not part of one's job; helping and cooperating with others; following organizational rules and procedures; and endorsing, supporting, and defending organizational objectives"³³.

The explanations of contextual performance hinges on three areas of research which offer the framework employed to deduce elements of contextual performance. These are organizational citizenship behaviour, prosocial organizational behaviour and the model of soldier effectiveness²³. Organizational citizenship behaviour is defined as "extra-role discretionary behaviour intended to help others in the organization or to demonstrate conscientiousness in support of the organization"³⁴. Prosocial organizational behaviour is "behaviour performed with the intention of promoting the welfare of individuals or groups to whom that behaviour is directed"³⁵ and the model for soldier effectiveness emphasizes determination, teamwork, allegiance as performance factors outside technical proficiency³⁴.

The term organizational spontaneity which encompasses behaviours like "helping co-workers, protecting the organization, making constructive suggestions, developing oneself and spreading goodwill" was used to define extra-role and voluntarily motivated behaviours which improve organizational effectiveness. It is directly related to prosocial behaviour, such

as aiding coworkers, organizational citizenship behaviour and behaviour that benefits the workplace⁹.

Contextual performance has been conceptualized in many ways. Two of such conceptualizations on the basis of effective functioning of an organization are *stabilizing* and *proactive* contextual performance¹⁵. Stabilizing contextual performance are organisational citizenship behaviours which are described as optional since they are not a part of the formal roles of an employee contract and are not enforceable or even recognized and rewarded by the formal reward system. Proactive contextual behaviours cover such behaviours that are necessary for the implementation of changes in an organisation or the adoption of innovations in work processes and procedures^{15,36}.

The fast-changing and uncertain condition of most modern workplaces make it important for people and organisations to anticipate challenges, identify opportunities and take action to appropriately deal with the challenge or explore the opportunities beneficially³⁷. Hence, proactive behaviour and initiative are considered critical predictors of organizational success³⁸. Proactive behaviours involve personal initiative (often regarded as an active self-starting approach to work and going beyond formal requirement) and taking charge which denotes employees' exhibition of self-initiated and future oriented plans and efforts to challenge and improve current situation. It implies employees' ability to voluntarily take steps and efforts to implement functional changes within the organisation³⁹. It is described as the "anticipatory action taken by employees to impact themselves and/or their environments⁴⁰ and it portrays three key elements – it is self-starting, which means that it originates not from external instructions but from individuals' own will; future-oriented, which means that proactive behaviour is not reactive but involves acting advance of future situations; and it is change focused, which means that proactive behaviour aims to create

change rather than maintain the status quo. In a nutshell, proactive behaviour involves making things happen³⁷.

The components of contextual performance were also classified into two by VanScotter and Motowidlo in 1996 as job devotion or dedication (self-disciplined, motivated actions such as working hard, taking the initiative, and adhering to the rules to support organizational objectives) and interpersonal facilitation (cooperation, consideration, and helpful acts that support coworkers' performance)²³. Between task and contextual performance, there are three key differences. First, while task performance is job-specific, contextual performance activities are equivalent for practically all jobs. Secondly, task performance is in-role behaviour and is part of the formal job description, whereas contextual performance is extra-role behaviour, discretionary, not enforceable, and does not require formal rewards. Thirdly, task performance is predicted primarily by ability, whereas contextual performance is primarily predicted by motivation and personality³⁹.

It is worth of note that not every separate and distinct instance of organizational behaviour will lead to increase in organisation's performance outcome, but the accumulation of the different behaviours will enhance the desired functioning of the organisation as a system³⁶.

It is crucial to note that in a team situation, personality traits like conscientiousness, extraversion, and agreeableness could predict contextual performance because contextual performance can occasionally be directed at other employees⁴¹. while other individual characters and traits such as dependability, work orientation and cooperativeness have also been identified as having relationship with contextual performance⁴². Organisations efforts to acquired best team of workers should identify the traits of prospective employees who will display reasonable level of contextual or extra-role behaviour order to select employees who will engage in contextual performance, employers need to predict contextual performance⁴³.

Changes within work organisations are inevitable and are seen in the dynamic nature of business environments, evolving techniques, technology and processes, and the trend for change in the experience and expertise of workers⁴⁴. As a result, scholars had increasingly recognized the need to advance the earlier models of job performance to incorporate other areas in which responsiveness to changing job and worker demands are characterized⁴⁵. For instance, adaptive performance was not captured in the taxonomy of work performance of Campbell and colleagues, but the non-static nature of work environment and the changing characteristics of work features compelled the need for adaptive workers. Since modern enterprises feature jobs that are constantly changing in terms of conditions and requirements and demand is increasing for flexible and dynamic set of workers who will respond to changes, and handle same in positive ways and adapt to the dictate of the changing pace,⁴⁶ a better understanding of such change-enabled performance requirements becomes important⁴⁷. This need for adaptability is depicted by adaptive performance in the workplace⁴⁸.

Adaptability has been used as a label for enacted behaviour as well as individual differences in willingness or ability to adapt⁴⁹. Other terms used to describe adaptive performance include adaptability, adaptation, adaptive expertise, adaptive transfer, and performance adaptation⁴⁷. Adaptability is defined as the readiness to cope with the predictable tasks of preparing for and participating in the work role and the unpredictable adjustments prompted by changes in work and work conditions⁵⁰. It is referred to as a person's ability to adapt or adjust to the environment in which he or she lives⁵¹ and is generally seen as being related to changes and the capacity to deal with such changes and adapt to it. However, adaptive performance encompasses more than the idea of adaptability to cover individual capacity to behave in a certain way to actually demonstrating the capacity through performance in adaptive manner⁴⁸. It embodies a set of behaviours rather than simply the ability or intent to adapt⁵².

Adaptive performance is described as task-performance-directed behaviours which individuals enact in response to or in anticipation of changes relevant to job-related tasks. Task-relevant changes here are considered to include changes in the nature of job-related tasks, the methods (both individual and interpersonal) for accomplishing tasks, and the ways that effectiveness is evaluated⁴⁷. In modern organisation effective performers and most times adaptive and therefore able to anticipate future needs and blend to the changing job requirements through upskilling in new technologies and procedures, knowledge acquisition on new task and attitudinal change for emerging roles⁴⁵. As a result, the idea of adaptive performance to explain how individuals adapt to changes in organizational, emergence of new cultures and technologies have been explored in literature^{48,53}. Thus, management experts and human resource specialists consider adaptability as a dynamic capability which allows for smooth communication and synergies in line with compelling situation⁵⁴. Measurement of adaptive performance is consistently correlated with cognitive capacity and personality qualities like openness to new experiences and has given clear definition of the key predictors of such performance³³.

Like other forms of job performance, such as task and contextual performance, adaptive performance appears to be a multidimensional concept. The eight-dimensional taxonomy of adaptive performance developed by Pulakos and colleagues which were presented to exist across many different types of jobs comprises handling emergencies or crisis situations; handling work stress; solving problems creatively; dealing with uncertain and unpredictable work situations; learning work tasks, technologies and procedures; demonstrating interpersonal adaptability; demonstrating cultural adaptability; and demonstrating physically oriented adaptability⁴⁸. In the same way, adaptive performance was treated as a distinct component or aspect of individual employee's performance which shows the extent to which the individual adapts to changes in a work system or work roles and comprises of attributes

such as creative problem solving, handling unpredictable situations of work, learning and coping with new tasks, tools, processes, technologies, and adjusting to changes in culture, workplace environment, work teams and individuals⁵³. A revised measure of adaptive performance shows nine dimensions which include “applied creativity, adaptability in crisis situations, cultural adaptability, emotional control, emotional perceptiveness, flexibility of opinion, openness to criticism, proactive learning, and dealing with ambiguous situations”⁵⁵. The need for people possessing and exhibiting good combination of some or all of the dimensions of adaptive job behaviours is characterized by evolving work environments⁵⁶.

Studies on adaptive job performance have revealed different perspective on the development of adaptive behaviour which are either based on the personality traits and learning ability of the employee to demonstrate behaviours that covers the components of the taxonomy of adaptive behaviour. A model of adaptive performance specifies the influence of work-related changes on the routine work behaviour of an employee and how an individual recognizes and handles the change using appropriate adaptive behaviour. Adaptive performance start from the routine work behaviour currently exhibited by the employee, then the interplay and influence of work-related changes that may come from internal or external work environment. This leads to the incumbent recognition and awareness about and the need to handle the change. As a result, the employee internalizes and evaluates the change in the context of his work and choose an appropriate adaptive behaviour to treat and respond to the change in a manner that contributes to the organisational goal⁵⁷.

The foregoing shows that the operations and activities of modern enterprises which take place in dynamic environment result in the need for organizations to redefine the expectations for their human capital which serve as the most viable and indispensable resource for determining the possibility or otherwise of achieving organisational goals³⁰. An

organisation's ability to integrate, build, and redesign its human competencies to address rapidly changing environment is referred to as dynamic capability⁵⁸. Sensitivity to changes and adaptation to changes are parts of the dimensions of dynamic capability and are adapted from adaptive performance. In essence, "managers of organizations need to attend to, monitor, and respond to contingencies in their environments for adaptive performance to be beneficial" and sensitivity to changes together with the ability to adapt to them are key factors⁵². In addition, proactivity and continuous learning which are important to foresee and respond to work-related changes are essentially key to adaptive performance^{30,59}. Accordingly, adaptive performance encompasses the proactive or reactive performance behaviours which an employee manifests towards changes in job-related matters. Such behaviours are important to enhance performance or prevent undesirable fall in performance standard and level which may be prompted by changes job design and redesign, new roles, new skills and competences, etc⁴⁷. This reveals the capacity of a worker ability of an employee or group of employees to modify their behaviours in response to the change⁶⁰.

The definition of job performance as scalable actions, behaviour and outcomes that employees engage in or bring about that are linked with and contribute to organizational goals reveals that job performance encompasses not only the employees' behaviours that positively contribute to organizational goals but also includes such behaviours that could undermine the achievement of organisational goals achieving organizational goals are included in this definition⁵⁹. While the positive aspect of work behaviour deals with task and contextual performance, the negative work behaviour constitutes counterproductive behaviours⁶¹. The third domains of Campbell performance model, in addition to task performance, contextual performance or organizational citizenship behaviour, is the avoidance of counterproductive work behaviour⁶².

Counterproductive work behaviour refers to employee voluntary behaviours that harm organizations or people working in the organizations⁶³. The construct covers “employee behaviour that goes against the legitimate interests of an organization” and can harm organizations or people in organizations including employees and clients, customers, and so on⁶⁴. It is a destructive behaviour that harms either employees or the organization as a whole⁶⁵. Maintaining personal discipline – a dimension in the cluster of performance behaviours of Campbell directly relates to the avoidance of counterproductive behaviours and is described as the degree to which negative behaviours, such as alcohol and substance abuse at work, law and rule infractions, and excessive absenteeism, are avoided⁶⁴. Several definitions of counterproductive work behaviour show that it is “intentional behaviour on the part of an organizational member viewed by the organization as contrary to its legitimate interests” or “volitional acts that harm or are intended to harm organizations or its people⁶¹.”

The construct space of counterproductive work behaviour includes employees engagement or avoidance of behaviours such as absenteeism, abusive supervision, aggression, blackmail, bribery, bullying, destruction of property, discrimination, drug use, extortion, fraud, harassment, industrial espionage, interpersonal violence, kickbacks, lying, sabotage, sexual harassment, social loafing at work, social undermining, tardiness, theft, tyranny, violations of confidentiality, violence, and withdrawal behaviours⁶¹. Accordingly, counterproductive work behaviours were grouped into five general categories of – “withdrawal, abuse, theft, sabotage and production deviance⁶⁵. Withdrawal means that a particular worker is not working for the number of hours he or she is expected to work and this can take the form of tardiness and absenteeism. Abuse in the workplace might be gossiping about a coworker, abusing a coworker verbally, sexual harassment or any other form of demeaning actions that are objectionable to others; theft include taking possession of critical items that hinder other employees from effectively carrying out their job jobs; sabotage means destroying

organisational equipment undermining employer's reputation, revealing trade secrets with a view to damaging productivity; and production deviance occurs where a worker deliberately and consciously perform his functions of roles wrongly or imperfectly⁶⁵. These behaviours are counterproductive since they are capable of detracting from the productive behaviours at work, can disrupt work-related activities, could breach social rules and norms, and could deviate from desired standard of behaviour in an organization⁶⁶.

Motivation for counterproductive work behaviour has been related to issues like protest, revenge, aggression⁶⁷ and even thrill-seeking and status enhancement⁶⁸ which could be tied to injustice negative emotions, anger, frustration, poor workplace conditions⁶⁹. Measuring job performance constructs involves three features that can be identified with regards to specific indicators - they should be controlled by the person performing them, reflect what employees do in work situations, and scale each employee's net contribution to reaching organizational goals⁶¹. The feature stipulating behaviours being under the control of the employee shows that engagement or avoidance of counterproductive work behaviour is volitional or intentional and could be a response to the motivation for such behaviours. For example, to qualify as counterproductive, the employee must purposely avoid using safe equipment or procedures, thus behaving in a reckless manner which results in injury, even though the injury itself was not desired. Alternately, the individual might engage in the behaviour for the specific purpose of causing harm, for example, to damage equipment⁶⁷.

Human resources sections and departments in organisations perform array of functions towards ensuring effective acquisition and utilization of human capital. One of such functions which is key to the management of the organisation's human resource is regular evaluation of employees' performance to ensure that the employees have a feedback and good understanding of their strengths and weaknesses and find possible means of improving⁷⁰.

The objective of organisational policy and practices in performance appraisal is basically to ensure objective and appropriate measurement of employees' performance⁷¹. This literally shows why performance of individual employee and work team is being measured in an organisation and forms the basis of a correct and true performance assessment capable of providing the pedestal for judging and measuring an employee's potential^{72,73}.

Performance measurement refers to the process of evaluating how well organisations are managed and the value they deliver for customers and other stakeholders⁷². It covers the evaluation of the main tasks carried out and the overall accomplishments of an employee in a given time when compared with the set standard of performance⁷⁴. It is also defined as the process of collecting, analyzing and/or reporting information regarding the performance of an individual, group, organization, system or component⁷¹. The quality of the task accomplishments, meeting up with the desired standards, time spent in reaching the standard, the cost incurred are essential ingredients for performance measurement and these serve as the basis of performance appraisal⁶⁹. Good approach to measuring of workers performance also encompasses the provision of timely feedback and reviews of performance in line with the set goals and standard of performance with a view to solving the observed problem bothering on performance. Performance measurement therefore remain integral in a workplace as it provides a platform for the bosses to measure performance of their subordinates and determine whether they are meeting the set standard and expectations of the organisation⁷⁵.

In measuring performance, several factors are employed for gathering the assessment feedback from both the assessors and the employees⁷⁶. The method of performance measurement varies according to the type of organisation, the culture, workplace environment, and the various forms of tasks in which the employees are engaged⁷⁵.

Whereas, any perspective used in the rating of an employee's performance should reflect appropriate combination factors that can reveal the complete and overall performance of the employee as any measurement of performance based on only one or some factors could provide incorrect results, leaving bad impression for the organisation's performance evaluation system⁷⁷. Hence, a good combination of measures with balanced criteria and methods that enable fair and accurate assessments of employee performance should be adopted for the purpose of measuring performance of the workers⁷⁵.

Performance measurement helps to see that best work practices are discovered and improved, work processes are ranked against the performance of similar firms, available resources are appropriately and profitably deployed and strategic activities are tailored towards the achievement of organisational strategic plan. Such performance measurement can foster decision on employees' compensation, enhance status, advancement and other opportunities⁷⁵. Identifying key performance indicators for employees' performance measurement will be a good attempt to institute an objective view on workers' performers. In this regard, key performance indicators which can provide lead for understanding individual and team performance include employee engagement, energy and enthusiastic attitude, level of influence, quality of work, people skills, technical ability and result-driven orientation⁷⁸.

Different methods are employed by organisations to measure the performance of their employees. Such methods include graphic rating scales, management by objectives and forced ranking depending on the job type, organisation and expected results⁷⁵.

A graphic rating scale is a performance appraisal method that lists desired traits and behaviours for each role and rates workers on each of those roles on a numbered scale. The attributes might include punctuality, quality of work, job knowledge, teamwork, accountability, responsibility, etc. which are to help an organization determine employee's

performance levels, increase efficiency and productivity, make salary adjustments or promotions and help managers obtain quantitative data regarding various employee attributes in relation to a specific job description⁷⁵. The rating scale feature of a list of duties, performance standards and a scale usually from 1 to 5 for rating employee performance and to help employers quantify the behaviours exhibited by its employees. Graphic rating scales are ideal for work settings that are production-oriented as well as for other fast-moving and evolving workplaces. However, it can be completed quickly, which is advantageous for managers of large departments or other competing jobs who have limited time for workforce management responsibilities. This way of evaluating employee performance takes preparation just like other methods do. By comparing these assessments across employees and stakeholders, overall performance can be measured and improved in terms of quality, teamwork, sense of responsibility and compliance to ethics⁷⁵.

Management by objectives is a strategic management model that aims to improve the performance of an organization by clearly defining objectives that are agreed to by both management and employees. According to the theory, having a say in goal setting and action plans encourages participation and commitment among employees, as well as aligning objectives across the organization⁷⁹. It refers to the process of establishing goals and outlining the roles and responsibilities of employees so that they are aware of their responsibilities at work and also assists them in developing a plan of action that will help them deliver at their peak to meet their goals within the allotted period. Management by objectives is a valuable tool for gauging the effectiveness of workers in managerial or supervisory roles. Major benefits of management by objective, according human resource experts, are enhanced motivation of employee, improved commitment and better communication between management and employees⁷⁶.

Forced ranking compares an employee's performance to that of their peers instead of comparing an employee's current evaluation period to their past performance, thus creating a competitive work atmosphere⁷⁶. Forced ranking is seen as a controversial process in which employees are evaluated in comparison to one another rather than according to performance standards. This makes many executives, academics, researchers, consultants, and human resource specialists to voice concerns about the practice, which has led to expensive legal disputes, negative press, and low morale at certain firms where forced ranking has not been successful or has been successful at a high cost⁸⁰.

In organisations and industries, the measurement and analysis of individual-level performance serve the following five major functions - define productivity and direct behaviour, monitor performance and provide feedback, diagnose problems, facilitate planning and control and support innovation⁸¹.

The specific metrics to be employed will depend much on the goal of the measurement system. For instance, if the measures are simply to be used for planning and control, the inputs and outputs may be erroneous aggregate numbers that serve as guidelines for establishing schedules and future capacity needs. However, if the measurements will serve as the foundation for a system of employee evaluation that results in bonuses, pay increases, layoffs, and disciplinary actions, the elements of the inputs and outputs use for the measures should be more precise for shorter time periods and must not include elements outside the worker's control⁸².

Measuring performance and managing behaviour calls for further elucidation because of its significance to managers in the efficient running of their business units and to researchers in developing appropriate framework for their research to illuminate human behaviour at work. The goal of an organization is to align employee behaviour with organizational objectives;

thus, management must devise policies that will encourage organizationally desired behaviour. Many incentive programs used by organizations are based on productivity or other performance indicators that don't align with their objectives. For instance, the number of lines of code created every hour may be tracked and compensated for by programmers. Accountants and maintenance staff may be judged on the quantity of reports they create and the frequency of equipment overhauls, respectively. Maximization of the measured criterion would probably be detrimental to the organization in each of these cases and many more⁸³.

Employee personalities vary, and these variations affect how they respond to the internal and external forces that exist in any firm. For instance, the office or work environment has been described as having observable enormous influence on the performance and mental state of most employees since a large part of the daily active hours are spent there. This in a way directly affects performance of individuals in the assigned jobs and consequently, the organization as a whole. As a result, it is crucial for a company to pinpoint the causes of an employee's poor performance at work and implement the necessary changes. Personality or ego conflicts, stress, demanding workloads, insufficient resources, subpar leadership from upper management, a lack of clarity about roles and responsibilities, a lack of transparency, a clash of values, poor team member pairing or selection, outdated technology, harassment and perceived discrimination, subpar performance management, and deteriorating health conditions are some of the things that make employees perform poorly at work⁸⁴.

The number of complaints that employees have at work can be significantly decreased by taking into account the relevant elements and enacting strict adjustments. As a consequence, the performance of the workforce working for a single goal with increased passion will be improved⁸⁵. Employee performance is always seen in terms of how the employee fulfils their

duties and also behaves in the workplace and it fundamentally important to the achievement of objectives⁸⁶.

No firm can deny the necessity of ensuring and improving employee performance. If you own a firm, try to avoid doing the boring and monotonous tasks as much as you can. You will unavoidably come into elements that could impair or weaken performance, nevertheless. These elements must be recognized in order to prevent their emergence or aggravation. But avoidance is insufficient; instead, it is always best to take a proactive approach⁸⁷.

Although it is not always simple, maintaining and improving performance at work may be distilled down to a few straightforward ideas. The necessity of employee motivation, managers' proactive involvement and the usage of technology and systems that significantly aid employees in performing their jobs more efficiently are the three key factors that must constantly be taken into account. Success will be recorded on employees' if plans are thoroughly implemented and the ideas are kept in mind⁸⁷.

The secret to an organisation's long-term success lies in retaining the greatest employees who serve as the bone of the firm. To facilitate desirable level of performance, organisations should identify and address poor performance issues, permit collaborative learning, recognize and reward employees, utilize technology, foster a positive work environment, aim high but set clear goals, create a healthy feedback culture, and celebrate accomplishments are some strategies that can help an organization stay competitive⁸⁸.

To stay on top, managers and supervisors in work organisations should invest in their work teams and turn them into the most valuable asset. It takes time and effort, but it is worth the efforts^{87,88}.

2.1.2 Digital Transformation

Digital transformation has become a topical and popular subject in all sectors all over the world as it has engendered series of changes in the way organisations, industries and people operate and carry out activities in customer relationship management, service delivery, production processes, internal control, value creation, etc^{89,90}. Attention is therefore being given in research and in practice to various changes in business, organisations and society as a result of increased adoption of digital technologies. This rising deployment of digital technologies, as a consequence, triggers a myriad of major changes conceptualized as digital transformation in organisational and business activities, as well as in governance and society⁹¹.

The concept of digital transformation was introduced around 2000 but became popular among researchers and practitioners after 2014⁹². The root of digital transformation can be traced to digitization and digitalization which are processes of converting analog data and methods into digital variants and the adoption of digital technologies at a large scale for business and organisational operations or activities respectively⁹¹.

The acquisition and integration of a number of digital tools and resources including mobile networks, Internet of things, big data, robotics, cloud computing, web resource, etc. indicate a drastic revolution of digital transformation and innovation in business processes, organisational activities, service model, production operations and even activities of government and government institutions⁹³. As business and organisations' environments are constantly being changed by technology and innovations, bringing about new developments, opportunities as well as challenges, efforts are being made by modern firms to adapt to such changes, to take advantage of the opportunities and also protect themselves from likely threats. Such technological changes and responses are better described as digital

transformation. The purposeful rapid and continuous engagement of organisations in cycle of digital innovation processes and outcomes to develop or improve product offerings and services depicts digital transformation⁹⁴.

Digital transformation is concerned with new developments and models that require the review of existing methods of providing goods or services, redefining of operational activities, relationships among firms, stakeholders, customers, etc⁸⁹. It is referred to as the integration of digital technologies into an organisation activities and business operations⁹⁵ or the processes whereby organizations engage in constant digital innovation to enhance products development and improvement as well as services and business patterns⁹⁴. Digital transformation is a term used to cover the aggregate implementation of several digital innovations bringing about new actors, system, culture, practices, norms, and beliefs that modify, supplement or replace existing ones within organizations, businesses, industries or fields⁹⁶ or the exploitation of digital technologies provides organisations with opportunities to integrate their offerings to functional, organizational, and geographic boundaries⁹⁰. It is also described as a sustainable, company-level transformation via revised or newly created business operations and business models achieved through value-added digitization initiatives, ultimately resulting in improved profitability⁹⁷. Usually, digital transformation happens deliberately and progresses through an organisation's operational, tactical and strategic activities in terms of work practices and processes, business strategies and methods⁹⁸ by integrating emerging digital evolutions and technologies into non-tech organisations, businesses and industries⁹⁹. It is simply a process that aims to improve by triggering significant changes to its properties through combinations of information, computing, communication, and connectivity technologies causing major and tactical responses from organizations towards changing their value creation paths and organization's structure, culture, and leadership in that direction¹⁰⁰.

Digital transformation is a form of transformation which deals with such changes that are introduced by digital technologies and causing responsive changes in business model, product and service offerings as well as overall structure of an enterprise¹⁰¹, the processes of complete organizational change relating to operations, value creation and appropriation which covers the digitization of all aspects of products and services, sales, marketing, communication, interaction with customers, clients and stakeholders, etc. in digital –enabled business models¹⁰². Digital transformation involves the adoption and implementation of technology for rapid and drastic improvement in the performance of an organisation or to facilitate the activities of a firm¹⁰³. Changes depicted as digital transformation primarily concerns technology and organizational change and the interplay of information technology and organizations and how information technology is designed, developed, used, and their intended and unintended outcomes on individual, work team, and the overall organisation¹⁰⁴ and are mostly initiated and driven by managers' strategic intent to leverage opportunities and respond to threats in their business and technology environments⁹⁴.

Transformations in organisations embracing digital innovation happen drastically and affect the core value proposition¹⁰⁵. Such is reflected in the constant changes of information and communication hardware into seamlessly little devices despite the ever-increasing capacity for processing, storage and management which are instrumental in the innovation and transformation efforts of organisations and business of different forms and nature^{106,107}. The rapid development and adoption of emerging digital technologies ultimately change the business competition and offering platforms by changing organizations' status quo and operating norms. As a result of the need for new types of resources and work procedures to offer emerging products and services, organizations embrace change in operational structure to support new forms of value creation enabled by digital technology and captured in digital

transformation which may even require an organization to review its mission and vision as well as culture and identity⁹⁴.

Digital transformation is rooted in IT-enabled organizational transformation as information technologies have become important factors determining organizational processes and outcomes¹⁰⁸. Hence, digital technologies beaming disruptive features and systemic cross-organizational effects on which organizational changes are pivoted^{109,110}. As digital transformation is described as the essential transformation of business spheres through the use of modern technologies, the interconnection of all economic sectors and the adaptation of economic players to the emerging digital economic realities of the digital with a significant impact on the society¹¹¹, seeing digital transformation as the use of technology to improve organisational activities and outcomes covers only a part of the process of transforming an organisation or business digitally as such technology adoption is expected to create additional value for the organisation, its products or service, customers or clients, and other stakeholders. Hence, digital innovation in production, goods, services, business model, operations and procedures and resultant changes which firms will have to experience and adapt to in an effort to accommodate the new and emerging processes and their outcomes are basic changes in digital transformation⁹⁴. The goal is creating value in the emerging business platforms, enhancing business processes or organisation's procedures in a way that impinge on customers' experience and in the long run, facilitate the development of structural fitness and capabilities capable of moving an entire organisation⁹⁷.

A flow model of digital transformation describes the drivers, phases or levels, and imperatives of digital transformation¹¹². The emerging *digital technologies* - big data, internet-of things, robotics, world wide web, mobile phones, office assistant, cloud and quantum computing, virtual reality, biometrics, etc. and digital platforms necessitate the need

for organization to embrace digital transformations. These new technologies brought up *radical competition* among firms and making them seek ways to do business globally with the use of digital tools^{113,114}. The convergence of information technologies, networks of telecommunications and digital technologies are changing the structure and dynamics of businesses and fostering dynamic digital organisations and economy⁹³. *Digital Consumer behaviour* in terms of purchasing habit and preferences is the third factor pushing digital transformation in businesses and organisations¹¹⁵. Observations on consumer factors reveal significant interest of the consumer in online purchases, customized products, online complaint and feedback opportunity, preview and review of goods which are made possible and facilitated by smart devices, phones and internet^{116,117}.

There are three phases of digital transformation - digitization, digitalization, and digital transformation¹¹². *Digitization* is the creation of digital representation of physical material or objects, such as documents, images, etc. It means converting something non-digital into a digital format for representation¹¹⁸. *Digitalization* depicts the deployment of digital devices that brings about changes in existing business activities and processes^{119,120}. *Digital transformation* is the most ubiquitous stage which affects the entire organization and results in the creation of new business opportunities and organisational models leading to changes that are customer-centric¹¹², backed by leadership, driven by radical challenges to corporate culture, and the leveraging of technologies that empower and enable employees¹²¹. Digital transformation is broader than moving to digital business (digitalization), it requires far more structures and plan to be implemented¹²⁰.

Following the phases of digital transformation in the flow model are the organizational structure, growth plan, KPIs, and goals that are part of the strategic imperatives of the digital transformation. *Resources* are organisation's assets (physical intellectual endowments) and

capabilities (human, information, or organizational capital) needed for successful implementation of digital transformation. Essentially, firms pay attention and redefine its practices and policies on “digital assets, digital agility, digital networking capability and big data analytics capability” for effective transformation¹¹².

Beyond the digital resources, another compelling factor is the *organisational structure* to accommodate and adapt to the transformation¹²². Organisational structure that will support effective digital transformation will feature separate business units, agile organizational forms, and digitally capable and functional areas¹¹². *Digital growth strategies* involve the use of digital platforms to implement digital transformation and take optimal advantage of the offerings. Such strategies will require good, stable and reliable digital platforms and tools to enable organisations, business entities and individual explore the possibilities offered by digital transformation¹²³.

Firms that are transforming digitally need to have compatible metrics for evaluating their performance in the deployment of digital tools, resource and processes. Such measure will indicate adherence, conformity and realization of growth objectives of digital transformation using key performance indicators¹¹². The widening trend in internet applications, smart resources, value chains and increasing use of artificial intelligence and other emerging digital platforms engender more innovation and generating gains and positive impact on organisations and business growth¹²⁴.

Digital transformation is an ever-changing and multifaceted process, requiring high level of adaptation and commitment to make it successful. The different dimensions of digital transformation are constantly emerging, causing changes in business, organisations and societies¹²⁴, essentially involving economic elements - companies, business models, processes, relationships, products, etc. It is an organisational process integrally connected

changes in the overall organisational process or business model due to adoption and deployment of digital technological resources¹²⁵. The essence is to offer support to organisations to maximize their core competences and build new ones capable of making the organisations attain competitive advantaged position⁹⁵.

The explosion of digital technologies triggers fundamental reorganization, realignment and possible replacement of organisation, business, societal, manufacturing and market organs and thus causing drastic changes in the established activities and models resulting in the growth and success of organisations that embrace the transformation⁹⁴.

Two propelling factors of digital transformation are *technology diffusion* and *digital disruption*^{126,127}. Technological diffusion is “the process by which the market for a new technology change over time and from which production and usage patterns of new products and operational processes and activities result”¹²⁸ making the industry players and users of the technology to align with the new development. Digital Disruption is based on two theoretical platforms: *disruptive innovation*, that is, innovations that lead to the decimation of another entity, such as a product, a company or even an industry and *digital innovation*, recombining digital technology to create novel outputs¹²⁷. Digital disruption is the fast-emerging processes in which digital innovation changes the traditionally known practices and procedures for value creation by separating or merging processes, tools and resources or generating new ones⁹⁴. It is also described as the alteration of a domain-specific paradigm due to the digital attributes of an innovation” or “changes to the established modalities of operation or functioning in a given context due to the influence of digitalization¹²⁶.

Digital transformation in itself is not an end and the journey is to make an organisation digitally matured¹²⁹. Digital Maturity is used to depict the position of an organization’s digital transformation in terms of what the organisation has done and where it has reached in

the digital transformation efforts¹³⁰. The automation of activities and business processes, decentralization of work functions, optimal use of human capacity, reduction of operating costs and creation of more value to stakeholders are a few of the inherent benefits derivable from digital transformation efforts both on production and service processes¹³¹.

Digital maturity is the ability of a corporation to respond appropriately to developments in the digital environment, incorporate digital innovations into business operations, and increase staff digital competency¹³². It shows the level of an organization's ability to create value through the deployment of digital technologies and serve as a salient indicator of digital transformation outcome in the organisation. Organisations with high digital maturity have the competitive advantage over those with lower maturity index in terms of profit, market share, cost efficiency, improved work or service quality to facilitate and stakeholders' experience and satisfaction¹³³. In the context of the digital transformation of business models, technological potentials that enable and facilitate digitalization are crucial⁹⁷.

Organisations embark on digital transformation processes to encompass all aspects of their business or services by integrating new technology to improve their operations, redefine the way they operate and improve performance¹³⁴. Such transformation journey is leveraged on the organisations' readiness, digital maturity and employees' expertise to achieve active usage, optimal user engagement level, work performance, productivity and cost benefits¹³⁵. All transformation models have four points in common which are technology, organization, people and processes which are considered as must for effective digital transformation¹³⁴.

Digital transformation metrics are essential indices of the progress of digital transformation efforts and how well digital transformation strategy of an organisation is effective. Digital transformation framework comprises of many component and dynamic parts as much is usually required to drive successful digital transformation¹³⁵. Mere technological changes do

not depict the content and paradigm of digital transformation, it is a transformation that covers organizational, behavioural management, ideals and cultural changes involving significant modification of processes, approaches, strategies, practices and upskilling of competence in taking advantage of digital technologies to fulfil goals, satisfy needs and improve user or customer experience from any location and at any period of the day¹³⁶.

The transformation of organisational activities and processes in digital ways reflects the *digital intensity* and *transformation management intensity* of an organisation. The former consists of specific set of elements deployed by the organization in the form of strategic assets, digital elements, capabilities and investments which are needed to drive the transformation and the latter serves as a pedestal on which leaders can ensure that the components of digital intensity are adequately utilized and that there is required competence and culture to achieve the transformation¹⁰³. The maturity shows strategic dynamism, customer centricity, digital culture, talent and skills innovation and lean delivery, big data and artificial intelligence and technology leadership¹³². The pivots that can be used to determine an organization's efforts and drive in reaching digital maturity will comprise a flexible and secure infrastructure, data mastery, digitally savvy, open talent networks, ecosystem engagement, intelligent workflows, unified customer experience and business model adaptability¹³⁷.

An assessment of digital transformation level of an organisation will reveal the organisation's digital maturity showing where the organisation is in the journey of digital transformation¹³⁸. Such assessment will reveal and describe the stages of digital transformation in an organisation showing how the organisation's maturity, strengths, and weaknesses could be evaluated¹³⁹. Some models of assessing digital maturity which explain the stages of transformation are based on a framework developed by Venkatraman in 1994 which was used

to describe the five stages of IT-enabled digital transformation – localized exploitation in which standard tasks are digitized without changing the business process itself, internal integration between the different IT solutions, redesigning the business processes to fully leverage the IT potential, redesigning the business network, and redefining the business scope or model⁹¹. While there is a framework which comprises digital products, digital decisions and processes, and digital business models¹³⁹, other dimension-based frameworks divide an organization or business entity into segments in which the maturity stage of each is assessed^{91,129}.

Authors and researchers have explored some constructs such as digital technology, digital capability, digital maturity, technological innovation level, organisational agility to describe the level of digital transformation in an organisation^{140,141,142}. Generally, the level of digital technology adoption and the effectiveness of digital transformation goal are reflected in the organisations' investment in technological tools in addition to the competence and mastery of digital skill by the employees who will drive the transformation journey^{143,144}.

Indicators drawn from a wide range of areas - education, business, innovation, commerce, governance, economic and social outcomes on the likely indices of measuring digital transformation should encompass the assessment of technologies underpinning the transformation, digital agility of the organisation or business, data set/flow and management, expertise and skills deployed, digital environment, digital leadership or governance, etc. and their impacts on performance, social wellbeing, service delivery, economic indicators¹⁴⁵. In the same way, a summary of the integrated index of digital transformation headline index shows that organizational management, technology adoption, environmental economy, digital transition, digital ethics and compliances are important for assessing digital transformation¹⁴⁶. As identified in technology enactment and digital era governance frameworks, organizational

culture and individual employee's competencies and mindset are important for digital transformation. A change in organisations' culture and posture for re-engineering of business or service delivery processes as well as individual mindset and competence are important condition to make digital transformation successful¹⁴⁷.

The global benchmark on digital transformation index is considered capable of revealing digital transformation levels of organisations and how they are performing in the digital age. This benchmark recognizes digital skills and talent of the workforce and how these are shared across business or organisation's functions; the integration of digital goals into departmental objectives, investment in technology and use of cloud environment; and how organizations are addressing digital transformation strategy to stay competitive and succeed in the increasingly digital era¹⁴⁸. The key areas of interest or spheres of concern that define the coverage of digital transformation are customers/users/consumers of products or services, competitors/other organisations, need for data management, innovation involving new tools, processes and competent workforce and value creations from the adoption and implementation of digital transformation¹⁴⁹. Hence, organisations focus on digital technologies, people's competence to explore the functional use of the technologies, collaborative efforts and capacity to redesign work flow and processes to facilitate digitally-driven changes and outcome to the benefit of the organisation and its targets constituents¹⁵⁰.

The concept of dynamic capability explains that the design and operation of a business or organisation are dependent on the dynamic capabilities of the organisation¹⁵¹. This could be seen as the subset of competence/capabilities, which allow the firm to create new products and processes, and respond to changing market circumstances to integrate, build and reconfigure its resources, processes and competences to address, craft, refine, implement and/or in some cases, to bring about changes and transformation in the business or

organisation's environment¹⁵². Accordingly, key metrics of digital transformation which should be evaluated on a regular basis to ensure that digital transformation is appropriately implemented should include organization agility, digital resources and tools, flexibility of operations, value creation as measures to gauge the success of the change in terms of organisation investment and goal, service efficiency, product value etc.^{101,153,154}. Similarly, measuring digital transformation encompasses active usage metrics in terms of level of technology adoption, use of digital tools, engagement and participation level from top down to others, value created from the cost of digital initiative¹³⁵.

The above-stated factors are critical to digital transformation in business and service sectors as organisations' efforts in this change process are channeled to realign and adapt existing technologies, processes and structures; to develop human resource competence for digital innovation; and to learn, discover, embrace and adapt to emerging digital technologies while the interplay of digital technologies, innovation, employees' competence and skills required, are hinged on organisation's capacity to reorganize resources, methods, process and change initiatives within and outside the organisation¹⁵⁵. Regardless of the availability of innovative digital technologies, the essential needs for digital transformation is purpose-driven, envisioning and facilitation of changes in how an organisation carries out its operation and how services are rendered to deliver value to stakeholders which are purely management and people challenge, not just a technology issue¹⁰³. Other issues, such as strategy, talent management, organizational structure, and leadership, are essentially important as technology for digital transformation¹⁵⁶.

As digital transformation involves the integration and adoption of digital technology to reinvent how a business carries out its operations and activities and how value is delivered to customers and stakeholders, successful digital transformation requires a substantial investment in all areas of organisational life including processes, operations, technology,

tools, culture and structures with the aim of gaining actionable insights that determine digital capabilities needed to improve employee performance, maximize earnings and returns and achieve organisational growth and survival¹⁵⁷. Digital excellence model gives measure for evaluating and appraising organization's transformational capabilities that are needed to achieve digital transformation¹⁵⁶.

Transformational capabilities focus on the fitness of organisation's culture, change leadership and agility to embrace and implement disruptive innovations¹⁵⁸. In addition to other factors, having transformational capability is key to a successful digital transformation¹⁵⁹. Transformational capability is really about how a company reacts to changes and requires dynamic capability – the ability to move fast (speed, nimbleness, responsiveness) and stability, a stable foundation or platform, if that do not change and serves as stable backbone that becomes a springboard for the company, an anchor point that does not change while a whole bunch of other things are changing as a result of the changes in the environment¹⁴². Strategy, structure in addition to leadership, culture, learning and change orientation among team leaders are the high-level transformational needs for digital change¹⁶⁰. Thus, transformational capabilities to adequately respond to technological changes and development could be assessed through change leadership, digital agility and innovation culture of an organisation¹⁶¹.

As change remains constant in all forms of organisations, change leadership is crucial to achieve short and long-term goals¹⁵⁹. Digital transformation is supported by data showing that successful digital transformations result from leaders' ability to fundamentally alter business models and capabilities gradually, over time, and as resources permit. This enables businesses to start, learn from, and restart digital initiatives so they can respond quickly to shifting market conditions and client demands¹⁶².

The capability of organisations' leadership to implement and manage changes encompasses three things that form a complex, interacting foundation – hyperawareness of change leaders, informed decision making of organisation's leadership, and fast execution which an organisation needs to be able to adequately deal with possible threats and to take advantage of new opportunities¹⁶³. Hyperawareness refers to the ability to identify and monitor changes in the environment, knowing and acclimatizing to new and emerging trends within the internal organisation's environment and from external factors – government, competitors, customers, clients, etc. Informed decision making is concerned with a firm's ability to take the best possible decision in any condition by exploring good data source, capturing, analysis and resources to develop reliable information. Fast execution depicts an organisation's capacity to promptly and effectively implement its decision and plans, sharing the information throughout the organisation, engage employees and make them embrace change, direct actions, ensure compliance and monitor progress in line with predefined objectives. These abilities denote capabilities to learn, embrace change, respond to change and adapt to innovation and new things and ultimately reveal the flexibility of an organization and a result of interplay between two capacities - dynamic control capacity of management and controllability or responsiveness of the organization¹⁶⁴. Control capacity of leaders refers to the “capacity of owners and senior managers seizing and capitalizing to market and technology disruptions”¹⁶⁵ to integrate, build, and reconfigure internal and external factors to address rapidly changing issues and conditions by involving every part of the enterprise, workers, supervisors, teams and managers at all levels. Controllability of the organization refers to “the organization design task – a particular design of an organization; its technology, structure and culture, affects both controllability and responsiveness¹⁶⁶.”

Effective digital transformation is dependent on the digital leaders in the organization who may not necessarily need to be high-tech experts, but should possess and demonstrate passion,

instinct and abilities to identify change, inspire others, manage complexity and build a culture of change accommodation among the workforce regardless of risks^{167,168}. In essence, change and innovation capability of change leaders is critical to achieving and retaining competitive positive in a rapidly changing environment¹⁶⁹. Organisation's leaders, supervisors, team heads in times of digital change should possess and exhibit characteristics such as ability for innovative thinking, digital disposition, collaborative competence, participatory engagement and commitment to digital vision¹⁷⁰.

Another important component of transformational capabilities which plays a pivotal role in digital transformation efforts of an organisation is the innovation culture of the organisation¹⁶². While culture is the collection of shared ideas, customs, assumptions, values, expectations, and practices that guide and inform the actions of all team members and serves as social for the life of the organization¹⁷¹, innovation culture is the deliberate introduction and application of new ideas, processes, or procedures with a view to creating additional benefit individuals, team, organization or the society¹⁷². Innovation culture is described as particular organisational formation or arrangement which makes innovative thinking a natural thing in a workplace and facilitates the generation of new ideas and innovation activities among all members of the organisation. Such culture is characterized by innovative leaders and managers, innovative teams, innovative individuals, organizational context conducive to innovation and multiple easy connection and relationship with outside¹⁷³.

Apart from simply making organisations capable of responding to change, innovation culture creates the type of change that steadily ensures organization's adaptation to its environment. Social trend, technology, system thinking, system failure, future thinking, researches and so on¹⁷⁴. and common characteristics in the cultures of digitally transformed organisations

include empowerment of people, continuous trials, experimentation, crave for risk and development of soft and technical skills supported by digital strategies^{166,175}.

Innovation culture within a work organisation embeds the spirit to embrace introduced changes in the routine of everyone to inspire the generation, testing, sharing and combination of new ideas to facilitate transformation or change success. This guarantees a shared commitment by all members of the organisation to face challenges in implementing changes and giving support at all levels to ensure sustenance of the change project. The workers in such culture should neither relinquish their duties and assigned roles nor aim to assign risk of innovation to others but should be given necessary supports in terms of resources to drive transformation and the policies to facilitate desired change¹⁷².

Digital Agility is one of the capabilities necessary to initiate and sustain digital transformation and remains an important determinant of capabilities required for innovation in product development and service delivery as the case may be¹⁶¹. An agile organisation is one with ability to identify changes in its environment and rapidly reconfigure its methods, resources, strategies and approaches with a view to responding appropriately and profitably to the observed changes¹⁷⁶. Agility simply refers to an organisation's capacity to continuously adjust and adapt strategic direction in its core functions and activities to create value; the capacity to redirect resources and ensure internal external controls towards efficient and effective value creation as warranted by changes or the ability of an organization to perceive and react quickly and speedily to environmental changes and take advantage of new opportunities¹⁵⁷. Agility is also defined as a successful exploration of competitive bases through the integration of reconfigurable resources and best practices in knowledge-rich environments to provide customer-driven product and services in a fast-changing market environment¹⁷⁷.

Digital agility is the ability of an organization to respond and take advantage of technological developments that change how the market functions¹⁶³. It is also described as the ability of an organization to change their operations and methods quickly and with ease by adopting digitally enabled methods and processes, digital tools and applications in performing business functions or providing services¹⁷⁸. Digital agility describes the ease with which an organization can rapidly enable, update, change, or adapt their processes. It is a specific type of business agility that encompasses the processes, tools, and software an organization uses to perform basic business functions¹⁷⁹.

Digital agility provides organizations with the power to promptly develop, test, and adopt new tools, procedures, systems, work patterns across the units, section and departments in an organisation¹⁷⁹. It affords an organisation to remain focused and well informed about developments and innovation in an industry or market and enable such organisation make swift efforts either proactively or reactively with a view to taking advantage of digital trends. It is an organisation's capability encompassing flexibility, quick and timely implementation of changes in operations and organisational activities and digitization of processes, supporting digital capabilities to enhance effective and profitable response to the dictate and demands of new or emerging digital technologies^{177,179}. The agility of a firm in terms of digital innovations and technologies enables employees to embrace and transform existing processes easily and quickly spin up new workflows to respond to digital changes which are only possible with flexible, dynamic, and easy-to-use technologies as the tech stacks gives the organisation the power to create digital solutions¹⁷⁹. The recent and common use of digital agility concept shows the increasing understanding that an organisation's ability to operate flexibly, adjust to new methods and tools, give attention to digital innovations, take cognizance of stakeholders, market and consumer preferences, develop encompassing plans and make efficient and effective decisions on operational, tactical and strategic levels has

become an important and essential need to remain relevant and have competitive advantage in the face of emerging digital innovations¹⁸⁰.

Effective organisational agility will focus on empowering employees (creating diverse teams cross-functional teams and work groups to innovate throughout the organization, collaborate and assist in removing silos that can ruin organizational agility and ensure that decision making is guaranteed at every level, making managers communicate objectives and incentives and give feedback on performance), embracing disruption (positively create regular change, transform decision making, engage workers for their input in open discussion changes with a view to detecting key issues necessary to redirect in line with innovation objective and take advantage of the opportunity presented in change situation to maximize resources and deploy employees' strength the implementation of changes) and experimenting with how work gets done (identify key organisational components to be agile, re-organisation the system and empower people and teams to make decisions and get things done) to improve processes, work output and increase the potential of the organization for strategic growth¹⁴².

Having transformational capabilities means the organisation has the ability to renew itself, its culture, change quickly and adapt to new technology and is capable of achieving success in the constantly changing, environment caused by innovative technologies and emerging digital processes¹⁸¹.

Digital transformation process and models involve the interaction of factors and actors such as leadership, organisation, technology, workers, competitors, customers, etc. across all value-added chain of an organisation^{103,111}. As other factors - strategy, organizational structure, leadership, technology - are significant for purposeful prediction and identification of change needs as well as implementation of digital change initiatives in organisational

activities, processes and operations¹⁵⁶, all digital transformation models point to two important factors considered as essential for any digital transformation - digital technologies and the workforce which is endowed and positioned to explore, use and manage other resources, processes and innovations¹³⁴. Digital capability thus includes the digital competence of people and innovative digital technologies which are distinctive knowledge or expertise built to drive digital solution and flexible technology resources and architecture to enable digital models and operations respectively¹⁵⁸.

The effectiveness and progress of digital transformation efforts is indicated in an organisations' commitment, investment in digital technology but significantly dependent on the attitude of people in the organisation as well as their competence and mastery of digital skill to facilitate the digital transformation drive the digital transformation journey¹⁴⁴. The use of technology is becoming increasingly embedded in a growing number of daily activities as employees are now required to perform a wider range of functions not traditionally included in their role leading to the need for a variety of key competences that an individual should develop to ensure remarkable participation in such technology-driven environment¹⁶³.

The above shows that skill, competence and capability of people needed to explore, identify and maximize the offering of digital innovations in a work organisation are major consideration for any digital change^{99,163}. Competences are a blend of knowledge, understanding, skills and attitudes that are suitable in a given perspective while the key ones which include digital competence are needed by individuals to personal and career fulfilment and growth, social inclusion, productive engagement and employment opportunities¹⁸².

Digital competence is a key concept that describes technology-related skills and the type of mastery, competence and knowledge required to function effectively in the knowledge society in which emerging technologies and innovation are central to the provision of

solutions and offering of new opportunities¹⁸³. It is one of the key competences for lifelong learning considered as transversal in facilitating the acquisition of others skills in a modern society. It denotes technical mastery, expertise and knowledge on the reality, use and positioning of digital devices and processes that are imminent for participation in digital revolution and it-enabled organisational and business cultures¹⁸⁴. Digital competence is a combination of knowledge, skills and attitudes with regards to the use of technology to perform tasks, solve problems, communicate, manage information, collaborate, as well as to create and share content effectively, appropriately, securely, critically, creatively, independently and ethically¹⁸⁵.

Digital competence includes a set of basic instrumental skills and abilities, related to the access and management of technical application of ICT and the knowledge, skills, values and even attitudes, necessary to prioritize information technologies over other devices and resources with a view to meeting personal developmental needs¹⁸⁶. Competence in the context of digital resources and processes comprises the knowledge and skills required for an individual to use digital tools for goal accomplishment either in personal or professional endeavors or the abilities for critical use of information technology (IT) with confidence for personal development, career achievement and for multifaceted purposes¹⁸⁷. As the concept of digital competence has emerged concurrently with technological development which enables and creates new activities and goals, the need and significance of digital competence are continuously changing in relation to current and emerging technologies and their use or application¹⁸⁸.

Three types of digital skill needs have been identified in information science literature¹⁸⁹. These are basic computer usage skill and literacy that are needed for everyday life; competence in the use of digital tools to ignite and facilitate functional usage of information

technology and systems in all types of sector, and digital skills for professional and information technology experts^{189,190}. While the term digital competence is used to cover to digital literacy, digital skills, e-skills, twenty-first-century, ICT skill, and digital mastery, it consists not only of digital skills but also social and emotional aspects for using and understanding digital resources. This is because the term ‘competency’ depicts more than just knowledge and skills but encompasses abilities for complex tasks with the use of psychosocial resources¹⁸⁸, cognitive, social and emotional attributes to handle technologies for creativity, innovation and problem solving in a digital environment¹⁹¹. Digital competence shows individual potentials and attitude to the use of technological tools in a digitally driven work culture, which specifies the type and nature of what should be learnt and mastered and to facilitate the creation of new things and the use of information and communication technologies to many areas not previously predicted¹⁸⁶.

The possession of strong digital skillset is an important element of the progressive corporate model and asset for an organization. It helps employees collaborate, communicate, through innovative technologies and to acquire precise insights and transform them into value added actions to achieve significant competitive benefit and drive more revenue for their organisations. A digitally competent individual is inclusive (open to hearing and recognizing multiple viewpoints, engage with others online), informed (evaluate the accuracy, perspective, and validity of digital media and social posts), engaged (using technology and digital channels for civic engagement, to solve problems and be a force for good in both physical and virtual communities), balanced (make informed decisions about how to prioritize time and activities online and offline and alert (aware of his online actions, and know how to be safe and create safe spaces for others online)¹⁹².

A digital competence framework of European Commission consists of twenty-one competencies and skills that are deemed necessary for digital competence. The competence areas are divided into five, each comprising of specific skills – *information* (browsing, searching, and filtering, evaluating, storing and retrieving), *communication* (interacting through technologies, sharing information, engaging in online citizenship, digital collaboration, online etiquette, managing digital identity), *content creation* (developing, integrating and re-elaborating, copyright and licensing, programming), safety and protection (for your devices, your data and digital identity, your health, the environment) and problem solving (technical issues, expressing needs and identifying technological responses, using digital tools, identifying digital competence gaps) which are grouped into skill levels of basic user, intermediate user, or proficiency user¹⁹³.

Knowledge, skills, and attitudes related to communication, creative expression, information management, personal development for critical and safe use of information and communication technologies, support, behaviour, speaking, learning, collaborating, and acting independently and ethically in a digital society are all parts of being competent in a digital context. This includes achieving goals for work, employability, learning, leisure, inclusion, and social participation¹⁹⁴.

The foregoing implies that digital competence follows the rapid changes in work places and societies and how to prepare for the advantages of the possibilities presented by technologies and readily adapt to the changes in the digital era. It follows that digital competence is the capacity to not only comprehend and utilize digital technologies and systems but also to have the self-assurance to do so independently, creatively, and critically. Having such abilities has become a necessity in almost all organs and functions of modern enterprises. For example, using computers and digital devices was known to be peculiar to certain fields or aspect of

work, but today most job requirements emphasize the use of digital resources in one way or the other ranging from job schedule, payroll, data collection, market survey, education, research, service provision, customer relations, etc¹⁹³.

As digital transformation is dependent on the application of digital technologies, techniques, products and services,¹⁹⁵ the adoption and integration of digital technologies such as big data analysis, mobile networks, internet resources, virtual conferences, cloud computing implies a drastic movement to digitalized workplaces, environment and societies with innovations in business models and functions, organization activities, service provision, production of goods and even governance¹⁹⁶.

Three kinds of technological innovations - *semi-radical*, *incremental* and *disruptive* technological innovations are seen in organisations to speed up of work processes, render better services, provide improved goods, make more profit, gain quick access to information and enhance communication¹⁹⁷. Semi-radical technology typically involves the use of existing skill in the use of technology to do things differently. For example, cellphones were typically used as before as mobile telephones but now being used for functions other than phoning. Disruptive technology also known as radical technological innovation halts the existing technologies, thus bringing in new technologies and devices that are more available and accessible, thus changing the central expectations, outlooks and activities in an industry or sector which are facilitated by organisations' capabilities and resources. For example, mobile phones ended the dominance of land phone, digital photography disrupted the traditional films and cameras, print media are becoming irrelevant as a result of e-readers. Incremental technologies are characterized with appreciated improvement in device and applications. For example, an improvement in word processing softwares which allows many users, professionals and others, to create documents and type with some degree of ease^{198,199}.

The combination of new technologies with innovative methods of data processing and analysis disrupts existing business processes and enables completely new business models thereby making organisations to exploit digital technologies in order to ensure or enhance individual and organizational performance, growth and survival¹¹⁸.

Digital technologies refer to electronic devices, automatic systems, and technological resources that generate, process or store information²⁰⁰. It is also referred to as the provision and the use of electronic tools that are needed to install and combine other forms of technology as well as working principles, processes and models²⁰¹. Technological tools in this sense include internet and website applications, computers and smart phones, artificial intelligence, virtual reality, big data, office assistance, electronic records system, e-books, cloud computing, multimedia, 3D printing and graphics, nano technology, etc. that form the driving force in modern organisations²⁰².

Digital technologies have grown exponentially, making the use of associated devices and applications a routine in organisations²⁰³. Organizations' use of modern computer and its application as well as information systems is common evidence of digitalization. Digitalization is the term used to denote the use of digital technologies in altering business processes and generating earnings through value creation or leveraging digital information technology to evaluate, reengineer and reimagine how organisational activities are carried²⁰⁴.

The organizational adoption and integration of new information technology-enabled processes, products, and services is termed digital innovation and it includes activities of initiating, developing implementing and exploiting digital tools for new purposes. It is the change from the use of traditional methods and tools to an era of knowledge and information society where digital tools and data are employed and manipulated in business operations and to deliver satisfaction¹⁹³.

As digital innovation is at the heart of every organization to do things better, faster and cheaper, finding new ways to offer products and services, digital technology facilitates the compression of large information in small but powerful storage resources that can be preserved and transmitted¹¹⁸. Digital technology is transforming work organisations, business enterprises and their activities. The adoption of artificial intelligence, big data analysis, cloud computing, internet technologies and other innovations facilitates transactions and the exchange or transmission of huge data and information between individuals and corporate entities. These changes in work tools and models have significant contribution to the unprecedented use of digital platforms to enhance service delivery and satisfaction from products²⁰⁵.

Digital resources offer benefits in terms of efficiency by speeding up processes and streamlining operations. Digital tools make work faster than humans, and to a large extent are error free. Analysis of data with the use of business intelligence software and data analysis tools makes data collection and analysis more accurate and faster in a way that cannot be matched by humans and therefore enhance decision making process²⁰⁶. Digital media simplify and expedite connections between individuals in many new ways, making people to create and manage social networks and connections over a long distance but in no time¹⁸⁷.

Nearly every aspect of modern life – education, manufacturing, travel, work, marketing, entertainment, services, communications and a host of other areas have been modernized by digital technologies and almost all electronic devices and machinery have an element of digital technology. With digital technology, devices are now more compact, handy, small and faster, transferrable with ease and large amount of information can be stored and transmitted virtually²⁰⁷. Organizations that embrace digital technologies and build their

culture around digital transformation easily attune to changing factors in their business and areas of interests and therefore making them more resilient¹¹².

As technology continues to develop, fascinating innovations and great improvements are noticeable in productivity, communication, and standard of living and have enhanced organisation and business operations in many ways such as improved productivity, improved customer experience, digital security, usage of smaller-sized devices, banking and finance, quick communication, flexible working, learning possibilities, automation, information storage, editing, accurate duplication, mapping, transportation, cheap operating costs, entertainment, news, etc²⁰⁸.

Digital transformation in organisation primarily involves the use of digital data for streamlining organisational processes and operations²⁰⁹ and basically focuses on how such processes facilitate efficiency of operations through digitization of operations, enhance collaboration continuous improvement in all facets of organisation being transformed digitally²¹⁰.

Digitization is the process of transforming an information object from analog to digital form. It is also referred to as digital enablement and involves converting analog materials into a digital form without any different changes to the material itself¹²⁰. It involves the encoding of analog information into a format that computers can store process and transmit²¹¹. A good example is the scanning of a photograph or converting a paper report to a PDF. The data itself will not change as a result of the scanning or conversion; it will only be converted into a digital format to enhance transmission and accessibility. It simply refers to transforming something that is now in non-digital form (such as signals, health information, location information and identity cards) into a form that can be used on a computational system for a variety of purposes¹¹⁹. Digitalization describes how digital technologies are deployed to alter

existing processes and operations in an organisation or business,¹²⁰ the process of enabling or improving processes by exploring digital technologies and digitized data or the use of digital technologies to capture and assess data, make better business decisions and enable new business models, improve or transform business operations, processes and organisational activities, to impact how work is done, change how customers and companies engage and interact, and create new opportunities and revenue¹²¹. Digitalization reflects the use of information technology or digital technologies to change existing processes in business or organisational activities¹¹⁹.

In digitalization, the use of information technical is essential to enable an organisation take optimal advantage of opportunities inherent in the adoption of digital tools and processes for information transmission, communication, relationship management, transaction and provision of services management distribution of the services²¹². This implies that digitalization involves the emergence of new adaptive processes in which digital data and resources are used and enabled by digital technologies¹⁵⁴ for the purpose of boosting operations and processes and creating value through enhanced user encounters²¹³.

Basically, digitization is used to refer to the transformation of data from analog to digital, the technical process of converting or transforming an array of analog information into digital bits and the increased availability of digital data aided by improvement in the methods of generation, storing, sending, transmitting and evaluating or exploring digital data. On the other hand, digitalization covers the application of digital technologies in the various components and domains of organisation and business activities particularly with the use of digital communication and media infrastructures²¹⁴. Digitalization is should be seen as a direct result from increased adoption of digital elements in the automation of organisational processes in which digital elements are activate to work without human interference and

digitization also requires elements to generate, handle and display information automatically²¹⁵.

Digital transformation offers opportunities for digitized collaboration among members and work teams thus facilitating interoperability, optimization, data sharing, tracking and tracing²¹⁶. Digital collaboration implies the deployment of tools and devices for collaboration and connection of a wider number of people engaged to accomplish task. Digital collaboration ultimately represents a major transformation in the way an organization works in order to increase efficiency and workflow. By improving workplace communication, collaboration, content management, document management, and information flow, digital collaboration aims to increase employee productivity and efficiency¹⁵⁸.

In transforming digitally, organisations in both public and private sectors consider several many value premises such as objective, efficient use of resources, personal needs of the individual and improvement in operations²¹⁷. Studies have shown that a number of executives in organisations agreed that innovation is critical for business and organisation's growth, but some focus on innovation only by simply creating new things whereas the new offering failed to create any addition impact to the operations, users or customers²¹⁸. The focal point of digital transformation is the improvement seen in the use of digital technologies which is an implication of digitalization and a crucial process outcome of digital change¹⁷⁶.

Digital transformation brings added value to organisation's operations by creating enhanced transparency, less misinformation, and benefits in the form of new products, service platform, improved convenience, diverse options of use, new experiences and lower cost of price and time. To organisations and businesses, it facilitates efficiency and effectiveness of current methods and offers opportunities to create new value. In addition, it changes the rigid model

of requiring physical presence of people at work for longer hours by allowing flexibility in terms of time and place, task performance via virtual platforms²¹⁹.

Digital transformation efforts should therefore be in tandem with desired efficiency in firms' operations and transcend to users, customers, clients, serviced groups, with a focus on value creation, which is the foundation of firm inversion - a change in organizational structure which influence technology adoption and use as well as management and leadership perspective to such adoption²²⁰.

Ensuring the success of any digital transformation initiative, project or effort involves defining organisation's vision, getting leaders involved, focusing on culture, gathering resources, employing or developing expertise and choosing the right technology²²¹. The process of digital transformation is ongoing; it does not have a finish line. In order to assess and track the impact, it is necessary to decide what metrics to use. As adjustments are made, take a step back to assess your progress and make any necessary corrections. Then, you can inform important stakeholders about your progress and what is not working¹⁹⁴.

New management, business and production methods are enabling innovation, opening up new markets, and upending established industries as part of digital revolution. The growth of the internet and the development of smart systems, virtual value chains, and artificial intelligence in manufacturing is accelerating innovation and boosting productivity, which is good for economic growth^{124,222}.

A similar process takes place in the public management models of public agencies, in order to meet citizens' demands and improve service delivery. Technologies are adopted by public institutions with a view to increasing the efficiency and effectiveness in service provision and to enhance public service delivery, increase transparency in public organisations' operations and facilitate more sustainable practices in public enterprises. As a result, government

agencies and institutions are gradually adopting the cloud option in their operations. In the same way, on a big scale and in everyday life, teleworking, e-learning, online official processes, e-commerce, e-banking, video conferencing, and video on demand are all commonplace. The most extensively used software and applications are email, video conferencing, office applications, customer relationship management, resource planning, workflow automation, and security²²³.

In recent years, the effects of the digital revolution have become increasingly pronounced, strengthening long-term trends. Applications for teleworking and social connections, as well as those related to the provision of education, health, and retail services remotely, have expanded and impacted many facets of society including the public organisations. Considering the advantages and taking benefit of it means reducing the negative impact through a change in work patterns and setting out digital transformation on a more inclusive and sustainable track¹²⁴.

As digital transformation is perceived technological revolution causing paradigm shift, its adoption and implementation in the private sector are influencing citizens' expectation of public organisations to be able to deliver quality services aided by digital technologies²²⁴. The adoption of digital technologies for administrative processes and functions in public organisation have the potential to enhance coordination of operations and activities between departments and units, reposition inter and intra-organisational relationships, enhance operational models and patterns and consequently transform public service delivery to the benefits of all stakeholders and serviced entities²²⁵.

A necessary factor for digital transformation in government owned organisation is the workers attitude, mindset and competences. The digital transformation of administrative processes of public organisation is based on the dynamic nature of organizations, the capacity

to identify and adopt changes as well as the use of digital tools and digitization of processes that will lead to improved work pattern, deliverables and work outcomes. Technology is essential for initiating transformative processes, but it is insufficient to create long-lasting results. Instead, it might lead to another round of adjustments and reviews of organizational transformation processes. Digital transformation needs to be continuously revised and improved as technology advances. A continuous feedback loop will instead assist public organizations improve the way they deliver public services because an end state is not feasible²²⁶.

Digital transformation in the public organizations will not dislodge the traditional administrative competencies and skills but will essentially amplify and complement such competences and develop new set of digital skills towards meeting the evolving phenomena changes of the digital society and to support the increasing demand for innovative service offerings²²³. The drastic changes in administrative roles of public institutions or organisations could be clearly seen in the adoption of smart devices, office application tools, the change from paper-based offices to digital ones or paperless offices, the use of information and communication resources for communication, training and development, service provision, payment, salary administration and the development of a number of e-platforms in public sector organisations which continually ignite policy changes, organisational cultural modification and consequential cost obligations.²²⁷

Different facets of society and the economy are being impacted by digital change. It creates new networking opportunities and enables collaboration between many actors, who may then exchange information and start new processes⁸⁸. At the societal level, digital disruption has an impact and changes communication, engagement, and consumption paradigms. Because of this, there is a surge in demand for hardware, software with more capabilities, cloud computing, data traffic services, and the basic digital skills necessary to operate the related technologies. In turn, the digital economy gives customers and service users access to a wide range of commodities and services, as well as more effective ways to consume goods and services remotely⁹³.

2.1.3 Work Environment

The need to provide a safe work environment for employees has had a long history in human resources management²²⁸. Workplace environment is a critical issue for accepting or keeping a job as the quality of the environment in the workplace shows the level of motivation, performance and wellbeing of workers which are outcome of error rate, level of innovation, team work and collaboration, job attitude, etc²²⁹. Work environment is one of the important factors that impinge on the attitude and performance of people in a work organisation as employees spend most of their time where they work, thus fineness and excellence of such environment is essential in determining the level of motivation, productivity, and performance of people who are engaged to carry out the organisation's activities^{230,231}.

Work environment is the totality of elements that can impact feelings, relationships, cooperation, efficiency and employee health, wellbeing within a workplace or the, social setting and physical conditions in which job is performed. It is the entirety of conditions, forces, actions and other factors that either currently affect or is capable of contending with

the employee's activities and performance, that is, all the situation, events, people, etc. that influence the way in which people work. This suggests that work environment is the sum of the interrelationship of factors that exists among the employees and the environment in which the employees work²³².

Work environment is also the term used to depict the tools, tooling and materials used, the surrounding atmosphere, the arrangement of works for individuals and groups, the culture that a company cultivates and the general conditions of employees which may directly or indirectly influence people in carrying out their activities^{233,233}. The collection of these situational factors that collectively make up the corporate atmosphere of an enterprise determines social, psychological, and physical life in an organisation and is very domineering on the level of ease which a worker experiences on the job and in carrying out tasks²³⁴. Hence, it is composed of physical conditions such as office temperature, equipment such as personal computers and work processes or procedures as well as the social interactions among peers, subordinates, and managers²³⁵.

The combination or interplay of factor within the purview of an organisation itself and under the control of the management or leadership of the organisation depicts the organisation's work environment²³⁴. Such factors include systems, procedures, practices, values and philosophies and a combination of diverse organisation-wide conditions and job-specific conditions, employment terms, leadership, culture, code of conduct, training and development, workplace safety²³⁶. Organizational environments are composed of forces surrounding an organization which directly or indirectly influence the operations, processes, performance and resources of an organisation including the elements that exist outside of the organization such as regulations, competitors, customers, end-users of services, suppliers, etc. that have impact on the organisation and its business or activities²³⁷. The term is used to describe the immediate environment in which work is carried out and the national

environment within which an organization gathers its inputs, processes them, and then returns its outputs in the form of goods or services for the general public to consume²³⁸. While the immediate environment comprises of culture, leadership, managerial policies and philosophies, the national environment is made up of a variety of elements, including those that have an impact on suppliers, customers, stakeholders, sociocultural aspects, the economy, technology, laws, and management philosophies²³⁹.

One of the factors that mostly affect how well an employee is motivated and consequently his level of performance is the quality of the environment in which people are made to work²³². Key elements of the work environment can be grouped into two—the first comprises factors that are driven by rules, practices, procedures, management or administrative requirements, and the second is factors that originate from surroundings, layout, office design, factory, office or organisation, etc. the former includes the establishment of organization rules and policies and programmes such as the allocation of jobs, flow of responsibilities, job descriptions, working conditions and agreement, work patterns and systems, holiday and shift policies, health and safety plans and practices, training opportunities, career progression, appraisal, performance standards, participation in decision-making, access to management, administrative support, etc. that reside within the ambit of the management or the organisation's norms as whole while the latter encompasses physical facilities, tools, equipment, ventilation, lighting, etc²³².

The work environment of an organisation comprises of many internal and external factors which influence activities, choices and reveals the strengths and weaknesses within the organization²⁴⁰. Internal factors that influence how operations are carried out within the company include its immediate and informational resources, as well as its technical, financial, and physical resources. These include the value system, the vision, the purpose, and the objectives, as well as the management structure and internal power relations, tangible and

intangible assets, and human resources²⁴¹. The external environment is made up of set of exogenous factors, not within the control of the organisation but have bearing on the organisation's growth and survival. It is divided into macro environment – economic, legal, political, technological, socio-cultural, demographic and globalization factors and micro environment – competitors, suppliers, customers, clients, media, intermediaries, shareholders and employees²⁴².

An organisation's work environment comprising work culture, systems, procedures, practices, values and philosophies, interaction and relationship among workers as well as the physical components could be categorised into physical or behavioural and perceived as friendly or hostile depending on the encounter of each worker or the extent to which the workers are able to satisfy their individual needs through their experience on the job²⁴³. While the friendly environment depict supportive and healthy work situation free from problems associated with poor building, poor ventilation, unhealthy human interferences, the hostile work environment is characterized by unwelcome sexual conduct, intimidation, poor ventilation, lack of necessary work tools, aggression among team members, offensive conducts and harassment, non-supportive policies and practices and other factors capable of shattering workers experience and eventually, their performance and commitment²³⁶.

The work environment is made up of combination of key components - the technical/physical components and human/behavioural component in addition organisation's policy-related factors.^{244,245,246,247} The physical environment comprises tools, resources, infrastructure and other physical elements²⁴⁶. It is made up of elements relating to employee's propensity to attach physically with the workplace environment including everything in the building structure and design, parking facilities, the lightning, noise levels, temperature, air quality and the equipment being used to perform work²³⁶. The physical or technical components of

the workplace environment also consists of natural and provided light, clean terrain, ventilation facilities for artificial and induced cooling or heating, office layout, space design, personal desk and chairs, visitors chairs, etc²⁴⁸.

The physical components of workplace environment include temperature (appropriateness of the temperature to employees and the preferences as well as the nature of outdoor environment of an organisation), lighting of the offices and work rooms with appropriate lighting features (contrast, illumination, diffusion), lifting tools for heavy and repetitive lifting that could increase the chances of injury, and noise level from people, striking surfaces, machines and equipment²²⁹, work area in terms of size of your personal workspace, location, layout and floor plans (open or close), conference and meeting areas, lunch rooms as well as facilities and hardware in terms of equipment, machines, tools and furniture²³³. The importance of the physical work has been widely studied and it has been established to be capable of hindering a range of work behaviours that could potentially affect individuals' task and organizational performance²⁴⁸.

Human or behavioural environment is one of the significant aspects of work organisations. It refers to a worker's communication and attitude towards other people in the work place and involves both verbal and non-verbal mode of interactions, communications and relationships. The behavioural component of the work environment represents the aggregate of attitude and people's behaviour towards team and colleagues and with subordinates or supervisors²²⁹. The human angle to the work environment depicts the ability to effectively interact with superiors, subordinates and co-workers within the organization as organizations with people problems blame faulty interpersonal relations among workers which hinders desired team work and the attainment of organizational goal²⁴⁹.

People in organisations are required to work together and exhibit good team dynamics to achieve common objectives. As a result, organisational politics, interaction among workers, supervisors, and management characterized the behavioural issues in the workplace²⁴⁶. The form of inter-persons relationship between workers and management as well work group and team supervisors is an essential factor of behavioural inclination which has psychological and attitudinal functioning of the workers in an organisation²⁵⁰. The acquaintances and association formed by people at work often turn to social resources in the form of help, compassion, recognition and value, and indication of social integration in the workplace²⁵¹.

Behavioural/human work environment is characterised by communication (employee's need to feel that their say and contributions have values in the discussion of the organization's philosophy, mission and values, from time to time and employees belief that what they contribute affects the organization), team Spirit/cohesion (sense of unity among team and employees), work-life balance (balance between work and personal life and the feeling that supervisors and management personnel do not overlook other aspect of employees' life such as family, health, friends, etc.)²²⁹ and social support (the presence of people who are considerate, respectful and helpful to one another, the extent to which supportive behaviours are perceived, and the belief or experience that one is supported, that help is available from others, and that one is a part of a network of people who care about them)²⁵².

Supervisor support, interpersonal connections, job aid to guide, direct and facilitate work efficiency, work tools, physical resources and ergonomics, ambience, assessment and feedback mechanism, pay and compensation plans and policies, opportunities for growth, incentives, work arrangements and conditions are likely work environment factors that could facilitate or undermine job performance and employee wellbeing in an organisation. An attractive and supportive work environment is a work situation which allows employees to

actively and effectively make the best use of their skills, expertise and knowledge and optimally channel available organisational resources to provide high-quality services or desirable product offerings²⁵³. These factors in addition to good work condition, healthy leadership, team cohesion, physical and psychological security are key work environment issues and concern that need to be recognized and provided for²⁵⁴.

Making the workplace appealing, innovative, cozy, satisfying, and motivating for employees is necessary to foster a feeling of pride and purpose in their work and to ensure that they do not have to leave their hearts at home while they are at work²⁵⁵.

2.1.4 Work Experience

Work experience is an important employees' factor that have been linked to individual job-related outcomes, attitude, disposition and performance²⁵⁶. Job experience can be viewed in terms of the total period of time which an employee has worked in a particular organisation, job roles or the overall experience gathered by a worker from other organizations²⁵⁷. Possession of relevant experience in a job helps the worker to easily complete tasks, meet job expectation without direct supervision²⁵⁸. Human capital managers and employers give importance to job experience in determining individual's fit for a job position and is considered an essential factors to propel desired characteristics on a job²⁵⁹.

The experience acquired through previous years on a job improve employees' productivity, response time and adaptability to work-related challenges, employees' stability, work attitude²⁶⁰ and thus leads to enhanced performance²⁶⁰. Experienced employees have capacity to internalize work expectations, performance standard, values and ethical considerations that are peculiar to their roles²⁶¹. Such internalization results in good judgement about tasks, individual strength and weaknesses and is instrumental in finding ways and identifying

individuals within work group to maximize potentials and alleviate consequences of weaknesses with a view to achieving desired level of performance²⁵⁹.

Work experience has been linked to knowledge and job skills necessary to drive performance of individuals²⁶² and it determines the extent to which past experience could be related to the demands of present jobs with bearing on employee commitment and engagement, job satisfaction, and other organisational objectives²⁵⁹. Therefore, employers and organisations emphasize the acquisition of relevant experience as a necessity to meeting the requirement of a position and take steps to enhance the work experience of their incumbent through training, internal transfers, rotations, etc²⁶³.

2.2 Theoretical Framework

The focus of this study is to determine the impact of digital transformation and work environment on the job performance of administrative staff of public tertiary institutions. Job performance is the dependent variable and is anchored on Campbell Theory of Job Performance and Individual Adaptability Theory. Digital transformation is anchored on Technology Enactment Theory, Task Technology Fit Theory and Dynamic Capability Theory while Work Environment is anchored on Person-Environment Fit Theory.

2.2.1 Campbell's Theory of Job Performance

Job performance theory was developed by John P. Campbell in 1990 which offers fundamental explanation to the concept of job performance and the application of the concept across different jobs and occupations. Campbell described performance in terms behaviours or actions that are relevant to organisation goals⁸. This theory implies that work performance is multidimensional and includes only those behaviours that are salient to the achievement of organization's goals.

The performance model of Campbell and colleagues comprises eight major performance components – “job-specific task proficiency, non-job-specific task proficiency, written and oral communication proficiency, demonstrating effort, maintaining personal discipline, facilitating peer and team performance, supervision/leadership, and management/administration”. The model provides insight into the components of job performance and its key indicators in most domain of jobs or occupation and represent the consensus of what constitute performance^{8,11}. The key component in the taxonomy, that is, job-specific task proficiency (core job tasks) depicts task performance while the remaining others are grouped and referred to as contextual performance²⁶⁴.

Task performance on one hand refers to the proficiency or competence level in the performance of key tasks in a job and it is also referred to as job-specific task proficiency, core task proficiency and in-role performance which cover performance indexes such as task knowledge, work quantity and quality¹¹. Task performance covers the items of a person's job description and actions that are part of the formal reward system which contribute to goal achievement and performance of the organisation. It is the core job function of an employee and requires the fulfillment of standard and expectations specified in the employee-employer contract¹⁵. It is the proficiency with which employees perform the roles and functions that are recognized as elements of their jobs or simply the activities that are directly linked to the implementation of the core tasks in a job.

Contextual performance, on the other hand, represents personal actions that assist the organizational, social, and psychological contexts in which technical core duties are carried out. It can also be referred to as interpersonal skills, extra-role performance, organizational citizenship behavior, and non-job-specific task competency. In all, it is an individual actions and disposition at work which transcends the expected work goals. Examples of contextual

behaviours are taking on extra tasks, displaying initiative, providing informal orientation for recruits on the job that are part of employees' attitudes and behaviours not necessary to accomplish job tasks, but needed for effective and proper functioning of work teams and the organisation^{12,20}.

Job performance is multidimensional and encompasses a range of actions, behaviours and activities of workers necessary for the functioning of an organisation³¹. Thus, job performance theory of John Campbell is used in this study to underpin the core functions of administrative staff of federal tertiary institutions, the key performance indicators in their core functions and responsibilities, their administrative proficiency and competence level in the performance of key administrative tasks.

2.2.2 Individual Adaptability Theory (I-Adapt Theory)

Based on the model of job performance of Campbell and colleagues, Pulakos, E. D., Arad, S., Donovan, M. A., and Plamondon, K. E. developed a taxonomy of adaptive job performance in 2000 by introducing a new aspect called *adaptive performance*⁴⁵. Adaptability reflects how individuals adapt to new conditions or job requirements. According to the theory, individual adaptability is a combination of a variety of information, skills, and abilities rather than a single knowledge, skill, or aptitude. Cognitive, emotional, social, and personality factors all have a role in adaptability. The approach emphasizes a person's capacity or propensity to adjust to changes in the workplace. It involves "affecting the environment, reconfiguring oneself, and degrees between fit"²⁶⁵.

Individual adaptability is the propensity to act in certain ways under particular circumstances. Although it is consistent and trait-like in that it encompasses features of personality and cognitive ability, adaptability is also state-like in that it is moment-specific. Thus, it is a special blend of individual variations and environmental requirements. Therefore, being able

to deal with changes in organizational goals, changes in personal performance standards, and changes in the performance environment that have already been detected or are predicted is referred to as being adaptable⁶.

The scope of performance domains was expanded by Pulakos and colleagues to develop eight adaptability performance factors, categorized as part of the hidden part of performance. The taxonomies were obtained by exploring pool of critical incidents of effective and ineffective performance. The dimensions of adaptive performance are solving problems creatively, dealing with uncertain or unpredictable work situations, learning new tasks, technologies, and procedures, demonstrating interpersonal adaptability, demonstrating cultural adaptability, demonstrating physically oriented adaptability, handling work stress, and handling emergencies or crisis situations¹⁶.

I-ADAPT theory suggests that adaptability level of individual comprises cognitive and personality aspects, conceptualized to be both state-like and trait-like²⁶⁵. It is trait-like as individuals may have tendencies to be more or less adaptable; and state-like because when and how a person adapts may hinge on his opinions, disposition and purpose in time. Individual adaptability is proposed to be more sensitive to change pressures in modern organizations.

I-Adapt theory underscores proactive and reactive adaptability. Reactive adaptability is an individual adapting as a response to a change in the environment with a view to meeting performance standard or fulfilling a goal²⁶⁵. Proactive adaptability refers to an individual adapting to an anticipated change, whether or not the change has occurred. Individual adaptability may be significant even in stable contexts due to proactive adaptability. An individual might change their conduct, for instance, if the chance for a promotion presents itself, to place themselves in a better position to be promoted. Although neither the

environment nor the behaviour has changed, these proactive adaptive behaviours would have a significant effect on performance. In other words, even in a static environment, workers may still exhibit adaptive behaviour.

Campbell taxonomy of work performance did not originally include adaptive performance.¹⁶ The inclusion of adaptive dimension as a unique aspect of performance showing employees' capacity to adapt to changes in a work environment and on job functions, stemmed from the ever-dynamic trend in technological changes in organisation as well as in the society.

While task performance shows the in-role or core task competence, contextual performance comprises behaviours that could aid task performance or influence the work environment positively, whereas adaptive performance reveals individual employee's behaviours in response to changing work patterns, demands and environment and thus should be predicted and measured separately²⁶⁶. Thus, the I-Adapt Theory is explored in this study to examine the adaptive work behaviour and readiness required of administrative staff of federal tertiary institutions that will make them acclimatize to changing work environment, show resilience to technology adoption and exhibit fitness for the dynamic work conditions and expectation.

2.2.3 Digital Excellence Model

Digital Excellence Model was developed in 2018 by Bartosz Górczyński - Leader of Digital Excellence Group and member of the Advisory Board of the CIONET community, Grzegorz Bełz - Digital Team of University of Economics in Wrocław and Piotr Płoszajski - Digital Project Team Leader of the Warsaw School of Economics¹⁵⁸.

Digital excellence specifies best practices of digital transformation and innovations in organizations that embrace dynamic growth and reveals both readiness and capacity of organisation to operate in the digital era, the key indicators and challenges and how organisations respond to them. Digital Excellence Model (DEM) is a digital transformation

framework which identifies the characteristics, activities and resources of organization that are capable of facilitating successful digital transformation. The development of Digital Excellence Model is based on business and organisational initiatives that link people, technology and organizations, prompting dynamic changes in business operations and organisational activities, operations and services with digitalization. By Digital Excellence, organisation and business ability to develop and sustain its digital transformation through innovative processes and digital operational model as a result of disruptive digital technologies are brought to focus¹⁵⁸.

Digital Excellence Model builds on existing frameworks and models of digital maturity, digitization, digital readiness^{141,146}. Thus, it shares common indicators from a wide range of interest areas such as education, business, commerce, information technology based on practical observations and feedback from organisations to provide and define an ordered areas of manifestation and indication of digital transformation¹⁴⁸.

Digital Excellence Model was developed on the assumptions that an organisation's potential for digital transformation, based on global approaches and models of digital transformation should be assessed; the five key areas in which an organisation should have distinctive capabilities for implementing digital transformation are imperative and should be defined; manifestations that demonstrate the potential of digital transformation in each of the key areas should be determined; the qualities of organisations which in practice drive digital excellence should be identified and reflected in the model; and that the model is an open framework which means that next to the existing manifestations, the organisation may indicate other factors, which in the company's opinion, can influence the success of digital transformation¹⁵⁸. The five key areas of distinctive capabilities specified in the Digital Excellence Model as indicators of transformation in digital era are Digital strategic

perspective, digital customer experience, transformational capabilities, digital capabilities and digital operation efficiency.

Digital strategic perspective deals with the organisations' strategy for implementing digital transformation and information technology at functional, tactical and strategic levels and align same with the firm's business strategy¹⁵⁸. A formulated digital strategy covering the objective and visions of an organisation, its target and operational model is imperative for digital transformation^{168,267}.

The Digital Excellence Model is depicted in the following figure:

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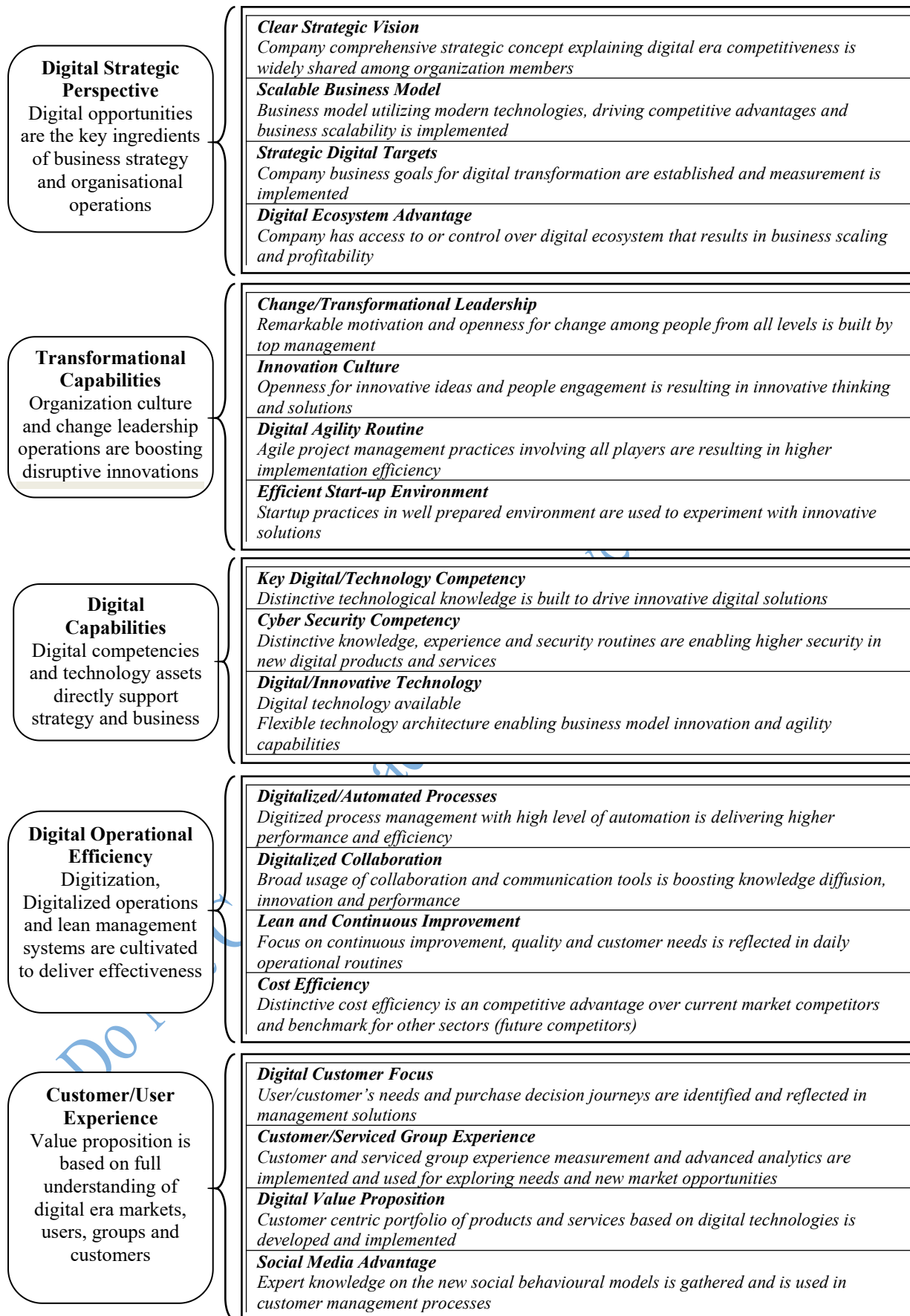


Fig. 2.1: Digital Excellence Model

Source:¹⁵⁸

Transformational capabilities focus on the fitness of organisation's culture, change leadership and agility to identify need for digital change, embrace and implement same¹⁵⁸. Such will requires deliberate introduction and application of new ideas, processes, or procedures characterized by change leadership and management¹⁶⁰, innovative team work and relationship in an atmosphere of innovation culture with the organisation making efforts to continuously adjust and adapt its core functions and activities to create value; the capacity to redirect resources and ensure internal external controls towards efficiency and effectiveness as warranted by changes or the ability of an organization to perceive and react quickly and speedily to environmental changes and take advantage of new opportunities^{161,162}.

Digital capability is an indication of digital competence of people and innovative digital technologies which are distinctive knowledge and expertise in the organisation to drive digital solution and flexible technology resources and architecture respectively garnered to implement digital models and operations^{134,158}. This shows organisations' commitment and investment in digital technology and the development of worker abilities to use and master digital processes and resources^{196,197}.

Digital operational efficiency will reveal the level of digitized processes and how these allow for seamless collaboration in the work organisation^{210,213}. Hence, efficiency in operational model and activities results in desirable work outcomes through digitization, collaboration and regular improvement in a digitally transforming organisation²²⁰.

Digital customer or user experience reveals the value proposition and creation that are derivable as a result of digitized processes and operations¹⁵⁸. A key concern of digital transformation is the target customer/users/consumer of products or services and value creations from the adoption and implementation of digital transformation¹⁴⁹. The need, purchase decision and user preferences are typically identified and factored into digital

offerings and solution of the organisation with a viewing to creating value and enabling good experience of the customers. As such digital transformation efforts is expected to be in tandem with desired efficiency in firm's operations and transcend to users, customers, clients, serviced groups, with a focus on value creation²²¹.

Digital strategic perspective which focuses on strategic vision, scalable business model, strategic digital target was deemed to be in the purview of owners and management of organisations and are input into the digital transformation and not a component of the process itself. Hence, it was not covered in the measures used as the administrative staff may not be in clear cut position to express opinions on it. However, such opinion could be reflected in their perspective on transformational capabilities of their institutions. Similarly, customer/user experience was not covered since the study focuses only on the administrative staff of federal tertiary institutions in South-west, Nigeria.

The Digital Excellence Model allows organisation to self-diagnose the potential, resources and processes they need to maintain in order to improve operations and competitiveness in the era of digital transformation.

2.2.4 Person-Environment Fit Theory

Person-environment fit theory was developed by Jacquelynne Eccles and her colleagues in 1993²⁶⁸. The theory describes the extent to which the characteristics of an individual and his environment factors have congruence or fit²⁶⁹. The theory suggests that people have an innate need to fit their environments and to seek out environments that match their own characteristics²⁷⁰. Research in person-environment fit has its foundation in Murray's Need-press Model and Lewin's Field Theory as it describes the match of a person's characteristics with the nature of the environment in which the person works²⁷¹.

The attributes of an individual in this sense include psychological needs, capacities, preferences, values, purpose and drive, etc., while environmental characteristics could be workload, technology, job demands, cultural expectations, social relationships and the attributes of others in a workplace or social system. The relationship of an individual with the environment could be explained as a definite type of person–situation relationship which required considerable fit between the person and the components of the environment²⁷². The fit literarily shows the compatibility between people and organizations that occurs when at least one entity provides what the other needs, they share similar fundamental characteristics²⁷³.

Two dimensions to the description of person-environment fit are supplementary fit and complementary fit²⁶⁹. Supplementary fit depicts the correspondence of an individuals and an organization in terms of purpose, value and attitude while complementary fit shows that resources and capacities of the two separate entities (individual and organisation) are capable of fulfilling the needs and preference of each other. For example, the organisation and the individual have credence to autonomy (supplementary) and the competence of a worker meets the requirements of the organization, or the facilities available in the organisation are capable of meeting the needs of the worker (complimentary) in a particular setting²⁷⁰. Complementary fit can also be viewed from two angles - demands-abilities fit and needs-supplies fit. Demands-abilities fit looks as the individual possessing the needs of the organization, that is, his abilities are what the organization needs. Needs-supplies fit views person-environment match as the situation in which organization satisfies the peculiarity and needs of the individual, thus creating a fit²⁶⁹.

The fit in the theory can be described along four domains - *organizations*, *occupations*, *groups* and *individuals*⁸² or as person-organization fit, person-job fit, person-group and

person-person fit respectively. Person–organization fit the compatibility between people and organizations which can lead to better levels of trust and a common feeling of sense of corporate attachment, reduced employee turnover, facilitate organisational commitment and enhance organisational citizenship behaviour²⁷⁴. Person–job fit is the compatibility between a person's characteristics and those of a specific job as described by the complementary perspective¹⁹⁸. Person–group fit is the extent of psychological and behavioural compatibility among coworkers that is capable of moderating work outcomes and cohesion within a work group or team²⁷⁵. Person–person fit is best described as the fit between an individual's attitude, relationship and cultural preferences and those of others in an organisation which defines the level of closeness among people (supervisor-subordinate and co-worker) as a result of the similarities in values, attitudes, and opinions¹⁹⁶.

A multitude of outcomes, including job performance, relationships, job satisfaction, and organizational commitment, have been linked to person-environment fit. According to this theory, an individual's characteristics interact with those of his or her environment in a way that both the individual and the environment influence each other. The level of compatibility between an individual and their environment can affect their drive, work attitude and behavior, social support, wellbeing, and capacity for constructive communication^{275,276}.

2.3 Review of Empirical Studies

Many empirical studies have been carried out in relation to job performance, digital transformation, work environment and other factors that relate to each of these variables.

2.3.1 Review of Empirical Studies on Digital Transformation and Job Performance

Digital transformation has become a topical issue for researchers and organisations in many sectors as a result of the dynamic nature of the emergence and use of technologies for business operations and organisational activities just as job performance remains a key

concern for researchers, organisations, business owners, practitioners, etc. In this regard, several studies have been carried out by researchers and experts on the concept of digital transformation and job performance as well as other related factors and variables.

A study on the influence of business model digitalization in public sector organizations showed that the organizations address innovation in the operational model not as a systematic process but as an obligation that is ignited by prompted by intrinsic and expected changes driven by technology from the external environment. The components of business model was seen as the driving force for organisations to embrace a new digital technology and is therefore seen as a focal points when engaging in innovation of operational models of public sector organizations and that the ability of public organisations to develop and build the expertise needed to leverage on the opportunities of digitalization is essentially important. As trend in digitalization efforts of businesses have impacts on public services, public institutions implement innovations in the various aspects of their activities and services which assisted in the transformation and the modernization of the public sector service provision. The various units and departments in the organizations surveyed showed understanding and commitment to mutual goal of digitizing their operations and services which led to the successful digital transformation efforts of the organisation²⁷⁶.

In an exploration of the predictive influence of technological innovation and digital competence on the job performance of secretaries selected from three public tertiary institutions in which digital capability and leadership capability, digital maturity, employee skill levels and software use; organizational agility were employed as metrics for the independent variables, it was revealed that the level of technological innovation shown the in the acquisition, adoption and use of emerging technologies offers remarkable contribution to the performance of the secretaries. The provision of relevant technical devices and the ability

to effectively use digital technologies facilitated desired job performance measured by job attitude, effectiveness and efficiency in administrative support and service delivery among the secretaries²⁷⁷.

An assessment of the digital transformation of operational and business processes of some firms revealed that a number of organisations have realized the need to digitize aspects of their operations but some have the problems to adequately implement the necessary initial steps as digital transformation always involve long processes and requires a detailed road map for the implementation in line with the technological requirements as well as organisation's processes and resourced available. The study showed that firms that are keen on digital transformation require integrated collaboration from every part to understand the significance of digital transformation to their operations, prioritize aspects of the digital collections, ensure that all functional units are working towards the same goals and equally assess their portfolio to ascertain the impact digital technologies have on their valuations and the opportunities to grab from the implementation²⁷⁸.

A survey of workers in the insurance companies operating the Peru Region aimed at determining the magnitude of impact posed by digital transformation on individual job performance involved the use of deductive inferential scientific explanatory method with a non-experimental design. The analysis of data showed that digital transformation significantly influence task performance while organisational processes enabled by digital transformation positively and significantly influence task as the model business of activities based on digital transformation did not show any implications for task performance contextual performance, which led to the conclusion that customer service experience, and digitally-enabled work processes could engender higher level of performance of the workers¹³¹.

A survey of 142 employees in a major UK charitable organisation to investigate the effect of digital literacy on behavioural intention of worker to continue in the digital workplace and to determine the impact of digital competence on individual performance showed that employees' digital skills enhance individual performance and their intentions to continue in the environment as a result of their perceptions of ease of use of technologies provided. This revealed the significant need for digital literacy being a fundamental requisite for technology utilization. It was equally found that behavioural intention and propensity to continue in the digital workplace is positively predicted by performance expectancy and effort expectancy as a result of the expressed continuance intention which predicted job performance in a positive direction²⁷⁹.

An investigation of the influence of technology and digital resources on organizational performance of private tertiary institutions in Malaysia via s through an online questionnaire yielded 155 responses was analysed with partial least squares structural equation modeling to reveal the focal interest of private tertiary institutions in Malaysia in terms of technology use. The result showed a positive and significant relationship of technology and organisational performance which implied that that technology management in the private higher learning institution could result in organizational performance. However, technology usage did not reveal any significant relationship with organizational performance of the private higher learning institutions in Malaysia²⁸⁰.

Assessment of the importance of information technology in shaping digital agility of modern organisations indicated that digital tools and agility serve as the capabilities of a firm to compete favourably in a digital environment. Dynamic capability was found to have relationship with competitive actions and helps in assessing how each part of a large firm leverage on digital technologies. Capability-building, entrepreneurial action, and co-

evolutionary adaptation were found to be the three key processes necessary to envision the dynamics of digital transformation and redefining of operational and business conducts²⁸¹. An examination of the efficacy of agility in responding to disruptive digital innovation involving a study of Elixir Technology as a small and medium scale enterprises with agility to respond to disruptive digital innovation revealed that small and medium enterprises gain agility by means of dual mitigation of their rigidity and the development of innovative capability in which rigidity is engendered by the apparatus set for achieving boundary openness and innovative capability is prompted by the mechanism set to achieve organizational adaptability²⁸².

A survey of digital competence of high school students to determine the impact of information and communication technology on educational policies indicated a perceived medium–high level of digital competence by students while their teachers believed that the students have moderate level of digital competence whereas the teachers perceived themselves as having better mastery of digital skills which indicated that level. In addition, teachers perceive themselves as more competent than portends that the conception of digital competence in school contexts is different from the social context¹⁸⁶. However, an analysis of the demographic factor impact on teachers' digital competence and use of digital resources showed significant differences in the digital competence for technological resources by teachers with more years of experience than other in all ICT resources examined and in all the areas of digital knowledge utilisation²⁸³. Similarly, an exploration of digital know-how and technology integration competence of Academic personnel in Turkey revealed high disposition of the academics to use technology different aspects of learning as they perceive technology adoption and utilisation as an essential factors for educational endeavours and other aspects of human lives which made them to give adequate consideration and attention to technology use and profession development in the same direction¹⁹¹.

With a view to understanding individual characteristics in the context of digital skills competency for a better fit of technology towards job performance in teaching duties, a study on the digital competency of educators in the virtual learning environment was revealed that the proposed inputs of digital competence is an essential factor for effective transformation as technological skill, knowledge acquisition and upgrade, presentation and professional skills components of digital competency were found to have significant impact on the task-technology fit. The Task-Technology Fit was found as an important element, which has significant positive impact on teachers' task performance with Moodle's utilization as a major correlate of the performance impact. The result showed that educators who can establish student-centered classroom activities and ensure collaborative participation and engagement of the studies are more likely to use the moodle in productive performance situations²⁸⁴.

Organizational implications of digital innovation in print media organisation showed that the physical materiality of products of print media provided stable boundaries between occupational groups within the organization as well as between media professionals and the customer while the malleability of digital materiality allows for quick re-arrangement that makes digital products a bit delicate. The implication of the use of digital technologies by print-media organisation is an interconnection with digital ecosystem in which new actors and practitioners have gained entrance, thus creating a cycle of vested power relationship among the digital media practitioners²⁸⁵.

A systematic review aimed at developing a synthesis of related researches and different empirical studies to develop well-grounded measurement model of digital maturity revealed that digital maturity could be assessed by eight dimensions and 32 items – *strategy* (explicitness of strategy formulation, cross-functional implementation, transformative impact,

degree of evaluation), *leadership* (commitment, style, role, adoption of digital strategy by executives), *business model* (generated customer value, relative innovativeness, degree of digitalization, implemented value co-creation), *operating model* (degree of agility, level of process integration, quality of resources, quality of cooperation), *people* (degree of expertise, implementation of learning routines, employee adoption of digital strategy, specialization on digital assets), *culture* (level of transparency, agility, empowerment, attitude toward change), *governance* (coordination mechanisms, level of alignment, measurability, target orientation), and *technology* (adoption and usage of technologies for data management, customer interaction, process automation, digital workplace)²⁸⁶.

An investigation of the implementation of a digital transformation maturity model showed a favourable disposition to information technology and digital media within the educational organizations and a general characteristic of people-centered maturity measurement but the relationship between individual competencies and organizational capabilities was not clear. This implied that a high maturity score among employees will not simply translate to high organizational capabilities or performance¹³⁰.

An assessment of digital transformation efforts in public organisations revealed that the integration and implementation of digital transformation programmes in government establishment are perceived to have political undertone. However, digital ambitions and a good understanding of the necessary methods and strategies for digital transformation may give the impetus to ignite digital transformation drive and pursue same to some level of success in public organisation. The success of such will result in the introduction of completely new ways of working in an established work arrangement in the public organisations²⁸⁷.

From a survey of chief information officers selected across organisations in the United States on digital transformation, IT capabilities and firm performance in which Resource Based View theory was used as a theoretical framework, it was found that that IT capability positively influences digital transformation processes in organisation serving as empirical support for unverified evidence regarding the impact of digital transformation on job roles of workforce and overall firms' performance. It was found that the emergence of digital technologies from social media to mobile platforms to big data, organizations with requisite capabilities will drive performance by using such technologies to drive unprecedented ease of operations, activities and relationship with clients and stakeholders. It was further revealed that digitally transforming organisations leveraged on its digital capability in fostering job performance of the workforce, work units and firms' activities fostering firm performance. the findings shows that firms investing in digital transformation are able to align digital insights with innovative processes and the investments lead to enhanced experience and performance²⁸⁸.

In a synthesis of peer-reviewed academic journals between 2015 and 2020, on digital agility and adoption of technology, 381 papers were considered narrowed down to 91 through inclusion and exclusion criteria. The systematic literature review was to assess the underlying relationship between Industry 4.0 ecosystem and digital agility as a component of digital transformation in organizations. The results show that agility is important for an organization to adopt Industry 4.0 technologies as it helps companies to cope with the changes that could ensue as a result of emerging technologies. The synthesis of the review indicated that organisations' capabilities for internet of things, cyber security system, big data management, cloud computing, etc. are important drivers of digital transformation in organisation and that only organizations which have agility as a (dynamic) capability can effectively cope with the changes and become key drivers for adopting such technologies for

improved workers' performance, operations efficiency and effectiveness, stakeholders' satisfaction and organisational growth²⁸⁹.

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An exploratory cross-sectional survey of university leaders, founders and students from Australia, Belgium, Canada, Germany, India, Kenya, Nigeria, Singapore, Switzerland, United Kingdom, the United States, London, Massachusetts and Canberra representing diverse groups of player and actors who were considered critical to digital transformation in higher education was carried out to obtain range of viewpoints and assessment of digital transformation in higher educational institutions. It was found that students considered digital innovations which support internships and ensure opportunities for employment as priority and were of the belief that the availability of technological resources to facilitate administrative functions and processes, simplify and modernize admission applications, enrolment, examinations, students' services and ease of academic engagement should be the major interest for digital transformation initiatives. The surveyed students were digitally savvy and considered the digital thinking in their choice of any institution in the future believing that there will be massive disruption of higher education model in the coming years. Similarly, leaders of higher education institutions expected disruption in the model of the schools in ten to fifteen years, most are employing 'middle ground' approach to effect transformation to their existing model while a few exhibited commitment and plans for creating new digitally-enable model in most areas of their institutions life as digital transformation was regarded as a pathway to strengthening their established way of working and delivery educational services and not a means of changing the operations and models. In all institutional management and leaders expressed precedence for student enrolment, institutional administration, course development, curriculum delivery and students experience in their bids for digital transformation²⁹⁰.

Examination of teachers' preparation and development programmes to use digital resources in learning environments and enhance learning outcomes revealed that institutions for training and developing teachers' competence are committed to four cardinal issues – "focus

on the active use of technology to enable learning and teaching through creation, production, and problem solving; building sustainable, programme-wide systems of professional learning for higher education instructors to strengthen and continually refresh capacity to use technological tools to enable transformative learning and teaching; ensuring pre-service teacher experiences with educational technology are program-deep and program-wide rather than one-off courses separate from methods courses; and aligning efforts with research-based standards, frameworks, and credentials recognized across fields”. Hence, ratification of a number of digital competencies by professional organisation will facilitate the recognition and the need for such competences as well as personal career development efforts by teachers and their employers²⁹¹.

An examination of the impact of digital technologies use on learning behaviour motivation for reading among Moroccan university students revealed that low cost of digital materials, friendly features of e-texts and student interest to keep abreast of information around them were prominent factors facilitating the preference for digital reading among the students a large percentage of them portrayed the digital materials (online materials, e-books, PDF, Google books and documents) as being essential to their academic engagement, indicating that are essential as the digital materials were regularly being used coursework and offer flexibility and seamlessness in reading experience²⁹².

An exploration into the extent of influence of availability and access to digital tools on performance and creativity showed that teachers see digital tools as “a chargeable interactive tools with illuminated screen on which kids can manipulate things such as phone, computer, camera, tablet, and a technology piece that allows you to use media, a video and audio clips, the internet, and learning platforms and software”. It was discovered that teachers’ perceptions of creativity in some schools had direct link to availability and access to evolving

digital tools and that digital tools were employed for the teaching of foundational skills and to stimulate digital creativity among the children²⁹³.

An investigation into the relationships among “digital literacy, digital workplace continuance intentions and individual performance” revealed a significant positive relationship between digital literacy and effort expectancy which implied that the level of digital literacy have significant bearing on employees’ perception of ease of use of digital technologies and their performance in the workplace while performance and effort expectancies were discovered to have strong predictive influence on continuance intentions, as workers who viewed technology as useful and user friendly demonstrated inclination for continued usage of the technologies¹⁸⁵.

The interpretive in-depth case study on digital transformation strategy of European financial service providers which involved a search for an organization where digital transformation strategy was at its early stage led to the discovery of AssetCo, a medium scale financial firm with almost one thousand workers where the study was carried out. A completely new digital strategy was discovered which pointed to the continuous nature of digital transformation showing that the processes and linked strategies of the firm were found to be highly dynamic. Influences from internal and external environment on the adoption of digital resources and advancement in the same direction were instrumental to the envisioning of the firm to be a leader in the financial service industry in the region. It was revealed that organisation’s political undertone readily influenced digital transformation and that strategizing was fruitful source of digital transformation²⁹⁴.

In a study on the use of digital technologies to facilitate digital organisational culture for enhanced job and organisational performance, it was discovered that digital culture facilitates the digitization of business activities and value creation of digital technology, showing that

appropriate organisational culture is an important condition for the adoption of emerging technologies capable of triggering value added activities, services and products and that such value added options are dependent on the extent of digitization of business operations or organisational activities^{Error! Bookmark not defined.}.

A range of innovation approach and strategies of surveyed technology-based knowledge-intensive business service firms in Spain were found to be common to manufacturing and services firms and were critical to innovation and performance improvement whereas innovation patterns and practices lacked sufficient impact on innovative outputs as well as returns and gains on operations. As against the known relationship of research and development with budget and enterprise size in manufacturing sector, smaller technology-based knowledge-intensive business service firms reported significant effort in research and development and a commitment in this direction. “Innovation practices in management, innovation practices in strategy and innovation culture and environment” were found to be statistically significant impactful on innovation outputs and business results²⁹⁵.

Model creation for the description of the key components of digital technology improvement in schools revealed differences in practices, constraints and perception of the usefulness of digital technology among surveyed schools. Teachers’ competence in basic digital tools covers the ability to use word processing software, use email resources, search for information on the Internet, download content from the internet, upload items to a cloud folder and use digital learning resources. A more detailed digital competence relates to the use of spreadsheets, image processing, graphics design, social media networks, virtual meetings, web page creation and design, blog publications, etc. Digital culture is a necessary driver of digital technology use for pedagogy and knowledge practices and curriculum delivery²⁹⁶.

In a study on the influence of technology usage and management on organisational performance of private higher learning institutions, technology management was found to be capable of enhancing institutional performance while low usage of technology undermines the organization's performance in terms of users' experience and administration. The subjects indicated the belief that digital process has come to displace the conventional paper-based office procedures and is leading to reduced operational costs. In addition, perceived ease of use, perceived usefulness and behavioural control portend positive impact on the attitude of the users to technology adoption while trust in technology has a positive effect on perceived behavioural control of workers²⁹⁷.

A study on the relationship of adaptive performance and job satisfaction of workers in Middle Tennessee State University revealed that work environments are usually dynamic and never static making workers in an organisation to embrace adaptability on their job than ever before. The study showed positive relationships between adaptability of an individual and all the identified dimensions of adaptive performance and that a person's level of adaptability relates to the extent of utilisation of the adaptability on a job⁵⁶.

An investigation into the mediating role of organizational climate on the influence of emotional intelligence on counterproductive work behaviour of administrative personnel in some Jordan universities indicated significant relationship and connection between emotional intelligence and counterproductive work behaviour. Components of emotional intelligence - self-awareness, understanding others, use and regulation of emotion have significant impact on organisational climate - "clarity, communication, responsibility, teamwork and support, and commitment" and are important to defining the counterproductive work behaviour of workers²⁹⁸.

An examination of the structural relationships between organizational support, job crafting, work engagement, and adaptive performance in which human resources professionals in South Korea were sampled revealed that organizational support bears much impact on adaptive performance by means of job crafting and employee engagement while job crafting and work engagement were found to be statistically significant to facilitate improvement in the adaptive disposition and behaviour of workers in an organisation. Hence, adoption and promotion of job crafting to give optimal face to the work environment is helpful in enhancing work engagement among workers²⁹⁹.

An empirical evaluation of job requirements for adaptation to technology with reference to performance employed the taxonomy of adaptive performance developed by Pulakos and colleagues. It was reported that the surveyed project managers in different countries across the world indicated a high frequency of experience in adaptive performance. The study revealed that learning work tasks, technologies and procedures, dealing with uncertain and unpredictable work situations, demonstrating physically orientated adaptability, solving problems creatively, handling emergencies or crisis situations, handling work stress, demonstrating interpersonal adaptability, and demonstrating cultural adaptability, depict adaptability level and serve as important need of managers to demonstrate adaptive performance⁴⁸.

2.3.2 Review of Empirical Studies on Work Environment and Job Performance

Managing organisations towards improving employees' performance was found to require concentration on employee motivation and provision of necessary infrastructure in the work environment³⁰⁰. The relationship and impact of work environment on employees' job performance were shown to be dependent on a number of work environment considerations such as physical component of workplace, supervisors support, job aids, work incentives, and

performance feedback. Work environment was revealed to be a key determinants of the level of satisfaction derived by workers from their experience and encounter on a job²⁵³.

An investigation of the impact of work environment on the performance of workers in Institute of Finance Management in Dar-es Salaam pointed out that where employees are not given due recognition and made to work in a desirable work atmosphere, they lose the feeling of commitment to their employer and are demoralized in terms of performance as employees' performance was found to be depended on a number of factors - job aid, fairly treatment, flexible work condition, noiseless workspace, supervisor's support, harmonious relationship with colleagues, supportive policies, opportunities, etc. that were found to be important in achieving the desired level of performance of workers²⁵³.

A study of office design and employee productivity pointed to no influence of office design and related work factors on the productivity of committed employees in the organisation as the workers were found to show focus on the fulfilment of their job functions irrespective of the availability and adequacy of office resources. While comfortable furniture showed significant impact on the employees' performance, light, noise-levels and temperature revealed negligible impact on the workers who demonstrated organisational commitment⁴.

An examination of the significance of psycho-social factors on the attitude of workers in private organisations revealed that workplace relationship, social relations, emotional issues, job assignment and extra work bear significant impact on employee's attitude at the workplace while adequate physical factor of the work environment – furniture, fittings and furnishing, office space, office arrangement, interior designs and aesthetics were found to enhance employees comfort level, work habits, lifestyle, sophistication and productivity. However, emotional factors and relations ranked highest to show that behavioural factors are

more critical than physical factors while comfort level in the workspace has more significant than the layout of offices in stimulating work attitude and performance of workers²²⁹.

A survey of workers in a software company revealed that poor work environment and discomfort revealed probability of health issues among employees and absentees and fall in productivity as a unit change in physical environmental factors will engender about 35 percent change in employees' health. Employees in software firm showed the need for attractive, peaceful and supportive work environment characterized by good relationship among workers, supervisors support, employee participation in decision that affect them in order to achieve higher performance²⁴⁷.

A RIDIT approach employed to determine the precedence of work environment factors influencing employee performance revealed that workers showed highest preference for cooperative workplace, organisation and supervisor supports, and employees' empowerment and followed compassionate relationship, mutual respect and understanding, thus showing the precedence of behaviour work factors on employees' performance. the result showed that administrative work group showed interest for work atmosphere that guarantee morality and honesty, courtesy, recognition of efforts, freedom to express ideas and thoughts, use of modern-day technological tools, opportunity for training and skill development and enhancement³⁰¹. Similarly, in another study, employees' job attitude and work disposition of workers was shown to have significant relationship with job performance³⁰².

A survey of employees drawn from small and medium scale enterprises in India to examine work-domain impact of work environment on the job-related attitudes of workers - satisfaction, affective commitment, work-family conflict and intention to leave revealed that workplace social support variables have significant bearing on workers' attitude, effective in molding employee views and impression about their firms' work culture, engender

productive work behaviours, reduces employees' intention to exit their job and renders the work environment favourable. In a similar direction, supportive organisational culture emerged as essential consideration of employees and portends positive psychological influence on the attitude of workers and facilitates the pressure associated with work load and demanding job conditions and requirements²⁴³.

Several dimensions of physical elements of the work environment – ventilation, temperature, noise reduction, interior infrastructure and lighting portrayed positive correlation and significant impact on the performance of worker of firms in the apparel industry in a district of Sri Lanka. The physical work components of the origination were discovered to be unfavourable and undesirable thus rendering the performance level and outcomes unsatisfactory²¹⁹. In a similar study, sound, lighting, office layout and design, space arrangement and allocation, colour and ergonomics were reported as physical factors that have impact on the ability, motivation for excellent performance and the adaptability level of workers to situational constraints, technology and environmental demands while organizational environment being a combination and interplay of people, policies, character and system was found to be a potent factor that could affect individual and the organizational performance²³⁰.

An investigation into the work environment factors affecting productivity showed that problems of poor or low productivity reside within the environment of a workplace as conducive and better work environment, in addition to pay, supervision, training, development, liveliness, excitement, motivation, work stress-free work encounters, energy and pleasure, and happiness were revealed to be capable of boosting workers performance, stimulating creativity and workers' commitment to organisational success³⁰³.

In a study of the work environment impact on employee performance level in selected manufacturing firms, results revealed that productive capacity and inclination of workers will increase where working conditions and environment are kept to remarkable level and will fall if work load on individual worker is made to increase beyond certain threshold⁷⁶. Similarly, test analysis of the predictive impact of organisational behavioural factors showed that employees' relationship with co-workers, supervisors support, organisational policies, technology use, training and development, incentives, employee recognition, adequate workload are factors constituting working environment and all have far-reaching influence on the performance level of workers³⁰⁴. Result of another study indicated that work life balance, psychological wellbeing, social exchange and relationships, management and leadership approaches, policy transparency and implementation depict a healthy workplace environment which facilitates improved work culture and organizational productivity³⁰⁵.

A survey of 110 supervisors selected from manufacturing and service organisations in Indonesia in which analysis of moment structures and sobel test were employed to examine the influence of flexible work hour and work environment on the engagement level and work performance of the supervisors revealed that work environment factors predicts significant change in employee motivation and engagement and that employees' motivation is capable of mediating the relationship of work environment and employee performance¹⁹.

A study revealed that giving the workers the freedom to arrange and utilize their own workplace in accordance with their preferences and peculiarity is a key to ensure a productive work environment as such authority and control over physical office design and layout was reported to be capable of making the workers feel a sense of security and ownership of their environment and a culture of optimal performance, motivation for efficiency and effectiveness as well as harmonious workplace relationships³⁰⁶.

An exploration of the correlation between activity-based work environment and job attitudes and vitality of office workers emphasized the interplay of task requirements and work environment to determine the perceived fit of task requirements or needs office workers and work environment. It was found that trust in management and workers need for routine seeking are possible predictors of suitable and well-organized use of activity-based work environment, a workplace environment devoid of disturbance and conflicts have positive correlation and influence on job attitudes of office staff and the energy they put in their work and that adequate balance of need–supply fit of communicative and supportive work environment strongly correlated with enhanced job attitudes³⁰⁷.

A survey of 3011 workers across organisations in a service sector to ascertain the connection between psycho-social work environment and work-related threats and violence revealed that high quantitative demands, high emotional demands, low level of influence over own work-situation, low predictability, low rewards at work, low role clarity, many role conflicts, many work-family conflicts and low organization justice were associated with work-related threats” and that “high emotional demands, low predictability, low role clarity, many role conflicts, many work-family conflicts, low supervisor quality and low support from nearest supervisor were associated with work-related violence³⁰⁸. A study report shows that restorative nature of the workplace is significant in enhancing the organisational citizenship behaviour of the workers such that when members of a work organisation are given restorative environment, the context in which job is performance is improved and extra-role behaviour of active involvement, team spirit and co-workers support will improve³⁰⁹.

The result of a study revealed that the characteristic nature of the physical aspect of the environment in which people are engaged to perform assigned tasks and roles defines and influences their welfare, comfort, engagement pattern and level, nature of interaction and

control over what they do in the work place, how they do it and ultimately determines the performance across every part of the organisation³¹⁰.

In a study involving the survey of staff of the admissions section of a large public university in the eastern United States, it was reported that friendship network in a workplace setting positively correlated with the contextual performance of the workers and that network of formal and social advice among the workers was capable of enhancing the organisational citizenship behaviour of the workers³¹¹.

In an assessment of the impact of employee health in mediating the relationship between workplace environment factors and employee performance, findings revealed that a unit increase or decrease variance in physical environment factors yielded 35% corresponding change in employees' health and that behavioural environment factors resulted in significant positive change in employees' health. Employees' health was reported to be highly significant in predicting the influence of work environment on employees' performance. It was submitted that physical and behavioural context of work environmental positively affect employees' health which in turn posed significantly positive influence of employees' level of performance²⁴⁶.

2.3.3 Review of Empirical Studies on Digital Transformation, Work Environment and Job Performance

In a review to identify key factors that foster effective digital transformation of any technology driven work environment, thirteen predominant factors were proposed and theorized as having influence on organisation's digital transformation activities and success at individual, group and organizational levels. The review revealed that technology acceptance, perception and attitudes toward technology use, skill and abilities, employee's resilience and adaptability, and work-related wellbeing were essential at individual level; communication and collaboration of work teams; team identification relationships and team adaptability and resilience were fundamental to effective digital transformation at the group-level, while leadership; human capital and organizational culture e organizational-level, were found to be important for digital transformation at organizational level. It was acknowledged that employers' acceptance and attitudes toward any type of digital technology will facilitate its adoption and transformational efforts. Similarly, employees' perception of the ease of learning new skills needed for a particular technology and the usefulness of such technology in enhancing their routines and task performance, will make the employees accept the use of the technology. In addition, technological adoption and acceptance were linked to training opportunities provided by the organisation and knowledge sharing on new technology among teams and supervisors influence technology adoption but such knowledge sharing relationship and interactions in the work environment are often moderated by technology type, employees' job roles, gender, age and experience³¹².

In a case-based survey conducted in a subsidiary of a global enterprise in the wholesale industry in Germany, autonomy, competence and relatedness factors in the work environment were considered in relation to performance measure and attitudes towards digital

transformation and usage intentions. It was found that the availability of array of tools makes workers to exhibit autonomous attitude in the work environment and determines their choice between existing and new technologies and to be selective in their choice in new set of technologies. The technological confidence of the workers was revealed as a potent predictor of their perceptions of usefulness of new technologies and also determines their attitudes towards the digital workplace as workers who are competent in using technological resources in the digital work environment explore technology in innovative and unique ways. Hence, technological resources in the workplace environment should lend a sense of connectedness with the workers in order to prompt a positive attitude among employees³¹³.

A review of material, organizational and environmental antecedents that are capable of prompting digital transformation shows that the emergence and diffusion of a variety of digital tools and resources is a material antecedent that enabled and triggered digital transformation and that social media, mobile devices, analytics, cloud computing and Internet of Things have digital properties that determine the form of digital transformation in a work environment. It was shown that the emergence and diffusion of digital technologies in a work environment interact with organizational characteristics (strategy, legacy, historical pathway, resources, processes, values and culture) and material and organizational antecedents are embedded in and interact with environmental factors. Enhanced use of digital technology and software for task performance, the creation of smart, linked, and customized products, and automated, data-driven, and virtual business processes, new value creation and improved service delivery were attributed to digital transformation in the work environment³¹⁴.

A survey of responses from employees of research and development was used to ascertain the relationship of absorptive capacity, creativity and job performance in work environment in

which social media usage was positioned to moderate the relatedness among the constructs. The study revealed that absorptive capacity of individuals has significantly positively relationship with employees' creativity and creativity positively correlated with job performance while the social media usage was found to be potent in influencing the impact of employees' absorptive capacity and the extent of creativity exhibited towards desirable job performance³¹⁵.

2.3.4 Review of Empirical Studies on Work Experience and Job Performance

In a study on the correlation of work experience and job performance in which data were collected from private-sector organizations involving 83 occupational groups, which constitute a diverse sample of all jobs in the economy of 50 states of United State of America, measure of work experience was taken as the number of months the employee worked in present occupations, regardless of employer. Two factors of work experience - length of experience and job complexity were found to have moderating impact on the correlation. Job performance is most correlated with work experience for individuals who have low mean levels of employment experience and who work in positions with modest cognitive demands. Work experience was found to have a greater impact on job knowledge and job performance for low-complexity jobs than for high-complexity jobs due to the differences in educational opportunities available for each of high and low complexity jobs which implies that work experience is a better predictor of job performance for low-complexity jobs than for high-complexity jobs. For performance in high-complexity jobs, job knowledge is acquired through both formal education and on-the-job training, however there are fewer formal education sources from which job knowledge can be acquired for low-complexity positions³¹⁶.

In a study to determine the net positive return to tenure with the current employer using total work experience in an industry as the explanatory variable, it was submitted that work

experience is occupational and industry-specific rather than firm-specific and leads to improvements in employees' job-related outcomes³¹⁷. The association and interaction between job demands, job control and work experience were investigated using a job-demand-control model in which work experience, measured as the number of years an individual had been working regardless the job or organisation, was introduced as a potential moderator of the impact of job demands and control and their interaction with adaptation and work outcomes. Significant interactions were found between work experience and the variables but such interaction effect decreases as the years of years of work experience increase leading to statistically insignificant interaction of years of experience on the job demand, job control and work outcome (adaptation and learning)³¹⁸.

The moderating role of personality factors was investigated on the relationship of prior-related work experience and job performance of workers in eleven private life insurance organizations which are highly ranked in overall market share and represent maximum employee strength of the insurance sector in New Delhi, India. Overall firm experience, unrelated experience and prior work-related experience were reported to significantly predict only one of the job performance outcomes – organisational citizenship behaviour of individuals, which indicated that an employee's company experience, unrelated experience, and prior job-related experience may all work together to influence whether they act in an organizational citizenship manner. It was discovered that none of the three work experience predictors explained any significant distinctive variance in any of the three performance outcomes, contradicting the assumptions that each of the predictors would do so for the three job performance outcomes. Additionally, the likelihood that public sector employees will engage in in-role behaviours and organizational citizenship behaviours, which were used as job performance indicators, depends on the quantity of firm experience, unrelated experience, and past work-related experience. Differences were reported between the predictive influence

of the work experience indicators on job performance measures in public organizations and that of private organizations, as shown by the three work experience predictors found to have no significant impact on any of the job performance outcomes in the private sector. Such differences were attributed to possibly the weight given to work experience and seniority in public sector organizations for career advancement, while performance record is the main criterion for similar promotion in the private sector³¹⁹.

Similar to this, personality traits were employed to mitigate the association between work experience and job performance over and above control factors including firm experience, irrelevant experience, and job complexity in order to clear up theoretical uncertainty in existing literature. It was submitted that more comprehensive personality traits including openness to experience, conscientiousness, agreeableness, extroversion, and neuroticism play significant roles in the strength of the relationship of work experience and job performance. Accordingly, it was suggested that research results showing a bad correlation between work experience and job performance would likely be situation-specific³²⁰.

2.4 Conceptual Model

The conceptual framework developed to model the relative and combined influence of digital transformation and work environment on job performance of administrative staff of public tertiary institutions in South-west, Nigeria is shown below:

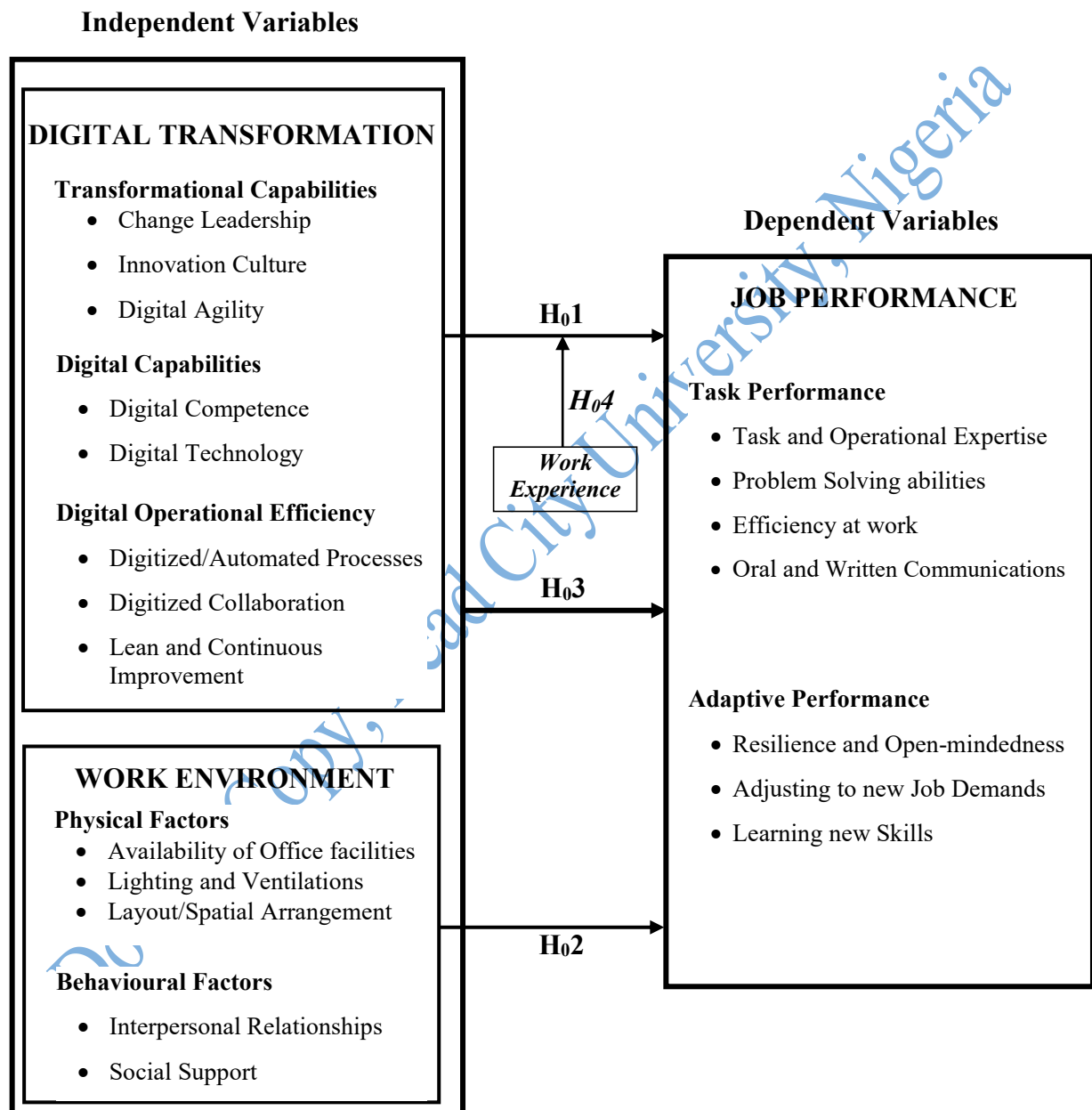


Fig. 2.2: Conceptual Model for Digital Transformation, Work Environment and Job Performance

Source: *Researcher's Fieldwork, 2023*

The focus of this study was to examine the impact of digital transformation and work environment on job performance of administrative staff of public tertiary institutions in South-west, Nigeria. As depicted in the conceptual model, digital transformation and work environment are the independent variables while job performance is the dependent variable

Job performance was measured in terms of task performance and adaptive performance. Metrics used to measure task performance are task and operational knowledge, problem solving ability, efficiency, task skills and expertise, work quality and communication skills which were adapted from Campbell's Theory of Job Performance¹². The metrics adopted for measuring adaptive performance are resilience, adjustment to new job demands, flexibility and open-mindedness, new skill development and creative ideas which were adapted from Individual Adaptability Theory^{11,45}.

Digital transformation and work environment are the independent variables. Constructs adopted as measures of digital transformation were transformational capabilities, digital capabilities and digital operational efficiency. The metrics were adapted from Digital Excellence Model¹⁵⁸. Digital transformation basically results in changes in key areas of organisational activities and manifests in a number of ways - Transformational capabilities of the organisation to adequately respond to technological changes and development through change leadership, digital agility and culture; Digital capabilities covers the development of new skills and competence by persons driving innovative solutions as well as digital technological tools and applications which enable digital changes; Operational efficiency depicts the extent to which digitalization of processes delivers efficiency of operations, use of communication tools for collaboration and knowledge diffusion as well as seamless and continuous improvement in operational routines^{158,168}.

Components of the work environment which were taken to ascertain the conduciveness of the work environment are physical and behavioural factors^{248,321}. Physical factors were measured in terms of lighting, ventilation, spatial arrangement and office furniture and fittings which are important physical needs for conducive work flow and workers comfort as indicated in a number of literature^{245,322,323}. Behavioural factors are represented by interpersonal relationships - communication and attitude among people in the work place, behaviour towards team and colleagues, subordinates or supervisors and social support (co-worker support and supervisors' support) which are indicated in literature as components of behavioural work environment^{295,304,324}.

2.5 Summary of Gap in Literature Reviewed

This study focuses on the influence of digital transformation and work environment factors on the job performance of workers in public organisation with particular emphasis on the administrative personnel of public tertiary institutions in South-west, Nigeria.

Every organisation, private or public is established with certain goals towards which efforts and activities are directed for the purpose of accomplishment. The achievement of organisational goals has been shown to be fundamentally predicated on the performance of workers engaged to carry out organisational activities. Employees' job performance is therefore a critical factor in the achievement of short and long-term goals of an organisation and an important issue of concern and interest to practitioners and researchers. Many factors have been identified and studied by researchers to measure and describe job performance as seen in existing literature, however till date, none had explored task, and adaptive performance to assess job performance of administrative personnel of public tertiary institutions in South-west, Nigeria.

While job performance has been studied extensively, administrative job responsibilities in public tertiary institutions encompasses an array of functions involving the interplay of many factors and are carried out at different interface of functions and mandate of such institutions, thus requiring performance factors to cover not only in-role and extra-role behaviours but also the readiness, capacity and wiliness to change and adapt to environmental and work changes beyond the stipulations of the job description of incumbents. However, most of the existing literature examined job performance of administrative staff of tertiary institutions and other public organisations in terms of efficiency, effectiveness, quality of work, job attitude and disposition, etc., thus leaving a wide gap in literature on the categorization of administrative job performance into task performance (covering their in-role, administrative task proficiency, task knowledge, work quantity and quality, communication, etc.) and adaptive performance (to capture their level of adaptability - creative problem solving, handling unpredictable situations of work, learning and coping with new tasks, tools, processes, technologies, and adjusting to changes in culture, workplace environment, work teams and individuals).

In this study, job performance of administrative staff of federal tertiary institutions in South-west, Nigeria were categorized into task and adaptive performance and treated as distinct components to contribute to existing literature and to provide further explanation on the concepts in developing appropriate framework for assessing the performance of administrative at work.

An indispensable factor in most organisations of modern societies which has changed the perception and expectation of consumers, users, serviced entities or groups on firms' operations, business offerings and service delivery is the use of technology and essentially the digital ones. The modern-day adoption of digital technologies prompts businesses and

organisations to transform their operational models and activities digitally. Digital transformation has therefore gained popularity in literature and it continues to attract the attention of researchers. The concept of digital transformation has been widely studied but such studies are largely situated in business enterprises as the concept was mostly viewed in terms of business process and product transformation for value creation to customers and consumers. Many metrics of digital transformation have been identified and studied but till date, no empirical research in the context of public organisation had explored the metrics examined in this study together as measures of digital transformation. Most existing empirical studies on digital transformation were carried out in private enterprises and constructs such as digital technology, digital capability, digital maturity, technological innovation, organisational agility were explored to describe the level of digital transformation. The present study recognized this gap in literature and is therefore based on federal tertiary institutions in South-west, Nigeria as public sector organisations. In addition, the study explored Digital Excellence Model which specifies best practices of digital transformation, readiness and capacity of any organisation to operate in the digital era, the key indicators and challenges and how organisations respond to them. The model particularly shares common indicators from a wide range of interest areas such as education, business, commerce, information technology and it used practical observations and feedback to offer a fuller explanation of digital transformation level and the salient areas of manifestation of digital transformation. The model offers practicable framework for the assessment of digital transformation in organisations and could be employed in a longitudinal study on digital transformation.

Extant literature and studies have shown that the workplace environment is a key determinant of workers' attitude, sense of responsibility, commitment, quality of work, level of productivity or performance and the motivation to improve in these areas. Studies

have equally shown the links between job performance and physical component of the workplace, people and situational factors in an organisation but none investigated the combined and relative influence of digital transformation and work environment on job performance of administrative staff of public tertiary institutions in Nigeria where work environment was x-rayed in terms of physical work environment and behavioural/human environment.

To fill identified gaps in literature and to contribute to existing literature on the variables, this study examined the influence of digital transformation (measured by transformational capabilities, digital capabilities and digital operational efficiency) and work environment (Physical and behavioural environment) on job performance (task performance and adaptive performance) of administrative staff of public tertiary institutions in South-west, Nigeria.

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Chapter Three

Methodology

This chapter describes the methods and procedures used to gather relevant data for the study. It covers the research design, population of study, sample and sampling technique, instrumentation, data collection procedures and method of data analysis.

3.1 Research Design

This study employed the mixed method research design involving the use of both quantitative and qualitative methods. Mixed methods gives the room to explore the breadth and depth of an investigation with a view to having enhanced and comprehensive insight about the investigation¹.

For the quantitative aspect of study, descriptive survey design was used. This is because the population of interest, that is, administrative staff of federal tertiary institutions comprises large number of individuals in different cadres of work groups, different institutions and wide geographical coverage which spans across the six states of the South-west Geopolitical zone of Nigeria. The survey approach gave room for the coverage of large subjects in the study population upon which generalisations were made^{2,3}. For the qualitative aspect, structured interview was conducted with the registrars who are the chief administrative officers of the federal tertiary institutions.

3.2 Population of the Study

The population of this study comprised senior registry staff of federal tertiary institutions in south-west geo-political zone of Nigeria. In all, there are 14 federal tertiary institutions in the study area - six universities, five polytechnics and three colleges of education owned by the federal government⁴. Preliminary investigation revealed a total of 5557 administrative

staff as shown in Table 3.1 who are senior registry staff (secretaries, executive officers, administrative officers and officers in the registrars cadre) in the federal tertiary institutions.

Table 3.1: Population of Administrative Staff of Federal Tertiary Institutions in South-west, Nigeria

S/N	Federal Institutions	Secretary Cadre	Executive Officer Cadre	Admin. Officers Cadre	Registrar Cadre	Total
1	University of Lagos	165	224	387	147	923
2	Federal University of Agric. Abeokuta	87	81	111	91	370
3	Federal University of Technology, Akure	81	104	114	71	370
4	Obafemi Awolowo University, Ile-Ife	99	86	122	99	406
5	University of Ibadan	121	136	212	136	605
6	Federal University, Oye-Ekiti	61	59	88	62	270
7	Federal Polytechnic Ado-Ekiti	94	112	123	89	418
8	Yaba College of Technology	97	126	131	112	466
9	Federal Polytechnic Ilaro	103	89	97	67	356
10	Federal Polytechnic Ede	65	51	47	49	212
11	Federal Polytechnic Ile-Oluji	56	46	48	51	201
12	Federal Coll. of Edu. (Technical), Akoka	103	89	101	73	366
13	Federal College of Education, Abeokuta	83	94	117	82	376
14	Federal College of Edu. (Special), Oyo	45	56	61	56	218
Total						5557

Source:⁵

3.3 Sample and Sampling Technique

For the purpose of this study, a sample of 373 administrative staff was considered appropriate from the population of administrative staff of federal tertiary institutions in South-west, Nigeria. The sample size was determined with the use of Taro Yamane's method of sample size determination in a known population of study.

The Taro Yamane formula is given as:

$$n = \frac{N}{(1+N(e)^2)}$$

Where:

n = Sample size

N = The population under study

e = Margin of error (it could be 0.10, 0.05 or 0.01)

From Table 3.1, the observed population of the administrative staff of the federal tertiary institutions covered in south-west, Nigeria stood at 5557 at the time of this study. Thus,

using the Taro Yamane's formula
$$n = \frac{N}{(1+N(e)^2)}$$

$$n = ?$$

$$N = 5557$$

$$e = 0.05 \text{ (95\% confidence interval)}$$

Therefore,

$$n = \frac{5557}{(1 + 5557(0.05)^2)}$$

$$n = \frac{5557}{1 + 5557(0.0025)}$$

$$n = \frac{5557}{1 + 13.89}$$

$$n = \frac{5557}{14.89}$$

$$n = 373.20$$

Multi-stage sampling technique was used for sample selection. The first stage involved the selection of respondents from the 14 federal tertiary institutions in south-west, Nigeria.

The next stage was the stratification of the population into federal universities, federal polytechnics and federal colleges of education as follow:

Table 3.2: Population of Administrative Staff of Federal Universities in South-west, Nigeria

S/N	Federal Universities	Secretary Cadre	Executive Officer Cadre	Admin. Officers Cadre	Registrar Cadre	Total
1	University of Lagos	165	224	387	147	923
2	Federal University of Agric. Abeokuta	87	81	111	91	370
3	Federal University of Technology, Akure	81	104	114	71	370
4	Obafemi Awolowo University, Ile-Ife	99	86	122	99	406
5	University of Ibadan	121	136	212	136	605
6	Federal University, Oye-Ekiti	61	59	88	62	270
	Total (A)					2944

Source:²

Table 3.3: Population of Administrative Staff of Federal Polytechnics in South-west, Nigeria

S/N	Federal Polytechnics	Secretary Cadre	Executive Officer Cadre	Admin. Officers Cadre	Registrar Cadre	Total
1	Federal Polytechnic Ado-Ekiti	94	112	123	89	418
2	Yaba College of Technology	97	126	131	112	466
3	Federal Polytechnic Ilaro	103	89	97	67	356
4	Federal Polytechnic Ede	65	51	47	49	212
5	Federal Polytechnic Ile-Oluji	56	46	48	51	201
	Total (B)					1653

Source:²

Table 3.4: Population of Administrative Staff of Federal Colleges of Education in South-west, Nigeria

S/N	Federal Colleges of Education	Secretary Cadre	Executive Officer Cadre	Admin. Officers Cadre	Registrar Cadre	Total
1	Federal Coll. of Edu. (Technical), Akoka	103	89	101	73	366
2	Federal College of Education, Abeokuta	83	94	117	82	376
3	Federal College of Edu. (Special), Oyo	45	56	61	56	218
Total (C)						960

Source:²

Therefore, $A + B + C = 5557$

Then, stratified random sampling technique was used to determine the sample size from each stratum using the formula below:

$$\frac{\text{Sample Size}}{\text{Population}} \times \text{Stratum Size} = \text{Stratum Sample Size}$$

Thus, the following table was obtained

Table 3.5: Sample Size per Stratum

Institutions	Stratum Size	Stratum Sample Size
Federal Universities, South-west, Nigeria	2944	198
Federal Polytechnics, South-west, Nigeria	1653	111
Federal Colleges of Education, South-west, Nigeria	960	64
Total	5557	373

Source:²

Table 3.5 shows that 198 participants were selected from the federal universities, 111 were selected from federal polytechnics and 64 participants were selected from federal colleges of education.

The next stage of the sampling procedure was the determination of the number of respondents from each institution under each stratum. To do this, the following formula was used:

$$\frac{\text{Population of Each Institution}}{\text{Stratum Population}} \times \text{Stratum Sample Size}$$

For example, University of Lagos = $\frac{923}{2944} \times 198 = 62$

Hence, the following sample table was obtained

Table 3.6: Sample Table

S/N	Federal Tertiary Institutions	Admin Staff	Sample Size
1	University of Lagos	923	62
2	Federal University of Agriculture, Abeokuta	370	25
3	Federal University of Technology, Akure	370	25
4	Obafemi Awolowo University, Ile-Ife	406	27
5	University of Ibadan	605	41
6	Federal University, Oye-Ekiti	270	18
7	Federal Polytechnic, Ado-Ekiti	418	28
8	Yaba College of Technology, Yaba	466	31
9	Federal Polytechnic, Ilaro	356	24
10	Federal Polytechnic Ede	212	14
11	Federal Polytechnic, Ile-Oluji	201	13
12	Federal College of Edu. (Technical), Akoka	366	25
13	Federal College of Education, Abeokuta	376	25
14	Federal College of Edu. (Special), Oyo	218	15

Source:²

After determining the number of respondents from each tertiary institution, convenient sampling technique was employed for the selection of the sample because of possible non-availability of all administrative staff in each institution at the time the survey was conducted.

The flow chart of the sampling procedure is displayed below:

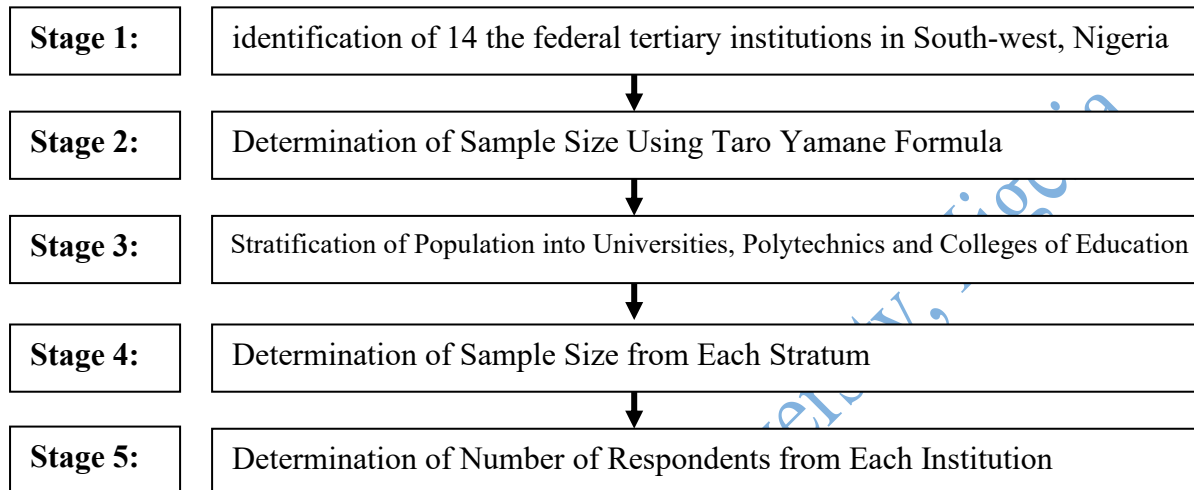


Fig. 3.1: Description of Sampling Procedure

Source: *Researcher's Fieldwork, 2023*

3.4 Research Instrument

For the study, quantitative and qualitative data were collected. The instrument used for the quantitative data was a structured questionnaire which made use of existing structured scales with appropriate properties. The questionnaire consists of the following sections:

Section A: Demographic Information

This section was used to collect demographic information of the respondents such as, gender, cadre, year of service and age. Items on the demographic data were self-developed by the Researcher.

Section B: Job Performance

This section on job performance consisted of 21 items divided into two dimensions - task performance and adaptive performance. The questionnaire items were adapted from

Individual Work Performance Frameworks and Individual Work Performance Indicators^{6,7}. The scales were designed with a 4-point likert rating options - Very High (VH), High (H), Low (L) and Very Low (VL). Examples of questionnaire items on task performance are knowledge of administrative tasks, ability to identify problems and issues, understanding of directives and instructions, while that of adaptive performance are ability to cope with new work demands, adjusting to new work processes and tools, learning new technologies, etc.

Section C: Digital Transformation

Digital transformation consisted of 34 items divided into three dimensions - transformational capabilities, digital capabilities and digital operational efficiency. The questionnaire items were adapted from Digital Excellence Model, Technology Capability and Strategic Flexibility Scale and Digital Literacy Scale^{8,9,10}.

Transformational capabilities has nine items on a 4-point likert options - Very High (VH), High (H), Low (L) and Very Low (VL). Examples of the questionnaire items are – commitment of management to digital changes, cultivating digital culture across organisation, identifying new digital opportunities, etc. Digital capabilities has two components – Digital technology with eight items on a 4-point likert options - Highly Available (HA), Available (A), Fairly Available (FA) and Not Available (NA) and Digital Competence comprising 6 items with options - Highly Competent (HC), Competent (C), Fairly Competent (FC) and Not Competent (NC). Examples of questionnaire items on digital technology are - IT-enabled internal communication networks, virtual interactions resources and e-service platforms and architecture while examples of items on digital competence are communication in online interactions, multi-media usage, digital information security, etc. Digital operations efficiency consisted 11 items such as digital data generation, digitalized collaboration among

departments and persons and digital service delivery with options Highly Efficient (HE), Efficient (E), Fairly Efficient (FE) and Not Efficient (NE).

Section D: Work Environment

Work environment consisted of 17 items divided into two dimensions - physical work environment and human/behavioural environment designed with 4-point likert options Highly Conducive (HC), Conducive (C), Fairly Conducive (FC) and Not Conducive (NC). Physical work environment comprised 11 items such as furniture and fittings, air-conditioning system and arrangement of people and work units which were adapted from Office Design and Employees Productivity Questionnaire and Workplace Environment Factors^{11,12}. Human/behavioural environment consisted of six items such as supervisory support to subordinates, co-worker support to each other and interaction among staff which were adapted from Psychosocial and Social Factors at Work and Work environment scale^{13,14}.

For the qualitative data, an interview guide was prepared for the purpose of interviewing the Registrars of the federal tertiary institutions. The questions on the interview guide were raised in line with the objectives of the study, the variables being examined and the items on the questionnaire.

3.5 Validity of the Research Instrument

In the context of this study, the validity of the research instrument went through two phases of scrutiny – face and content validity. Both phases were handled by experts in the Department of Information Management, Lead City University, Ibadan. This was to ensure that the instrument (questionnaire) contained items that would actually measure what the research wanted to measure.

3.6 Reliability of the Research Instrument

The reliability of the research instrument was determined through a pilot study. 30 copies of the questionnaire were administered to carefully selected administrative staff in three federal tertiary institutions in South-south Geo-political Zone of Nigeria (one university, one polytechnic and one college of education) which are not within the geographical coverage of the study. The federal tertiary institutions used for the pilot survey are University of Benin, Benin City; Auchi Polytechnic, Auchi and Federal College of Education (Technical), Asaba.

The reliability of the scales on the questionnaire was determined with Cronbach's alpha which gave reliability coefficient of 0.72, 0.70 and 0.73 for Job Performance, Digital Transformation and Work Environment scales respectively and 0.70 for the instrument as a whole.

3.7 Method of Data Collection

The researcher engaged the service of two research assistants for the administration and collection of the questionnaire. The research assistants were given orientation and training for two days on questionnaire administration and relevant people skills that could aid the administration of questionnaire and collection of research data. Data collection spanned through four weeks. The respondents were assured of the confidentiality of their responses and anonymity of their identities. In addition, a well-structured oral interview was conducted for the highest authorities of the registry department of each institution, that is, the Registrars of the federal tertiary institutions covered in the study.

3.8 Method of Data Analysis

The raw scores for the variables were arranged, coded and analysed using the Statistical Product and Service Solutions (SPSS) Version 25. The statistical tools used are frequency, percentage, mean and standard deviation for demographic data and research questions,

inferential statistics involving multiple regressions was employed for the test of the Hypotheses 1, 2, and 3 while hierarchical regression was used for the test of Hypothesis 4. All analysis were carried out at 0.05 level of significance, that is, 95% degree of confidence. Thematic content analysis was used for the qualitative data collected during interview.

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Endnotes

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Chapter Four

Results and Discussion of Findings

This chapter deals with data presentation, analysis and the interpretation of the results. The analysis was guided by the specific objectives and the hypotheses that were formulated in the study. The first section shows the presentation of the descriptive analysis using tables showing percentages and interpretation below the tables. The second section presents inferential statistics and discussion of findings comes at the later end of the chapter. The results presented were based on the research questions and hypotheses, which the study set out to answer and examine. Data was analyzed using SPSS version 25.

A total of 373 copies of questionnaire were administered, and 346 were returned. After sorting the questionnaires, 317 copies were certified as duly filled and considered usable. The usable questionnaires represented 84.9% response rate. The response rate is presented in Table 4.1.

Table 4.1: Response Rate

Response Rate:	Frequency	Percent (%)
Returned and used	317	84.9%
Not Returned/Returned but not used	56	15.1 %
No of distributed Questionnaire	373	100%

Source: Field Survey Data (2023)

4.1 Demographic Data Analysis

This presents the demographic information of the respondents of this study

Table 4.2: Demographic Characteristics of Respondents

Variables	Category	Frequency	Percentage
Gender	Male	175	55.2%
	Female	142	43.8%
Cadre	Secretarial	46	14.5%
	Executive	121	38.2%
	Admin Officer	90	28.4%
	Registrar	60	18.9%
Work Experience	0-5yrs	33	10.4%
	6-10yrs	72	22.7%
	11-15yrs	95	30.0%
	16-20yrs	26	8.2%
	21-25yrs	47	14.8%
	26-30yrs	26	8.2%
	Above 30yrs	18	5.7%
Age	Below 25yrs	10	3.2%
	26-35yrs	38	12.0%
	36-45yrs	112	35.3%
	46-55yrs	116	36.6%
	56yrs and above	41	12.9%
Educational Qualification	ND/NCE	38	12.0%
	HND/BSc	174	54.9%
	Master's Degree	89	28.1%
	PhD	16	5.0%

Source: Field Survey Results (2023)

This section consists of background and respondents' information that describe basic characteristics such as gender of the respondents, cadre, work experience, age and educational qualification. To this effect, the results are presented in Table 4.2.

Results on Table 4.2 indicated that 175 respondents representing 55.2% were male, while, 142 respondents representing 43.8% were female, indicating that most of the respondents were male. The ratio of male to female respondents portrayed the likelihood that there were more male than female administrative staff in the federal tertiary institutions in South-west, Nigeria, the possibility of male administrative staff to be readily disposed to participate in the survey or that most of the questionnaires not returned and those that could not be used for analysis were completed by female administrative staff. However, gender is not a factor of consideration and concern in this study.

Also, 46 respondents representing 14.5% were in secretarial cadre, 121 respondents representing 38.2% in executive, 90 respondents representing 28.4% were administrative officers, and 60 respondents representing 18.9% were registrar cadre. This shows that each of the cadres under the administrative staff category were adequately covered in the survey as depicted on the Population Table 3.1. Additionally, the result could also be an indication of accessibility to each of the cadres of the administrative staff in the course of conducting the survey as well as their willingness and readiness to partake in the survey - the executive officers being mostly accessible and willing, followed by the admin officers, then the registrar cadre and the secretaries.

33 respondents representing 10.4% had 0-5 years of work experience, 72 respondents representing 22.7% had 6-10 years, 95 respondents representing 30.0% had 11-15 years, 26 respondents representing 8.2% had 16-20 years, 47 respondents representing 14.8% had 21-25 years, 26 respondents representing 8.2% had 26-30 years, and 18 respondents representing

5.7% had above 30 years. This clearly points to the fact that most of the respondents have had remarkable years of work experience in their respective institutions as administrative staff and were in good positions to express opinions on the subject and variables being examined in this study.

The results on age profile of the respondents show that 10 respondents representing 3.2% were below 25 years of age, 28 respondents representing 12.0% were between 26-35 years, 112 respondents representing 35.3% were between 36-45 years, 116 respondents representing 36.6% were between 46-55 years, and 41 respondents representing 12.9% were 56 years and above. The high percentage of the respondents being between 26 and 55 years is a reflection of the fact that administrative staff position is a senior staff category in tertiary institutions and incumbents of such positions should have higher education background or have remarkable work experience in addition to higher education, the summation of which would have taken up substantial years of age. This depicts that a large percentage of the administrative staff of the federal tertiary institutions covered in this study are in their most active working age and that the cohort effect of varying tendencies of age groups on behaviour, attitude and disposition to the variables of this study (digital transformation, work environment and job performance) may not pose overarching impact by a particular age group since all possible working age clusters were represented.

Furthermore, the demography of the respondents reveals that 38 of them representing 12.0% had ND/NCE, 174 respondents representing 54.9% had HND/BSc, 89 respondents representing 28.1% had Masters degree, and 16 respondents representing 5.0% had PhD. This clearly portray the importance of higher education as a requisite condition for job placement into administrative staff position and career advancement of the job holders. In addition, the nature of the work organisations under study being higher educational

institutions could be a stimulating factor propelling educational advancement of the administrative staff.

4.2 Presentation of Data

Presentation of data collected for this study is in two folds – analysis of research questions and test of the hypotheses. The research questions were analysed with frequency count, percentage and mean while the test of hypotheses was done with multiple regression analysis using SPSS Version 25.

4.2.1 Analysis of Research Questions

The decision rule to make sense of the four Likert-type scale is as follows: Mean response between 1.00 – 1.49 is *very low*, 1.50 – 2.49 represents *low*, 2.50 – 3.49 represents *high* and the mean responses between 3.50-4.00 represent *very high*.

Research Question One: What is the level of job performance of administrative in federal tertiary institutions, South-west Nigeria?

Table 4.3: Descriptive Analysis of Responses on Level of Job Performance

Job Performance	VH	H	L	VL	Mean
Task Performance					
<i>Task and Operational Expertise</i>					
Knowledge of administrative tasks	150 (47.3%)	155 (48.9%)	12 (3.8%)	-	3.44
Versatility on administrative job roles	129 (40.7%)	167 (52.7%)	20 (6.3%)	1 (0.3%)	3.34
Up-to-date knowledge on core responsibilities	135 (42.6%)	155 (58.9%)	27 (8.5%)	-	3.34
Weighted Mean					3.37
<i>Problem Solving Abilities</i>					
Ability to identify problems and issues	159 (50.2%)	134 (42.3%)	24 (7.6%)	-	3.43

Proffering solutions to work issues	128 (40.4%)	165 (52.1%)	24 (7.6%)	-	3.33
Taking responsibility for problems and challenges	154 (48.6%)	132 (41.6%)	30 (9.5%)	-	3.40
Weighted Mean					3.38

Efficiency at Work

Ability to streamline work processes for efficiency	149 (47.0%)	151 (47.6%)	17 (5.4%)	-	3.42
Task completion with minimal time and effort	139 (43.8%)	154 (48.6%)	23 (7.3%)	1 (0.3%)	3.36
Meeting deadlines on assigned tasks/responsibilities	177 (55.8%)	123 (38.8%)	16 (5.0%)	1 (0.3%)	3.50
Weighted Mean					3.43

Oral and Written Communications

Understanding of directives and instructions	163 (51.4%)	143 (45.1%)	9 (2.8%)	2 (0.6%)	3.47
Active listening and attention to details	143 (45.1%)	156 (49.2%)	14 (4.4%)	4 (1.3%)	3.38
Providing feedback on assigned task/responsibilities	140 (44.2%)	153 (48.3%)	21 (6.6%)	3 (0.9%)	3.36
Weighted Mean					3.40

Adaptive Performance

Showing Resilience and Open-mindedness

Ability to cope with new work demands	143 (45.1%)	155 (48.9%)	19 (6.0%)	-	3.39
Flexibility to challenges	113 (35.6%)	176 (55.5%)	26 (8.2%)	2 (0.6%)	3.26
Handling difficult work situations	107 (33.8%)	181 (57.1%)	29 (9.1%)	-	3.25
Weighted Mean					3.30

Adjusting to Emerging Job/Tasks Requirements

Adjusting to new work processes and tools	127 (40.1%)	159 (50.2%)	31 (9.8%)	-	3.30
Accepting new technologies	115	171	31	-	3.26

	(36.3%)	(53.9%)	(9.8%)		
Readiness to meet emerging work demands	142 (44.8%)	161 (50.8%)	13 (4.1%)	1 (0.3%)	3.40
Weighted Mean					3.32

Learning New Skills

Learning new technologies	137 (43.2%)	142 (44.8%)	36 (11.4%)	2 (0.6%)	3.31
Mastery of new work processes	118 (37.2%)	174 (54.9%)	23 (7.3%)	2 (0.6%)	3.29
Generating new ideas for task completion	138 (43.5%)	144 (45.4%)	33 (10.4%)	2 (0.6%)	3.32
Weighted Mean					3.31

Grand Mean for Job Performance

3.43

Decision Rule: 1.00–1.49 =Very Low; 1.50–2.49 =Low; 2.50–3.49 = High, 3.50 4.00 =Very High

Note: VH = Very High, H = High, L = Low, VL = Very Low

Source: Field Survey Results (2023)

The results in Table 4.3 shows that 47.3% of the respondents rated the administrative staff very high on knowledge of administrative tasks, 48.9% high, and 3.8% low. On the average mean of 3.44, the respondents indicated that the administrative staff in the institutions have high knowledge of administrative tasks. The results also indicated that 40.7% of the respondents rated very high versatility on administrative job roles, 52.7% rated high, 6.3% rated low, and 0.3% rated very low. The average response gave a mean of 3.44 which depicts that the respondents indicated high versatility of administrative staff on administrative job roles. It is also indicated on the results that 42.6% of the respondents rated very high on up-to-date knowledge on core responsibilities, 58.9% high, and 8.5% rated low. On the average, the respondents indicated that the administrative staff have high up-to-date knowledge on core responsibilities with a mean of 3.34.

The results on problem solving abilities as depicted in Table 4.3 show that 50.2% of the respondents indicated very high ability to identify problems and issues, 42.3% rated high, and

7.6% low. On the average, the results gave a mean of 3.43 indicating that the administrative staff have high ability to identify problems and issues. It is also shown on the results that 40.4% of the respondents rated very high in proffering solutions to work issues, 52.1% rated high, and 7.6% rated low. The average mean response is 3.33 which depicts high ability of the administrative staff to proffer solutions to work issues. The results also indicated that 48.6% of the respondents rated very high on taking responsibility for problems and challenges, 41.6% rated high and 9.5% rated low. Averagely, the respondents indicated high responsibility for problems and challenges with an average mean value of 3.40.

Also, from the results in Table 4.3, 47.0% of the respondents rated very high on the ability to streamline work processes for efficiency, 47.6% rated high, and 5.4% rated low; while on the average, the mean response is 3.42 which indicates respondents' rating of high abilities to streamline work processes for efficiency. The results further indicated that 43.8% of the respondents rated very high on task completion with minimal time and effort, 48.6% high, 7.3% low, and 0.3% very low. On the average, the respondents indicated high level of task completion with minimal time and effort at a mean of 3.36. The results also show that 55.8% of the respondents indicated rated very high on meeting deadlines on assigned tasks and responsibilities, 38.8% rated high, 5.0% low, and 0.3% very low. On the average, the mean value of 3.50 indicated that the administrative staff have very high capability to meet deadlines on assigned tasks and responsibilities.

According to results in Table 4.3, 51.4% of the respondents rated very high in understanding of directives and instructions, 45.1% high, 2.0% low, and 0.6% very low. On average, the respondents indicated that there is high understanding of directives and instructions by the administrative staff with an average mean of 3.47. The results also revealed that 45.1% of the respondents rated very high on engagement in active listening and attention to details,

49.2% high, 4.4% low, and 1.3% very low. The average mean response of 3.38 shows that the respondents indicated high level of the administrative staff engagement in active listening and attention to details. Results also indicated that 44.2% of the respondents rated very high in providing feedback on assigned task and responsibilities, 48.3% rated high, 6.6% rated low, and 0.9% very low. On the average, the respondents indicated that they provide feedback on assigned task/responsibilities (mean = 3.36) which depict high rating of the administrative staff in providing feedback on their assigned responsibilities and tasks.

Furthermore, as shown in Table 4.3, 45.1% of the respondents indicated very high ability to cope with new work demands, 48.9% rated high, and 6.0% low. On the average, the respondents indicated high ability to cope with new work demands (average mean = 3.39). It is also indicated on the results that 35.6% of the respondents rated very high flexibility to challenges, 55.5% high, 8.2% low, and 0.6% very low. On average, the respondents indicated high flexibility to challenges, the average mean value being 3.26. The results indicated that the administrative staff ability to handle difficult work situations was rated very high by 33.8% of the respondents, 57.1% of the respondents rated this high, and 9.1% rated it low. On average, the respondents rated the ability to handle difficult work situations as high as the average mean is 3.25.

Also, results in Table 4.3, 40.1% of the respondents rated very high ability to adjust to new work processes and tools, 50.2% high, and 9.8% low. With a mean of 3.30 on the average, the respondents indicated high level of ability adjust to new work processes and tools. Results also indicated that 36.3% of the respondents rated very high extent in accepting new technologies, 53.9% high, and 9.8% low, while on the average, the mean of 3.26 shows the respondents' indication of high ability of the administrative staff in accepting new technologies. Results also indicated that 44.8% of the respondents rated very high on

readiness to meet emerging work demands, 50.8% high, 4.1% low, and 0.3% very low. On the average, the mean of 3.40 indicated high readiness of the administrative staff to meet emerging work demands.

According to results in Table 4.3, 43.2% of the respondents are rated very high in learning new technologies, 44.8% high, 11.4% low, 0.6% very low. On average, the respondents indicated high level of learning new technologies as the average mean is 3.29. Results also shows that 37.2% of the respondents indicated very high mastery of new work processes, 54.9% high, and 7.3% low, 0.6% very low. On the average, the respondents indicated high master of new work processes with the average mean being 3.29. Furthermore, the results show that 43.5% of the respondents rated very high ability in generating new ideas for task completion, 45.4% high, 10.4% rated low, and 0.6% very low. On the average, the respondents indicated high ability to generate new ideas for task completion with the average mean of 3.32.

As shown on the results, the grand mean for job performance is 3.43 and based on the decision scale, suggest that the respondents rated high the statement representing job performance such as Ability to identify problems and issues, Ability to streamline work processes for efficiency, providing feedback on assigned task/responsibilities, learning new technologies, and adjusting to new work processes and tools. This implies that the level of job performance of administrative staff of federal tertiary institutions under examination is moderately high. This points to the need for management of the federal tertiary institutions to have concerted performance driven strategies towards achieving higher level of administrative staff job performance.

Research Question Two: What is the level of digital transformation in federal tertiary institutions, South-west Nigeria?

Table 4.4: Descriptive Analysis of Responses on Level Digital Transformation

Digital Transformational	VH	H	L	VL	Mean
Transformational Capabilities					
<i>Digital Leadership</i>					
Emphasizing and ensuring digital leadership at all levels	123 (38.8%)	147 (46.4%)	43 (13.6%)	4 (1.3%)	3.23
Commitment of management to digital changes	109 (34.4%)	155 (48.9%)	50 (15.8%)	3 (0.9%)	3.17
Integration of digital technology into strategic planning	122 (38.5%)	143 (45.1%)	46 (14.5%)	6 (1.9%)	3.20
Weighted Mean					3.20
<i>Innovation Culture</i>					
Innovation practices across sections and departments	118 (37.2%)	141 (44.5%)	54 (17.0%)	4 (1.3%)	3.18
Freedom for creativity and idea generation among staff	110 (34.7%)	150 (47.3%)	53 (16.7%)	4 (1.3%)	3.15
Cultivating digital culture across the Organisation	118 (37.2%)	140 (44.2%)	53 (16.7%)	6 (1.9%)	3.17
Weighted Mean					3.17
<i>Digital Agility</i>					
Identifying new digital opportunities	116 (36.6%)	141 (44.5%)	57 (18.0%)	3 (0.9%)	3.17
Developing and enhancing human capacities for emerging tech	100 (31.5%)	152 (47.9%)	58 (18.3%)	7 (2.2%)	3.09
Taking advantage of digital resources	108 (34.1%)	145 (45.7%)	62 (19.6%)	2 (0.6%)	3.13
Weighted Mean					3.14
Digital Capabilities					
<i>Digital Technologies</i>					
IT-enabled internal communication networks	131 (41.3%)	138 (43.5%)	38 (12.0%)	10 (3.2%)	3.23
Internet resources/facilities	119 (37.5%)	130 (41.0%)	52 (16.4%)	16 (5.0%)	3.11

Cloud computing facilities	98 (30.9%)	121 (38.2%)	69 (21.8%)	29 (9.1%)	2.91
Virtual interactions resources	106 (33.4%)	134 (42.3%)	61 (19.2%)	16 (5.0%)	3.04
Staff database architecture	114 (36.0%)	130 (41.0%)	60 (18.9%)	13 (4.1%)	3.09
Students database management system	127 (40.1%)	130 (41.0%)	52 (16.4%)	8 (2.5%)	3.19
Cyber security system	115 (36.3%)	120 (37.9%)	68 (21.5%)	14 (4.4%)	3.06
E-service platforms and architecture	120 (37.9%)	124 (39.1%)	55 (17.4%)	18 (5.7%)	3.09
Weighted Mean					3.09

Digital Competence

Communication in online interactions	121 (38.2%)	149 (47.0%)	35 (11.0%)	12 (3.8%)	3.20
Office suites and applications usage	97 (30.6%)	149 (47.0%)	61 (19.2%)	10 (3.2%)	3.05
virtual collaboration for data creation and sharing	94 (29.7%)	126 (39.7%)	82 (25.9%)	15 (4.7%)	2.94
Cyber security competence	99 (31.2%)	129 (40.7%)	70 (22.1%)	19 (6.0%)	2.97
Multi-media Usage	105 (33.1%)	139 (43.8%)	64 (20.2%)	9 (2.8%)	3.07
Digital information security	110 (34.7%)	131 (41.3%)	62 (19.6%)	14 (4.4%)	3.06
Weighted Mean					3.05

Digital Operation Efficiency

Digitized/Automated Processes

Digital data generation	130 (41.0%)	140 (44.2%)	45 (14.2%)	2 (0.6%)	3.26
Digital data management system	111 (35.0%)	166 (52.4%)	37 (11.7%)	3 (0.9%)	3.21
Automated work flow	104 (32.8%)	135 (42.6%)	70 (22.1%)	8 (2.5%)	3.06
Flexible digital operations	116 (36.6%)	122 (38.5%)	65 (20.5%)	14 (4.4%)	3.07
Weighted Mean					3.15

Digitized Collaboration

Digitalized collaborations among departments and persons	103 (32.5%)	124 (39.1%)	62 (19.6%)	28 (8.8%)	2.95
Virtual communication and meetings	113 (35.6%)	125 (39.4%)	67 (21.1%)	12 (3.8%)	3.07
Electronics record management	117 (36.9%)	126 (39.7%)	60 (18.9%)	14 (4.4%)	3.09
Weighted mean					3.04

Lean and continuous improvement

Seamless interdepartmental work-flow	103 (32.5%)	144 (45.4%)	59 (18.6%)	11 (3.5%)	3.07
Digital Service delivery	113 (35.6%)	118 (37.2%)	65 (20.5%)	21 (6.6%)	3.02
Value added operations	98 (30.9%)	135 (42.6%)	70 (22.1%)	14 (4.4%)	3.00
Operational efficiency	114 (36.0%)	140 (44.2%)	52 (16.4%)	11 (3.5%)	3.13
Weighted Mean					3.06

Grand Mean for Digital Transformation**3.11**

Decision Rule: 1.00–1.49=Very Low, 1.50–2.49=Low, 2.50–3.49 =High, 3.50-4.00 = Very High.

Note: VH-Very High, H-High, L-Low, VL-Very Low

Source: Field Survey Results (2023)

The results in Table 4.4 show that 38.8% of the respondents rated the institutions very high in emphasizing and ensuring digital leadership at all levels, 46.4% high, 13.6% low, and 1.3% very low. On the average, the respondents indicated that their institutions emphasize and ensure digital leadership at all levels with a mean of 3.23. The results also shows that 34.4% of the respondents rated very high on commitment of management to digital changes, 48.9% high, 15.8% low, and 0.9% very low. On average, the respondents indicated that there is high commitment of management to digital changes with a mean of 3.17. Results also show that 38.5% of the respondents indicated very high integration of digital technology into strategic planning, 45.1% high, 14.5% low, and 1.9% very low. On average, the respondents indicated high integration of digital technology into strategic planning with a mean of 3.20.

According to results in Table 4.4, 37.2% of the respondents are indicated very high innovation practices across sections and departments, 44.5% high, 17.0% low, and 1.3% very low. On the average, a mean value of 3.18 shows the respondents indication of high innovation practices across sections and departments. The results also indicated that 34.7% of the respondents rated the institution has having very high freedom for creativity and idea generation among staff, 47.3% high, 16.7% low, and 1.3% very low. On the average, the respondents indicated that there is high freedom for creativity and idea generation among staff with a mean of 3.15. The results further shows that 37.2% of the respondents indicated very high cultivation of digital culture across the institutions, 44.2% high, 16.7% low, and 1.9% very low. On the average, a mean of 3.17 shows the respondents opinion that digital culture is high cultivated across the institutions.

According to results in Table 4.4, 36.6% of the respondents are rated the tertiary institutions as very high on identification of new digital opportunities, 44.5% high, 18.0% low, and 0.9% very low. On the average, the respondents indicated that the institutions identify new digital opportunities at a mean of 3.17. Results also indicated that 31.5% of the respondents rated their institutions very high in developing and enhancing human capacities for emerging technology, 47.9% high, 18.3% low, and 2.2% very low. On average, the respondents indicated that their institutions develop and enhance human capacities for emerging technology with a mean of 3.09. Results also pointed out that 34.1% of the respondents rated their tertiary institutions very high in taking advantage of digital resources, 45.7% high, 19.6% low, and 0.6% very low. On average, the respondents indicated that the tertiary institutions take advantage of digital resources at a mean of 3.13.

According to results in Table 4.4, 41.3% of the respondents rated highly available, 43.5% available, 12.0% fairly available and 3.2% not available on IT-enabled internal

communication networks in the institutions. On the average, the respondents indicated that IT-enabled internal communication networks are available in the institution with a mean of 3.23. The results also showed that 37.5% of the respondents rated highly available internet resources/facilities, 41.0% available, 16.4% fairly available, and 5.0% not available. On average, the respondents indicated that their institutions have internet resources/facilities with a mean of 3.11. Results also indicated that 30.9% of the respondents rated highly available cloud computing facilities, 38.2% available, 21.8% fairly available, and 9.1% not available. With the average a mean of 2.91, the respondents indicated that cloud computing facilities are available in the institutions.

The results also revealed that 33.4% of the respondents indicated that the institutions have highly available virtual interactions resources, 42.3% available, 19.2% fairly available, and 5.0% low. On average, the respondents indicated that the institutions have virtual interactions resources with a mean of 3.04. It is also indicated that 36.0% of the respondents rated highly available staff database architecture, 41.0% available, 18.9% fairly available, and 4.1% not available. On average mean of 3.09, the respondents indicated that there is staff database architecture in the institutions. The results also indicated that 40.1% of the respondents rated student database management system as highly available, 41.0% available, 16.4% fairly available, 2.5% not available. On average, the respondents indicated that availability of students database management system with a mean of 3.19.

The results also showed that 36.3% of the respondents rated cyber security system as highly available, 37.9% available, 21.5% fairly available, and 4.4% not available. On average mean of 3.06, the respondents indicated that cyber security systems are available in the tertiary institutions. Also from the results, 37.9% of the respondents indicated highly available e-service platforms and architecture, 39.1% available, 17.4% fairly available, and 5.7% not

available. With an average mean of 3.09, the respondents indicated that e-service platforms and architecture are available in the institutions.

According to the results in Table 4.4, 38.2% of the respondents indicated that they are highly competent in communication in online interactions, 47.0% competent, 11.0% fairly competent, and 3.8% not competent. On the average, the result showed a mean of 3.20 for the respondents' competence in communication in online interactions. It is also shown that 30.6% of the respondents rated highly competent in the use of office suites and applications, 47.0% competent, 19.2% fairly competent and 3.2% not competent. With this, the result shows average mean of 3.05 that the respondents indicated that they are competent in office suites and applications usage. The results also indicated that 29.7% of the respondents indicated high competence in virtual collaboration for data creation and sharing, 39.7% are competent, 25.9% fairly competent, and 4.7% not competent. On the average, the result gave a mean of 2.94. on the administrative staff competence in virtual collaboration for data creation and sharing. Results also indicated that 31.2% of the respondents rated the administrative staff of the institutions as highly competent in cyber security, 40.7% competent, 22.1% fairly competent, and 6.0% not competent. On average, the respondents indicated that they have cyber security competence with a mean of 2.97. The results also indicated that 33.1% of the respondents rated highly competent in multi-media usage, 43.8% competent, 20.2% fairly competent and 2.8% not competent. On average, the respondents indicated that they have multi-media usage competence with a mean value of 3.07. Results also indicated that 34.7% of the respondents rated highly competent in digital information security, 41.3% are competent, 19.6% are fairly competent, and 4.4% not competent. On the average, the respondents indicated that they have competent in digital information security with a mean of 3.06.

According to results in Table 4.4, 41.0% of the respondents rated digital data generation as highly efficient, 44.2% indicated efficient, 14.2% fairly efficient and 0.6% not efficient. On average, the respondents indicated that digital data generation operations in the institutions are efficient has a mean of 3.26. It was also indicated that 35.0% of the respondents rated highly efficient for digital data system, 52.4% efficient, 11.7% fairly efficient, and 5.0% not efficient. Averagely, the result showed 3.21 mean value for the respondents' opinion on the efficient of digital data system in the institutions. The results further showed that 32.8% of the respondents indicated that there is highly efficient automated work flow, 42.6% efficient, 22.1% fairly efficient, and 2.5% not efficient. On average, the respondents indicated that automated work flow is efficient with a mean of 3.06. It was also shown on the results that 36.6% of the respondents rated flexible digital operations as highly efficient that they, 38.5% efficient, 20.5% fairly efficient, and 4.4% not efficient. On average, the respondents indicated that they have flexible digital operations are efficient at a mean of 3.07.

According to results in Table 4.4, 32.5% of the respondents rated highly efficient for digitalize collaboration among departments and persons, 39.1% efficient, 19.6% fairly efficient, and 8.8% not efficient. Averagely, the respondents indicated that digitalize collaboration among departments and persons is efficient with a mean of 2.95. The results also show that 35.6% of the respondents indicated engagement in virtual communication and meetings as highly efficient, 39.4% rated it as efficient, 21.1% indicated fairly efficient, and 3.8% indicated it as not efficient. On the average, the respondents indicated that virtual communication and meetings is efficient (mean value 3.07). The result further showed that 36.9% of the responses indicated highly efficient electronic records management, 39.7% efficient, 18.9% fairly efficient, and 3.4% indicated as not efficient. On average, the

respondents indicated that the efficiency of electronics record management has a mean of 3.09.

From the results in Table 4.4, 32.5% of the respondents rated highly efficient for seamless interdepartmental workflow, 45.4% efficient, 18.6% fairly efficient, and 3.5% not efficient. On the average mean of 3.07, the respondents indicated that there is efficient seamless interdepartmental workflow. 35.6% of the respondents indicated highly efficient digital service delivery, 37.2% efficient, 20.5% fairly efficient, and 6.6% indicated that digital service delivery is not efficient. On the average, the respondents indicated that there is efficient digital service delivery with a mean of 3.02. It is also shown on the results that 30.9% of the respondents rated value added operations as highly efficient, 42.6% rated it as efficient, 22.1% rated it as fairly efficient while 4.4% indicated it as not efficient. On the average, the respondents indicated that value added operations in the institutions are efficient at mean of 3.00. Furthermore, it was also indicated that 36.0% of the respondents rated highly efficient for operational efficiency, 44.2% rated it as efficient, 16.4% rated it fairly efficient, and 3.5% indicated it to be not efficient. On average, the results gave a mean value of 3.13 showing that the respondents indicated high operational efficiency in the institutions.

The grand mean for digital transformation is 3.11 and based on the decision scale, this suggests that the respondents rated digital transformation (digital leadership, innovation culture, digital technologies, digital competence, digitized/automated processes, digitized collaboration as well as lean and continuous improvement) as moderately high. This implies that the level of digital transformation of the institutions under examination is moderately high. Nevertheless, the results point to the need for improvement in digital transformation by ensuring that cloud computing facilities are readily available, virtual collaboration for data

creation and sharing is enhanced, improvement in cyber security competence and digitalized collaborations among departments and sections.

Research Question Three: How conducive is the work environment of administrative in federal tertiary institutions, South-west Nigeria?

Table 4.5: Descriptive Analysis of Responses on Work Environment

Work Environment	HC	C	FC	NC	Mean
Physical Work Environment					
<i>Office Facilities</i>					
Furniture and fittings	76 (34.0%)	129 (40.7%)	90 (28.4%)	21 (6.6%)	2.82
Office cabinet	65 (20.5%)	130 (41.0%)	97 (30.6%)	25 (7.9%)	2.74
Office decoration	68 (21.5%)	100 (31.5%)	106 (33.4%)	42 (13.2%)	2.61
Weighted Mean					2.72
<i>Lighting and Ventilation</i>					
Natural lighting of the office	102 (32.2%)	134 (42.3%)	70 (22.1%)	11 (3.5%)	3.03
Artificial lights provided	78 (24.6%)	143 (45.1%)	65 (20.5%)	31 (9.7%)	2.85
Natural air cross ventilation	97 (30.6%)	133 (42.0%)	68 (21.5%)	19 (6.0%)	2.97
Air conditioning system	86 (27.1%)	126 (39.7%)	74 (23.3%)	31 (9.8%)	2.84
Weighted mean					2.92
<i>Layout/Spatial Arrangements</i>					
Arrangement of furniture and fittings	93 (29.3%)	137 (43.2%)	68 (21.5%)	19 (6.0%)	2.96
Demarcations provided	78 (24.6%)	144 (45.4%)	75 (23.7%)	20 (6.3%)	2.88
Arrangements of people	89 (28.1%)	141 (44.5%)	73 (23.0%)	14 (4.4%)	2.96
Arrangement of work unit	101 (31.9%)	139 (43.8%)	66 (20.8%)	11 (3.5%)	3.04

Weighted mean					2.96
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Interpersonal Relationship

Interaction among staff	176 (55.5%)	118 (37.2%)	22 (6.9%)	1 (0.3%)	3.48
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Informal communication	136 (42.9%)	143 (45.1%)	35 (11.0%)	3 (0.9%)	3.30
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Reporting and feedback channels	118 (37.2%)	147 (46.4%)	49 (15.5%)	3 (0.9%)	2.61
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Weighted Mean					3.13
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Social Support

Supervisory support to subordinates	133 (42.0%)	148 (46.7%)	35 (11.0%)	1 (0.3%)	3.03
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Co-worker support to each other	131 (41.3%)	148 (46.7%)	35 (11.0%)	3 (0.9%)	3.28
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Nature of teamwork	128 (40.4%)	141 (44.5%)	42 (13.2%)	5 (1.6%)	3.24
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Weighted Mean					3.19
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Grand Mean for Work

Environment					2.97
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Decision Rule: 1.00-1.49 =Very Low, 1.50–2.49 =Low, 2.50–3.49 = High, 3.50-4.00 = Very High

Note: Highly Conducive (HC), Conducive (C), Fairly Conducive (FC) and Not Conducive (NC)

Source: Field Survey Results (2023)

According to results in Table 4.5, 34.0% of the respondents indicated highly conducive office furniture and fittings, 40.7% conducive, 28.4% fairly conducive, and 6.6% not conducive. On average, respondents indicated that they have conducive office furniture and fittings with a mean of 2.82. the results also show that 20.5% of the respondents rated highly conducive for office cabinet, 41.0% conducive, 30.6% fairly conducive, and 7.9% not conducive. On the average, the respondents indicated there were conducive office cabinet with a mean of 2.74. In addition, it is shown on the results that 21.5% of the respondents rated highly conducive for available office decoration, 31.5% conducive, 33.4% fairly conducive, and 13.2% not conducive. On the average, the mean value is 2.61 which depicts respondents opinion that the office decoration is conducive.

According to results in Table 4.5, 32.2% of the respondents are rated highly conducive that they have natural lighting of the office, 42.3% conducive, 22.1% fairly conducive, and 3.5% not conducive. On average, the respondents indicated that they have natural lighting of the office with a mean of 3.03. Results also indicated that 24.6% of the respondents rated highly conducive for artificial lights provided in the offices, 45.1% conducive, 20.5% fairly conducive, and 9.7% not conducive. On average, the respondents indicated that the artificial lights provided in the offices are conducive as the average mean is 2.85. It is also indicated on the results that 30.6% of the respondents rated natural air cross ventilation as highly conducive, 42.0% rate it conducive, 21.5% fairly conducive, and 6.0% not conducive. On average, the mean of 2.97 indicated that natural air and cross ventilation are conducive. Also from the results, 27.1% of the respondents rated air conditioning system in the offices as highly conducive, 39.7% conducive, 23.3% fairly conducive, and 9.8% not conducive. On average, the respondents indicated that they have conducive air conditioning system as the mean is 2.84.

Results in Table 4.5 also indicate that 29.3% of the respondents rated the arrangement of furniture and fittings as highly conducive, 43.2% rate it as conducive, 21.5% indicated fairly conducive, and 6.0% not conducive. On the average, the respondents indicated that the arrangement of furniture and fittings is conducive, the average mean being 2.96. It is also shown on the results that 24.6% of the respondents rated highly conducive for demarcations provided, 45.4% conducive, 23.7% fairly conducive and 6.3% rated it not conducive. The average response gave a mean of 2.85 which shows that the respondents indicated that demarcations provided in offices are conducive. The results also indicated that 28.1% of the respondents rated arrangement of people in offices as highly conducive, 44.5% conducive, 23.0% fairly conducive, and 4.4% not conducive. On the average, the respondents indicated

that the arrangement of people is conducive as the result showed an average mean of 2.96. Also from the result, 31.9% of the respondents rated the arrangement of work units as highly conducive, 43.8% rated it as conducive, 20.8% indicated it to be fairly conducive, and 3.5% rated it not conducive. On the average, with an average mean of 3.04 on the results, the respondents indicated the arrangement of work units of administrative staff in their institutions is conducive.

The results in Table 4.5 shows that 55.5% of the respondents rated interaction among staff as highly conducive, 37.2% rated it conducive, 6.9% fairly conducive and 0.3% rated it not conducive. On average, the respondents indicated that there is conducive interaction among staff at an average mean response of 3.48. On the results, informal communication among staff was rated as 42.9% highly conducive, 45.1% conducive, 11.0% fairly conducive, and 0.9% not conducive. The average mean response of 3.30 indicates that the respondents rated informal communication as conducive. Reporting and feedback channels were rated by 37.2% of the respondents as highly conducive, 46.4% conducive, 15.5% fairly conducive, and 0.9% not conducive. On average, the respondents indicated that reporting and feedback channels were conducive with the average mean of 3.20.

Also, results in Table 4.5 shows that 42.0% of the respondents rated supervisory support to subordinates as highly conducive, 46.7% conducive, 11.0% fairly conducive, and 0.3% not conducive. On average, the respondents indicated supervisory support to subordinates as conducive in their institutions with a mean of 3.30. Co-worker support to each other was indicated as highly conducive by 41.3% of the respondents, 46.7% rated it as conducive, 11.0% indicated it to be fairly conducive while 0.9% indicated that it was not conducive. The average mean of 3.28 shows that the respondents rated co-worker support to each other as conducive. In addition, the results point out that 40.4% of the respondents rated highly

conductive for nature of teamwork, 44.5% rate it conducive, 13.2% fairly conducive and 1.6% not conducive. On the average, the respondents indicated that the nature of teamwork is conducive for their work as the average mean is 3.24.

The grand mean for work environment as shown on the results is 2.97. Based on the decision scale, the result suggests that the respondents rated the metrics representing work environment (office facilities, lighting and ventilation, layout arrangements, interpersonal relationship, social support) as conducive. This implies that the conduciveness of the work environment depicted by physical and behavioural components is moderately high. Nevertheless, there is room for the management of the of federal tertiary institutions in South-west, Nigeria to put in place facilities that will guarantee remarkably high conducive work environment necessary to aid administrative job performance.

4.2.2 Analysis of Research Questions

Qualitative data in the form of views and opinion gathered from the Registrars of the federal tertiary institutions through the interview were analysed with thematic content analysis. Since there is a conceptual framework for the study, deductive thematic approach was used which involved the generation of thematic codes or in line with the objectives of the study, the measures of the variables of interest as presented in the theoretical framework and the conceptual model. This was basically aligned with the focus of the questionnaire used for quantitative data collection. The audio and text recordings of the interviews were transcribed and the opinions and views expressed were extracted into codes and classified along the themes from which deduction were made. The analysis are shown in Table 4.6 below:

Table 4.6: Thematic Analysis of Qualitative Data

Thematic Codes	Extracted Codes	Deductions
Job Performance		
<i>Task Performance</i>		
Performance of Core Job	▪ The administrative staff category has the competence to deliver their core responsibilities, ▪ They put in their best in their primary functions, ▪ Our administrative staff are versatile in the core content of their job description ▪ Their performance in administrative functions is satisfactorily efficient, ▪ Their performance in administrative functions is satisfactorily effective.	Task Performance of the administrative staff (Core jobs, administrative expertise, communication and problem-solving abilities) is high
Administrative Expertise	▪ Our administrative staff have requisite knowledge and expertise for their jobs, ▪ The administrative staff are well-trained and competent, ▪ They work collectively and individually towards administrative excellence in the Institution.	
Problem Solving Abilities	▪ The administrative team members possess problem solving abilities, ▪ Unpredictable nature of part of their job makes them to be problem solvers ▪ They exhibit remarkable level of problem-solving prowess on their job, ▪ Ability to solve problems is why they are administrators.	
Communication Skills	▪ Communication style and competence are reflected in information dissemination, ▪ Communication skill is shown in policy implementation, ▪ Their written communication enhances workflow, ▪ Communicating well on job issues is essentially critical, they are doing well, ▪ Their good communication skills smoothen their work as a whole.	

Adaptive Performance

Adaptability to changes

- The administrative staff exhibits necessary adaptability to work changes;
- With technological changes, they manifest readiness to move with changes in the work designs;
- Digital training makes them readily adaptable to new work demands

The administrative staff have high adaptive performance level in term of adaptability to changes, embracing and adjusting to new changes and learning of new technologies and methods.

Adjusting to new demands

- They will do the needful in every demanding situation
- They do not show much fear to new technology
- They do not display noticeable resistance to changes in work procedures;
- Reaching excellence demands that they embrace and understand emerging trends;
- They make efforts to adjust and make the best out of tech use

Accepting and learning new technologies

- Whatever technology brings, our administrative staff are ready to explore,
- At any rate, our administrative staff constantly engaged in a number of ICT-related training,
- As new technologies are coming up, they are learning how to use them,
- They are always ready to learn,
- fulfill their administrative job expectations.

Digital Transformation

Transformational Capabilities

Digital Leadership/Culture

- We emphasize digital culture at all levels,
- The leadership of the university is highly committed to digital platforms for our deliverables,
- Efforts are constantly and dedicatedly geared towards cultivating digital culture across sections and departments.

Capability of the federal tertiary institutions to develop and grow digitally (transformational capability) is high

Adopting Digital Methods

- The management is conscious of the significance of digital transformation,
- We like to see that the institution is driven by digital technology,
- Within financial limits and work structure, we adopt digital processes,
- Digital transformation is key in the strategic

		plan of this Institution;	
		▪ We want to embrace technology to the fullest of benefits derivable from it.	
Developing Capacities	Digital	▪ Necessary mechanisms are in place to identify our digital needs, ▪ We are committed to developing our staff in all categories in the use of digital technologies, ▪ Everyone is interested in enhancing our platforms and developing new ones, ▪ Training is regularly put in place to develop the mastery of digital tools and platforms by our staff, ▪ We are committed to ensuring that there is reliable digital interface for institutional functions and services.	
Digital Capabilities			
Availability/use of Digital Tools and Platforms		▪ Our Institution, despite limited resources has considerable number of digital tools, ▪ We achieve our short and long-term goals basically with the use of technology, ▪ From time to time, digital tools and resources are procured for use at different levels, ▪ To a large extent and satisfactorily too, we have digital resources to drive the institution, Technological equipment and other related resources are provided for staff use, ▪ Identifying and procuring relevant digital equipment is an annual ritual in our budget.	The federal tertiary institutions have resources, platforms and tools for digital transformation and the administrative staff are digitally competent
Staff Digital Expertise		▪ The administrators possess the needed skill to optimally utilize available tools, ▪ Our administrative staff have the necessary expertise and mastery to use the equipment, ▪ The university has a very good Communication and Information Technology Centre ▪ Of course, there are competent and resourceful people any digital revolution, ▪ We evaluate our digital needs and training of personnel in the same direction.	
Digital Operations Efficiency			
Automated Process		▪ Application for enrolment is purely	Efficiency of

	automated, ▪ The admission process, for example, does not require physical contacts, ▪ We can generate data and information about staff and students through databases, ▪ Well, using the digital tools makes things more efficient, ▪ Work flow is smooth, ▪ Data management is effective but we definitely have room for improvement; ▪ Presently, efforts are being crystalised to digitally manage our records, ▪ Administrative activities and procedures have been digitalized. ▪ Establishment records are efficiently and effectively managed with the use of digital Technology,	digital operation is relatively high, but improving significantly
Virtual Communication/ Collaboration	▪ Administrative communication is seamless, ▪ There is opportunity for online interaction among personnel, ▪ To some extent, it is a gradual thing, Rome was not built in a day, but we will definitely get there, ▪ Communication with the use of digital tools is improving, ▪ In virtually every communication, technology is utilized.	
Digital Service Delivery	▪ Service delivery on our digital channels commendable, considering network challenges, ▪ Digital technology use offers us the benefit of providing our services digitally, where possible, ▪ Application for studentship records is done online, ▪ Inter-institutional record verification is at least improving, ▪ The platforms and portal we deployed for service delivery are functional	

Work Environment

Physical

Office Furniture/Resource	▪ Administrative staff are in all sections and their offices are conducive, ▪ Though there is room for improvement, they have office furniture,	The physical components of the work environment of
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	▪ Within the funding capacity of the College, our staff, especially the administrative staff are provided the necessary resources to make them comfortable, ▪ They have office stuffs to make the workplace conducive, ▪ The management makes it a point of attention to ensure that office is are provided with necessary furniture, cabinets and other physical facilities.	the administrative staff is conducive
Lighting and Ventilation	▪ The offices are well ventilated, ▪ Except for electricity, most of the offices have air-conditioners, ▪ The offices of our administrative staff have good ventilations, ▪ The offices are well illuminated in terms of natural and electric lights.	
Behavioral Interpersonal Relationship	Relationship among the staff is cordial, There is peaceful habitation among the administrative staff, We do not usually have constant reasons to settle interpersonal disputes, Staff, at all levels have good relationships, The administrative staff members work in an atmosphere of esprit de corps,	The physical element of the work environment is conducive and supportive to the administrative staff
Social Support	▪ The head of units cooperate with their subordinates; The head of departments show interest in the well-being of their team members; There is humane work-related and social support among the administrative staff, ▪ There is good team cohesion, ▪ Head of administrative sections have good relationships with their subordinates, ▪ They cover up for themselves on sanctionable issues, that is support, ▪ The subordinates are being guided and supported by their superiors.	

Source: Field Survey Results, 2023

The thematic content analysis above revealed that the highest authorities of the Registry Department of the federal tertiary institutions in South-west, Nigeria reported their

administrative staff as highly competent in the core job function and adaptability to change which translated into their high-performance level. The leadership and management of the institutions are also represented as being committed to digital transformation, embracing technology adoption and investing resources into digital transformation of work processes and platforms. The analysis shows that the federal tertiary institutions have remarkable level of digital tools, developing digital platform and the administrative staff possess the digital prowess to use tools and other resources. The work environment of the administrative staff in terms of physical elements, structures and facilities as well as behavioural factors are conducive and comfortable.

4.2.3 Test of Hypotheses

Hypothesis One

The null hypothesis one which states that there is no significant influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria was tested using multiple linear regression analysis. In the analysis, the values of job performance metrics were regressed on the values of digital transformation sub-measures. Data for digital transformation (independent variable) was generated by summing responses of all variable items respectively while that of job performance of administrative staff (dependent variable) was generated by adding responses of all items used to measure the variable. The regression test results are presented as presented in Table 4.7.

Decision Rule: Reject the null hypothesis if the significant value is less than 0.05, and accept the alternative hypothesis.

Table 4.7: Summary of regression analysis for the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria

	Model	F(df)	Anova Sig
R	0.715		
R Square	0.512	109.371(3,313)	0.000
Adjusted R Square	0.507		
Coefficients	Unstandardized Coefficients	t	sig
Constant	1.755	19.021	.000
Transformational capability	.418	10.241	.000
Digital capability	.151	3.160	.002
Digital operational efficiency	-.060	-1.369	.172

a. Dependent Variable: Job performance

b. Predictors: (Constant), Digital transformation

Source: Field Survey Results (2023)

From the results in Table 4.7, digital transformation has strong positive and statistically significant relationship with the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. ($R = 0.715$, $p < 0.05$). The coefficient of determination (Adj. R^2) of 0.507 shows that digital transformation predicts 50.7% of the changes in job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, while the remaining 49.3% changes in job performance of administrative staff is explained by other external factors not examined. From Table 4.6, the results of the ANOVA, showing the overall model significance of regression test revealed that digital transformation has a significant influence on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. This can be explained by the F-value (109.371) and low p-value (0.000) which is statistically significant at 95% confidence interval. Hence, the result posited that digital transformation experienced in federal tertiary institutions in South-west, Nigeria significantly influenced the job performance of administrative staff of the institutions.

Furthermore, the results of regression coefficients revealed that a positive and statistically significant relative influence was reported for transformational capability and digital capability. However, digital operational efficiency exerts insignificant relative influence $\beta = -0.060$, $p = 0.172$, $t = -1.369$). Specifically, the results reveal that at 95% confidence level, transformational capability ($\beta = 0.418$, $p = 0.000$, $t = 10.241$) and digital capability ($\beta = 0.151$, $p = 0.000$, $t = 3.160$) of federal tertiary institutions in South-west, Nigeria were statistically significant as the p-values were less than 0.05 and the t-values greater than 1.96. Also, the results of regression coefficients in Table 4.6 position that at 95% confidence level, a unit change in transformational capability will lead to a 0.418 increase in the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, given that all other factors are held constant. Also, a unit change in digital capability will lead to 0.151 increase in the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, given that all other factors are held constant.

Of all the digital transformation sub-variables examined, transformational capability has the highest relative influence (Beta=0.418) followed by digital capability (Beta=0.151). These relative contribution to job performance were positive and statistically significant at probability values less than 0.05. Given this result (Adj. $R^2 = 0.507$, $F(3,313) = 109.371$, $p = 0.000$), this study rejects the null hypothesis one (H_{01}) which states that digital transformation will have no significant influence on the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

Hypothesis Two

The null hypothesis two which states that there is no significant influence of work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria was tested using multiple linear regression analysis. In the analysis, the

values of job performance were regressed on the values of work environment sub-measures. The data for work environment (independent variable) was generated by summing responses of all variable items respectively while that of job performance of administrative staff (dependent) was generated by adding responses of all items used to measure the variable. The regression test results are presented as presented in Table 4.8.

Decision Rule: Reject the null hypothesis if the significant value is less than 0.05, and accept the alternative hypothesis.

Table 4.8: Summary of regression analysis for the influence of work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria

Model		F(df)	Anova Sig
R	0.594		
R Square	0.353	85.596(2,314)	0.000
Adjusted R Square	0.349		
Coefficients	Unstandardized Coefficients	t	sig
Constant	1.843	15.057	.000
Physical environment	.163	4.852	.000
Behavioural environment	.317	7.061	.000

a. Dependent Variable: Job performance
b. Predictors: (Constant), Work environment
Source: Field Survey Results (2023)

From the results in Table 4.8, work environment has moderately strong positive and statistically significant relationship with the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria ($R = 0.594$, $p < 0.05$). The coefficient of determination (Adj. R^2) of 0.349 shows that work environment accounts for 34.9% of the variations in job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, while the remaining 65.1% variation in job performance of administrative staff is accounted for by external factors other than work environment components examined in this study.

From Table 4.8, the results of ANOVA (overall model significance) of regression test revealed that work environment has a significant influence on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. This can be explained by the F-value (85.596) and low p-value (0.000) which is statistically significant at 95% confidence interval. Hence, the result posited that the work environment significantly influenced the job performance of administrative staff in federal tertiary institutions in South-west, Nigeria.

Furthermore, the results of regression coefficients revealed a positive and statistically significant relative influence physical and behavioural work environment. Specifically, the results reveal that at 95% confidence level, the influence of physical work environment ($\beta = 0.163$, $p = 0.000$, $t = 4.852$) and behavioural work environment ($\beta = 0.317$, $p = 0.000$, $t = 7.061$) of administrative staff of federal tertiary institutions in South-west, Nigeria were statistically significant as the p-values were less than 0.05 and the t-values greater than 1.96. Also, the results of regression coefficients in table 4.6 position that at 95% confidence level, a unit change in physical work environment will lead to a 0.163 increase in the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, given that all other factors are held constant. Similarly, a unit change in behavioural work environment will lead to 0.317 increase in the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, given that all other factors are held constant. Of the work environment sub-variables examined, behavioural work environment has the highest relative influence (Beta=0.317) followed by physical work environment (Beta=0.163). These relative contributions to job performance were positive and statistically significant at probability values less than 0.05. Given this result (Adj. $R^2 = 0.349$, $F(2,314) = 85.596$, $p = 0.000$), the null hypothesis two (H_{02}) which states that work environment will have no significant

influence on the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria is rejected.

Hypothesis Three

The null hypothesis three which states that there is no significant combined influence of digital transformation and work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria was tested using multiple linear regression analysis. In the analysis, the values of job performance were regressed on the combined values of digital transformation and work environment. The data for digital transformation and work environment (independent variables) was generated by summing responses of all variable items respectively while that of job performance of administrative staff (dependent) was generated by adding responses of all items used to measure the variable. The regression test results are presented in Tables 4.9.

Decision Rule: Reject the null hypothesis if the significant value is less than 0.05, and accept the alternative hypothesis.

Table 4.9: Summary of regression analysis for the influence of digital transformation and work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria

Model		F(df)	Anova Sig
R	0.686 ^a		
R Square	0.470	139.361(2,314)	0.000
Adjusted R Square	0.467		
Coefficients	Unstandardized Coefficients	t	sig
Constant	1.642	15.476	.000
Digital Transformation	.341	8.687	.000
Work Environment	.213	5.056	.000

a. Dependent Variable: Job performance

b. Predictors: (Constant), Digital transformation and work environment

Source: Field Survey Results (2023)

From the results in Table 4.9, digital transformation and work environment have strong positive and statistically significant relationship with the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. ($R = 0.686^a$, $p < 0.05$). The coefficient of determination ($\text{Adj. } R^2$) of 0.467 shows that digital transformation and work environment predicts 46.7% of the changes in job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, while the remaining 53.3% variation in job performance of administrative staff could be accounted for by external factors other than the combination of digital transformation and work environment. From Table 4.9, the results of ANOVA (overall model significance) of the regression test revealed that digital transformation and work environment have significant combined influence on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. This can be explained by the F-value (139.361) and p-value (0.000) which is statistically significant at 95% confidence interval. Hence, the result posited that the digital transformation and work environment in federal tertiary institutions in South-west, Nigeria significantly influenced the job performance of administrative staff working therein.

The results of regression coefficients revealed that positive and statistically significant influence was found for digital transformation and work environment. Specifically, the results reveal that at 95% confidence level, digital transformation ($\beta = 0.341$, $p = 0.000$, $t = 8.687$) and work environment ($\beta = 0.213$, $p = 0.000$, $t = 5.056$) of administrative staff of federal tertiary institutions in South-west, Nigeria when tested together were statistically significant as the p-values were less than 0.05 and the t-values greater than 1.96. Furthermore, the results of regression coefficients in Table 4.9 shows that at 95% confidence level, a unit change in digital transformation will lead to a 0.341 increase in the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, given that all other factors are held

constant. Also, a unit change in work environment will lead to 0.213 increase in the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, given that all other factors are held constant. Of the two predictor variables combined, digital transformation has the highest relative influence ($\text{Beta}=0.341$) followed by work environment ($\text{Beta}=0.213$). The combined influence on job performance were positive and statistically significant at probability values less than 0.05. Given this result ($\text{Adj. } R^2 = 0.467$, $F(2,314)=139.361$, $p=0.000$), this study rejects the null hypothesis three (H_03) which states that digital transformation and work environment will have no significant influence on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

Hypothesis Four

Null hypothesis four states that there is no significant moderating impact of work experience on the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. To evaluate the null hypothesis, hierarchical regression was applied whereby the analysis was carried out in the order of hierarchy. A composite score was obtained for digital transformation and work experience regarding administrative staff of federal tertiary institutions in South-west, Nigeria and were used in the regression analysis. Also, data for job performance (tagged Y) was created by adding responses of all items for the variable, while that of work experience (tagged Z) was obtained from adding responses of all items for the variable.

In addition, an interaction term for digital transformation and work experience (tagged - X_i*Z) was obtained by multiplying the composite score for responses on digital transformation and work experience. The hypothesis would be supported if the effect of the interaction of digital transformation and work experience (X_i*Z) on job performance of administrative staff of

federal tertiary institutions in South-west, Nigeria is statistically significant. The results of the step-by-step analysis are presented in Table 4.10.

Decision Rule: Reject the null hypothesis if the significant value is less than 0.05, and accept the alternative hypothesis.

Table 4.10: Summary of hierarchical regression analysis for the moderating impact of work experience on the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, Nigeria

Model ^{1,2,3}	Beta	t	Sig.	R	R ²	Adj. R ²	ΔR ²	ΔF	Sig. F Change
(Constant) ¹	1.895	19.504	.000	.654 ^a	.427	.425	.427	234.840	0.000
Digital Transformation	.471	15.324	.000						
F & Anova Sig: 234.840 (1,315), p=.000									
(Constant) ²	1.857	19.160	.000	.665 ^b	.442	.438	.014	8.151	0.005
Digital Transformation	.449	14.335	.000						
Work experience	.031	2.855	.005						
F & Anova Sig: 124.161 (2,314), p=.000									
(Constant) ³	1.840	7.910	.000	.665 ^c	.442	.436	.000	.007	.935
Digital Transformation	.455	5.947	.000						
Work Experience	.036	.592	.554						

DTtn*WExp -.002 -.082 .935

F & Anova Sig: 82.514 (3,313),
p=.000

-
- a. Predictors: (Constant), Digital Transformation
 - b. Predictors: (Constant), Digital Transformation, Work experience
 - c. Predictors: (Constant), Digital Transformation, Work experience, DTtn*WExp denote Digital Transformation * Work Experience
 - d. Dependent Variable: Job Performance
- Source: Researcher's Field Survey Results (2023)**

Tables 4.10 presents the hierarchical multiple regression results for the moderating impact of work experience on the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. Results in Table 4.9 model 1 summarizes the output for the analysis if moderation impact is not considered. Therefore, in this model, the independent variable is digital transformation.

From the results, digital transformation has positive and strong relationship with job performance of administrative staff of federal tertiary institutions in South-west, Nigeria ($R = 0.654$, $p=0.000$). The coefficient of determination (R^2) of 0.427 shows that digital transformation predicted 42.7% of the changes in job performance of administrative staff under study while the remaining 57.3% changes in performance is explained by external factors different from digital transformation. This result suggests that digital transformation influenced 42.7% of changes in job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

Table 4.10 shows the results of ANOVA (overall model significance) of regression test which revealed that digital transformation has a significant effect on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. This can be explained by the F-value (234.840) and low p-value (0.000) which is statistically significant at 95% confidence interval. Hence, the result posited that digital transformation of federal

tertiary institutions in South-west, Nigeria influenced job performance of their administrative staff.

In the second model, a multiple regression involving digital transformation and work experience was introduced as predictor variables and the results indicate that a change was experienced as R^2 change is 0.014. The F-statistics is 124.161 with a p-value of 0.005 ($p < 0.05$) indicating that the effect is statistically significant. This implies that digital transformation and work experience have positive and significant influence on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

The third model involved the introduction of work experience in the interaction of digital transformation with job performance using regression model. Results in Table 4.9 indicate that the R-square change is 0.000, and F-change of 0.007 with a corresponding (Sig. F-Change) p-value of 0.935 which implies that the interaction term of work experience have an insignificant moderating effect on the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria ($p = 0.935$). Hence, this result implies that work experience does not moderate the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. Based on this result ($\Delta R^2 = 0.000$, $\Delta F = 0.007$, $p = 0.935$), this study fails to reject the null hypothesis four (H_04) which states that work experience has no significant moderating impact on the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

The results obtained from the tests of the hypotheses are depicted in the following resultant model:

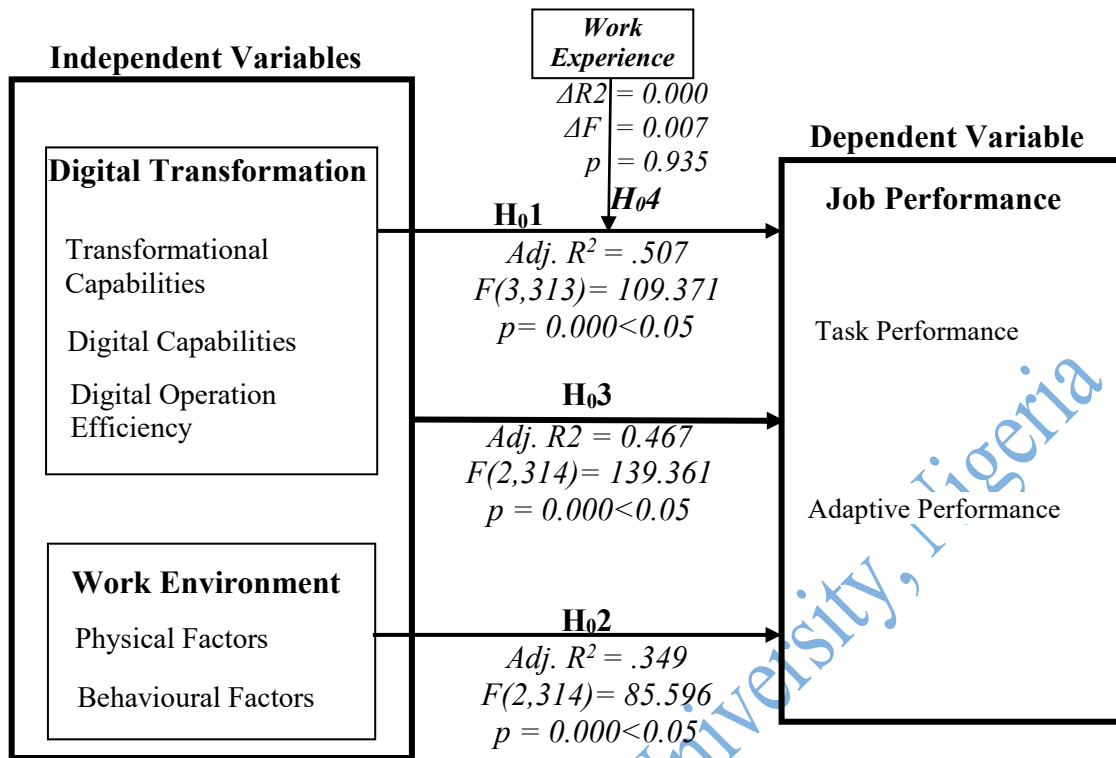


Fig. 4.1: Resultant Model

Source: Researcher's Field Survey Results (2023)

4.3 Discussion of Findings

Research Question One was raised to determine the level of job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. Job performance of the administrative staff was assessed in terms of task and adaptive performance as the two dimensions that are the focus of this study. Task performance which depicts the adeptness with which administrative staff perform the roles and functions recognized as core elements of their jobs is measured in terms of task and operational expertise, problem solving abilities, efficiency at work, oral and written communications. These were aimed to reveal their expected performance comprising administrative planning, organizing, administering the day-to-day work through technical administrative abilities, goal setting, ensuring administrative standard, giving directives, supervising and monitoring other subordinates, engaging in effective communication, ensuring task completion, meeting deadlines,

maintaining effective records and information management, providing feedback and reporting, seeing to the efficiency of administrative operation, seeing to quality of administrative service delivery and other in-roles of administrative staff of tertiary institutions¹.

The results revealed that administrative staff members of the federal tertiary institutions in South-west, Nigeria have high knowledge of administrative responsibilities, they are highly versatile in their core job roles and are up-to-date on what are expected of their responsibilities and the implication on general administration of their institutions. The administrative staff manifested high ability to identify problems and issues and in proffering both proactive and reactive solutions to administrative issues and challenges that may occur in the discharge of their responsibilities and towards ensuring smooth functioning of various organs and sections of their tertiary institutions. The result also revealed that members of the administrative staff group have are efficient and effective in streamline work processes, ensuring task completion with minimal time and effort and are always inclined towards meeting deadlines on assigned tasks and responsibilities. In terms of communication skills and competence, the result shows that the administrative staff show good understanding of directives and instructions relating to their core jobs and their institution, they pay attention to details, listen actively and provide appropriate feedback on their assigned responsibilities. The result depicts good level of task performance of the administrative staff of federal tertiary institutions in South-west, Nigeria and revealed the core elements that should characterize task performance especially in the context of administrative job functions^{1,2,3}.

Adaptive performance which covers the ability and readiness of the administrative staff to adjust to changes in their work role, methods, tools and the unpredictable changes in technology and work environment is measured in terms of resilience and open-mindedness, ability to adjust to emerging job and tasks requirements and disposition to learning new skill

and using new technology. The result revealed that the administrative staff of federal tertiary institutions in South-west, Nigeria have high ability to cope with new demands emanating in their job roles, have appreciable level of flexibility to challenges and could handle difficult work situations to a large extent. It was further revealed that the ability of the administrative staff to adjust to new work processes and tools, to accept new technologies are remarkably high and they have good level of readiness to meet emerging work demands.

As new technologies and platforms are being introduced to enhance task performance, the administrative staff are portrayed as having high interest and readiness to learn new technologies which is reflected in their mastery of new work processes and ability in generating new ideas for task completion. These result support previous researches on the importance of job-related behaviours that reflect task-performance-directed adaptability - handling emergencies, unpredictable work situations and work stress, solving problems creatively, learning existing work tasks, technologies and procedures,⁴ learning and coping with emerging new tasks, tools, processes, technologies, and adjusting to changes in work culture, workplace environment, work teams and individuals,⁵ etc. that are deemed inevitable as a result of the dynamic nature of modern organisations, evolving techniques, technology and processes, and the trend for change in the experience and expertise of organisations' workforce⁶.

On the aggregate, it was found that job performance (task and adaptive performance) of administrative staff of federal tertiary institutions in South-west, Nigeria is high as reflected in the grand mean of 3.43. This is also supported by the revelation from the Registrars of the federal tertiary institutions in Nigeria that the institutions have team of administrative staff who are well-groomed in their assigned roles and manifests remarkable abilities for problem

solving, internal and external communications, administrative versatility and adaptability to changes in work and work processes.

Research Question Two was raised to determine the level of digital transformation in federal tertiary institutions in South-west, Nigeria. This denotes the extent of institutional capability for digital change, the deployment of digital technologies, tools, processes, platforms and human competence necessary to change the institutions into ones in which digital technologies change the traditionally known methods, practices and procedures and facilitate the activities, processes and operations of the institutions for efficiency and effectiveness in administrative functions and service delivery^{7,8}. In determining this, the common denominators to most dimensions of digital transformation, that is, organisation, people, technology and process^{9,10} were considered, and thus the study adopted transformational capability, digital capability and digital operations efficiency as measures of digital transformation¹¹.

Transformational Capabilities falls under the organisation domain of digital transformation and entails the ability of the institutions to respond to technological developments in changing their operations and methods by adopting digital methods, processes, tools and applications. Digital Capabilities covers the people and technology components and it reflects digital technologies, tools, applications and resources that are required for driving the institutions' digital transformation on one hand, and the digital competence, technology-related skills, expertise, knowledge, disposition and attitude required of the administrative staff to perform their jobs, solve problems, communicate, manage information, collaborate, create and share digital content independently and appropriately in a digitally transforming/transformed institutions. Digital operation is the process aspect of digital transformation reflecting the level of automated work processes, use of digital

communication tools for collaboration, knowledge diffusion and continuous improvement and efficiency in operational routines¹² of administrative staff of federal tertiary institutions in South-west, Nigeria.

On transformational capabilities of the institutions, the results depict that the federal tertiary institutions in South-west, Nigeria are emphasizing and ensuring digital leadership at all levels with high commitment to digital changes and integration of digital technology into their strategic plans. It was also found that there are high innovation practices across sections and departments, freedom for creativity and idea generation among members of staff and good level of that digital culture across different organs and components of the institutions. In addition, the institutions were shown to be agile and responsive in identifying new digital opportunities, developing and enhancing human capacities for emerging technologies, and in taking advantage of digital resources and offerings of digital technologies.

The results on digital capabilities showed that digital technologies are highly available in the institutions in terms of IT-enabled internal communication networks, internet resources/facilities, minimal use of cloud computing, virtual interactions resources, appreciable staff and students database management system, cyber security system, noticeable e-service platforms and architecture. It was evidently shown in the result that the administrative staff of federal tertiary institutions in South-west, Nigeria are competent in communication in online interactions, use of office suites and applications and fairly competent in virtual collaboration for data creation and sharing. They were portrayed as having cyber security competence, digital information security and multi-media usage abilities. The results are in line with previous research submissions that digitally transforming organisation are characterized by organisations' readiness, innovation culture, digital agility and culture,¹³ availability of IT solutions, investment in digital technologies,^{14,15} competence

and mastery of digital skills or expertise to achieve active usage and optimal engagement level by employees¹¹.

It was further revealed that the use of digital tools in the institutions are characterized by highly efficient digital data generation for administrative use, flexible digital operations enabled by automation of functions and processes which make collaboration, virtual communication, meetings and management of institutional, staff and students records efficient, easy to use and reliable. It was also found that the level of digital activities of the institutions as portrayed by the administrative staff shows that digitization of operations was found to render interdepartmental workflow very seamless and service delivery qualitative and satisfactory. The empirical findings were corroborated by the submissions of the highest administrative officers of the federal tertiary institutions that digital tools and techniques are largely embedded in administrative services and functions of all organs of the institutions in providing administrative supports to other organs and personnel and rendering services to current and old students as well as staff, other institutions, organisations and agents of government

On the aggregate, the level of digital transformation of federal tertiary institutions was found to be high with flexibility in terms operation time and place, usage of virtual platforms, interoperability, records and data sharing, and management, etc. This means that digital transformation, especially in administrative operations, manifests digital operational efficiency. This could be explained that course advertisement, admission and registration, office management, human capital issues management, salaries and wage administration, information management, examinations and students' records management, inter-organisation and town-gown relationships and other administrative functions and roles, for example, are efficiently carried out. The results buttressed previous findings that digital

transformation as a process incorporates continuous and concomitant improvement in activities¹⁶ with added values in organisation's operations through enhanced service platform, processes and improved convenience^{17,18}. The empirical finding

Research Question Three was raised to determine the level of conduciveness of work environment of administrative staff of federal tertiary institutions in South-west, Nigeria. Work environment depicting the totality of tools, equipment, social setting, physical conditions, relationship among people, surrounding atmosphere, the arrangement of works, units, individuals and groups, and the general conditions of the settings and atmosphere¹⁹ in which administrative staff of federal tertiary institutions in South-west, Nigeria perform their works was measured along physical and behavioural components of work environment. While the physical component of the work environment comprises tools, office resources, office design, ventilation facilities for artificial and induced cooling or heating, office layout, space design, furniture, illumination and lights, noise levels, equipment and other physical elements^{20,21,22}, the behavioural component encompasses communication among workers, verbal and non-verbal mode of interactions, aggregate of attitude and people's behaviour towards each other, team members and colleagues, interaction and behavioural inclination between subordinates and supervisors, acquaintances and association formed at work, social resources in the form of help, compassion, recognition and value, and indication of social integration in the workplace^{23,24,25}.

It was found from the result that the physical work environment of the administrative staff of federal tertiary institutions in South-west, Nigeria is conducive in terms of office furniture and fittings, office cabinet, artificial and natural lightings and ventilation, office layout, arrangement of people, work units, office movable components and demarcations are conducive to support workflow and spatial needs of the administrative staff. It was also

found that communication and interactions with colleagues, team members and supervisors and reporting or feedback channel with heads of units were reported to be conducive to the administrative staff while the form of social integration and support from co-workers and supervisors/heads of units were found as comfortable and conducive. On the aggregate, the results clearly indicate that the administrative staff of federal tertiary institutions in South-west, Nigeria work in moderately high conducive environment. The findings are in tandem with the position of Registrars of the institutions that the possible influence of the environment in which work is carried out is sine qua non to the work itself and expected outcomes which necessitated the management of the institutions to provide conducive environment to their administrative to ensure that performance is not only enhanced but to make people feel comfortable as members of the work organisations. This implies need for the management of the of the federal tertiary institutions to provide more office resources and facilities that will enhance the conduciveness of the work environment with a view to improving the comfort, wellbeing and ultimately the performance of the administrative staff.

From the results of test of hypothesis one, it was found that digital transformation has positive and strong relationship with job performance of administrative staff of federal tertiary institutions in South-west, Nigeria and that such relationship positions that digital transformation experienced in federal tertiary institutions in South-west, Nigeria significantly influenced job performance of administrative staff of the institutions. Of all the digital transformation sub-variables examined, transformational capability (digital leadership, innovation culture and digital agility) has the highest relative influence on job performance of the administrative staff of federal tertiary institutions in South-west, Nigeria followed by digital capability (digital technologies and digital competence) while digital operations efficiency was found to exert insignificant influence on job performance. From the result, a unit change in transformational capability will lead to a 41.8% increase in the job

performance of administrative staff of federal tertiary institutions in South-west, Nigeria, given that all other factors are held constant. Also, a unit change in digital capability will yield 15.1% increase in the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, given that all other factors are held constant.

On the aggregate, the result of the null hypothesis one revealed a p-value less than 0.05, thus, at 95% confidence level, the hypothesis was rejected and it was upheld that digital transformation have significant influence on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. The coefficient of determination (Adj. R^2) of 0.507 implies that digital transformation predicts 50.7% of the changes in job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, while the remaining 49.3% changes in job performance of administrative staff is explained by other external factors not examined.

The results show that transformational capabilities as a key component of digital transformation showing the fitness of the federal tertiary institutions' culture, change leadership and agility to embrace and implement digital tools and processes; to change quickly and adapt to new technology is potentially instrumental in facilitating desirable performance level in the discharge of administrative functions, responsibilities and service delivery. This implies that the culture of innovation, the dynamic nature of the leadership of the federal tertiary institutions to recognize and respond to technological changes by integrating digital technology into their strategic plans, giving room for innovation practices and creativity among staff are fundamental in their digital transformation and essentially in leveraging technology for enhanced administrative performance.

This finding aligns with a number of existing research findings. For example, a well-grounded measurement model of digital transformation revealed that organisation's

capability, leadership commitment to digital transformation, degree of agility for digital process integration, people's expertise, readiness to learn new technology and digital strategy, empowerment of human capacity and technology adoption and usage are key drivers of job performance and organisations' functions in modern days²⁶. Also, the ambition of public organisations for digital transformation which is reflected in the leadership disposition, commitment and investment in digital tools and human capacities was reported to be significant in igniting completely new ways of working in public organisations and facilitates desirable functioning of organs of public organisations²⁷.

The findings of this study also corroborates that job performance in organizations with necessary capabilities for emerging technologies are characterized by unique ease of operations, seamless workflow and communication and digital culture and such organisations take advantage of digital resources, platforms, processes, procedures and digital savvy workforce to raise job performance level, user experience and enhance its deliverables²⁸. As digitally supportive organisational culture was reported to energize and propel digital strategies, operations and subsequently results in increased strategic benefits and value creation,²⁹ the finding of this study also positions that integration of digital technology into the institutions' strategic plan, embeddedness of digital culture across the institutions, motivation for innovations and creativity among staff are key ingredients necessary to propel digital transformation into yielding desirable job performance among administrative staff of federal tertiary institutions in South-west, Nigeria. This is further confirmed by the views shared by Registrars of the institutions that availability of digital tools, resources and platforms as well as the willingness, abilities and interests exhibited by well-motivated digital-savvy teams of administrative staff are reflected in how administrative functions are being performed, the type of improvement that are seen in the tertiary institutions, efficiency

and effectiveness of IT-based administrative operations that beneficial to all actors and stakeholders in the institutions.

While the relationship between individual competence and organisational capabilities could be affirmed in a study on the implementation of a digital transformation model which showed high disposition to information technology and digital media in an educational institution³⁰, the findings of the present study portray significant relationship among the measures employed to assess digital transformation (transformational capabilities, digital capabilities – digital competence and digital technology, and digital operations efficiency). This could be a result of the fact that people-centered maturity approach was adopted in relating individual competencies and organizational capabilities in the previous study under reference which showed that a high maturity score among employees in terms of their competence will not simply translate to high organizational capabilities or performance. However, the present study assessed digital competence as a composite of digital transformation to ascertain its relative relationship with other input factors and its composite contributions to digital transformation index. The result of this study also supports other previous research findings that employees' digital competence enhances individual performance and their intentions to continue in the environment as a result of their perceptions of ease of use of technologies provided. This revealed the significant need for digital literacy being a fundamental requisite for technology utilization³¹.

In addition, the results point to the fact that availability of capacity development and enhancement mechanisms in the area of digital competence and access to digital resources foster the deployment of digital processes and tools as well as readiness and willingness of administrative staff to learn new technologies, master and streamline new work processes. These were helpful in proffering solutions to administrative work issues, in communicating

with other persons and departments and allows for good work flow, dissipation of minimal manual efforts, timeliness and effective administrative service delivery. This supports the submission that organisations' capabilities for internet of things, cyber security system, big data management, cloud computing, etc. is significant in driving any meaningful digital transformation in organisation and that only organizations which have agility as a (dynamic) capability can effectively cope with the changes in technology and adopt same for improved workers' performance, operations efficiency and effectiveness, stakeholders' satisfaction and organisational growth³². The findings further locates favourable position to the aggregate viewpoints expressed by students, staff and management personnel who are critical players and actors in selected higher educational institutions across many countries that digital transformation facilitates communications, enhance administrative functions and processes, simplifies and modernizes admission applications, enrolment, examinations, students' services and ease of academic engagement and thus these areas should be considered as major interests for digital transformation initiatives³³.

In line with the position that performance of administrative functions encompasses capacity for prompt and informed decision making and implementation which depends on availability of data or information, possibility of effective information sharing in an organisation³³, the results of this study also showed that decision-making and other information-related index of job performance of the administrative staff of federal tertiary institutions in South-west, Nigeria are being facilitated by digital transformation. This substantiates the submission that decision making and implementation of work changes in modern organisations and businesses hinges on capabilities to learn, embrace change, respond to change and adapt to technology and new things and ultimately reveal the flexibility and capacities within the organization³⁴. As the adoption of digital technology was reported to be significant in transforming existing work processes easily and quickly and in spinning up new work

patterns to respond to digital changes³⁵, this study also reveal that digital transformation efforts of the federal tertiary institutions in South-west, Nigeria was found to be capable of enabling the administrative staff to exhibit adaptive use of technology, flexibility to challenges, to be dynamic in handling difficult work situations and in generating new ideas for discharging their administrative roles. With digital leadership and culture across the institutions, the administrative staff will learn new methods and demands of work, exhibit abilities for innovative thinking, digital disposition, collaborative competence, active participation in virtual communication and commitment to digital up-skilling which are essential performance attributes to meet job demands in the ever-changing technology-driven institutions. This finding is elucidative of the views expressed by the Registrars of federal tertiary institutions in South-west, Nigeria that the institutions invest in technological tools, emphasize digital transformation in their strategic plan and makes efforts in developing competencies and capacities for emerging technologies have been fruitful as evidenced in innovation practices seen across departments and sections of the institutions and in the effective administration and functioning of the institutions.

The relative influence of digital operational efficiency as shown in the results depicts very low specific contributions in the overall influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. This implies the need for deliberate improvement in digitized and automated processes, digital data management system, flexibility in digital operations, digitalized collaboration among departments and persons, virtual communication, digital service delivery, value added operations, etc. and conscious efforts to monitor and sustain such improvement efforts in technology-related functions and activities of administrative staff of the federal tertiary institutions.

The null hypothesis two was formulated to determine the influence of work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. Work environment, denoted by cumulative function of physical and behavioural components of the workplace, was found to have positive and statistically significant relationship job performance of the administrative staff (the coefficient of relationship $R=0.594$ and coefficient of determination Adj. $R^2=0.349$) which depicts that work environment could be linked to about 35% of the total variation that may occur in job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. Work environment was also found to have significant influence on job performance of administrative staff of federal tertiary of the federal institutions, given a p-value of $0.000 < 0.05$. This result clearly suggests that the environment in which administrative staff of federal tertiary institutions in Southwest Nigeria carry out their duties which reflects the composite of tools, resources, office materials, ventilation and cooling systems provided, lightings, social interactions among staff, relationship with supervisors, nature of perceived and received social support, teamwork, etc., have substantial contributions to their job performance. The result formed alignment with previous research findings that the nature and conditions of tools, arrangement of work, surrounding atmosphere, forces and other factors are capable of contending with the employees' activities, influence the way people work and their performance^{36,37} and that working relationships among peers, reporting channels and communication pattern between subordinates and their superiors, work related social wellbeing lend atmosphere of harmony, peaceful co-habitation among members of work teams and facilitate group dynamics necessary to stimulate desired level of individual and group performance in a workplace^{38,39}.

Specifically, it was observed that physical work environment factors pushed lesser influence on the job performance of the administrative staff ($\beta=0.163$) when compared to the relative influence of behavioural environment factors which was found to be capable of yielding

higher influence on the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria, β value being 0.317. This implies that behavioural work environment has the highest relative influence followed by physical work environment in relation to job performance of the administrative staff. The results are indications that the type, nature quality and conditions physical work tools, arrangement of work units, office resources, etc. are largely important to the wellbeing and comfortability of the administrative staff while mutual relationship, social inclinations, friendly work atmosphere, peer and supervisory assistance are critical to the conduciveness of the workplace and the overall job performance of administrative of federal tertiary institutions in Nigeria. The results support previously documented research findings that the fineness or otherwise of work environment impinge on workers' attitude, enthusiasm for productivity and performance^{40,41}. The quality of support from direct supervisors and colleagues were attributable to extra-role behaviour, active involvement in team efforts and improvement in job performance level^{42,43}. Furthermore, this finding is corroborated by the chief administrative officers of federal tertiary institutions in Nigeria that the well-being and comfort experienced by the administrative through the nature and components of their work environment influence their disposition to work and commitment to achieving desirable results. This lends supports to previous research findings that friendship, networks of formal and social relationship within an enterprise underscores the context in which job is performed and ultimately determines interdepartmental workflow and job performance across every part of the organisation^{44,45}.

Null hypothesis three was formulated and tested to determine the combined influence of digital transformation and work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. From the results, digital transformation and work environment were found to have strong positive and statistically significant joint relationship with job performance of the administrative staff. The result suggests that digital

transformation and work environment, when measured together, will predict about 47% of the changes in job performance of administrative staff of federal tertiary institutions in South-west, Nigeria (coefficient of determination = 0.467). This implies that the total variation that could be observed in the job performance of the administrative staff could be linked directly to the joint influence of digital transformation level of the institutions as well as the characteristics of the environment in which administrative jobs are being performed or where members of the administrative category carry out their duties in the federal tertiary institutions. This supports previous submission that organisational environment and its antecedent factors share common and reciprocal relationship with digital transformation as digital technologies, resources platforms and processes interact and are diffused into the work environment to stimulate improved performance of specific tasks, enhance service delivery, excite workers' perceived benefits from digital transformation and trigger their adaptability to technology-driven changes in the workplace⁴⁶.

The combined influence of digital transformation and work environment was statistically significant on job performance of the administrative staff. In effect, the level of commitment of management of the federal tertiary institutions in South-west, Nigeria to digital changes, the extent of integration of digital technology into work processes, especially in administrative operations, encouragement of innovation practices, motivation for creativity and idea generation among staff, staff development and capacity building for core competence in technology use, availability of digital internal communication networks, internet resources, cloud computing facilities, staff and students database management systems, electronic service platforms and records management practices, provision of office suites and applications, multi-media resources, etc. and the nature of conduciveness of the institutional environment in terms office facilities, ventilation and lighting, layout,

cooperation, supports and relationships among peers and supervisors, etc. will determine the disposition of the administrative to their job roles and expectation.

In essence, it was found that the degree to which administrative staff of federal tertiary institutions in Nigeria collectively and individually accomplish the core elements of their job duties, their attitude and adaptability to emerging changes in work roles, methods and technology use are largely dependent on their institutions' response to technological developments, provision and access to digital technologies, applications and resources; technology-related skills, expertise of the administrative staff as well as the conduciveness of both physical work environment factors and behavioural disposition among the administrative staff members and their supervisors or heads of units/departments. This aligns with the submission that the availability of technological equipment, work tools, resources and essential facilities in the workplace engendered workers to exhibit positive attitude towards their work and was critical to workers' choice and disposition to new technologies which in effect served as a potent predictor of their job performance and adaptability to new technologies⁴⁷. According to the top echelon of administrative positions in the federal tertiary institutions of South-west, Nigeria, the offerings and deliverables of the institutions have been greatly enhanced with the use of digital resources through improved work flow, access to institutional services, collaboration among units and people and general administration of the institutions.

Null hypothesis four was formulated to determine if there would be any significant moderating impact of work experience on the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. The hypothesis sought to ascertain if work experience, being a demographic factor, will impose any significant impact on the influence of digital transformation on job performance

of the administrative staff. When presented together as predictor variables, the result indicated that digital transformation and work experience account for 44.2% of the total changes in job performance and at a p-value of 0.000 ($p < 0.05$) the influence is statistically significant, which implies that digital transformation and work experience have positive and significant influence on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

However, with the introduction of work experience in the interaction of digital transformation with job performance in the regression model, it was found that the interaction term of work experience has an insignificant moderating effect on the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria (R-square change=0.000; $p=0.935$). This clearly implies that work experience does not moderate the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. Based on this result ($\Delta R^2 = 0.000$, $\Delta F = 0.014$, $P = 0.935$), this study fails to reject the null hypothesis four (H_{04}) which states that work experience has no significant moderating impact on the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. This finding suggests that it is essential to recognize that the impact of work experience on the use of digital tools may not always be significant and positive.

While research findings have shown that work experience is an important factor for job consideration, placement, and has significant influence on work-related behaviours and job performance of workers as shown in extant literature^{48,49}, the findings of this study lend support to other research position that none of the work experience predictors, (overall firm experience and prior work-related experience and unrelated experience) explained any significant distinctive variance in any of the three performance index, contradicting the assumptions that work experience would do⁵⁰. In the context of digital transformation, some

potential issues such as resistance to change from established workflows as a result of technology use, potential skill stagnation if employees fail to keep up with evolving technologies, and possible low disposition to newer and innovative work process may come to bear in undermining the impact which work experience is expected to reflect in workers. This, in a way, corroborates the submission that the impact of work experience in relation to job performance and other factors may hinge on individual worker's personality traits such as openness to experience, conscientiousness, agreeableness, extroversion, and neuroticism which have been found to play significant roles in the strength of the relationship of work experience and job performance⁵¹.

In addition, administrative work in tertiary institutions could be categorized as a form of high-complexity job which require former education for specific job-related knowledge, learning capacity and job disposition that are needed for administrative task performance, communication, intuition, problem-solving, adaptability and flexibility for changes in work and organisation. Work experience was reported to have highest correlation to job performance among workers in low-complexity jobs, that is, jobs that place low levels of cognitive demands and high education requirement on employees.

Furthermore, analysis of work experience, as a demographic factor of the administrative staff of federal tertiary institutions examined in this study revealed that 33% of the administrative staff had between 1 to 10 years of experience in their job position while the remaining 67% had over 10 years of work experience as administrative staff in their respective federal tertiary institutions. This is indicative of agreement with previous research finding that significant interaction effect of work experience may diminish as the years of experience of worker in an organisation increases⁵². This suggests that the number of years spent by the administrative staff may have bearing on how the changes in work processes, approaches and

expectations as a result of digital technologies could enhance job performance of the administrative who had spent few years on their job but such years of experience may not particularly influence administrative staff with many years of work experience in federal tertiary institutions of South-west, Nigeria. The implication is that work experience may affect how perception, disposition and use of digital resources with attendant changes in work characteristics and processes affect the discharge of administrative responsibilities, problem solving, flexibility, learning and adaptation to new technologies by administrative staff who had spent few years on the job, whereas year of experience may not account for such influence of digital technology use on job performance of administrative staff who have put in higher number of years.

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Chapter Five

Conclusion

This chapter presents the summary of findings of the study, it presents the conclusion based on the result of data analysed, outline the researcher's recommendations and suggested areas for further researches.

5.1 Summary of Findings

This study focuses on digital transformation, work environment and job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. The study was based on four postulations which served as guides in investigating the relative and combined influence of digital transformation and work environment on job performance of the administrative staff. Data collected were sorted, coded, and analyzed to establish the statistical significance of the influence of digital transformation and work environment on administrative staff job performance in federal tertiary institutions in South-west, Nigeria and the hypotheses were tested at 0.05 level of significance. From the interpretation of analysed data and findings of the study, the following can be summed up as the main empirical findings of this study:

Job performance of administrative staff of federal tertiary institutions in South-west, Nigeria is high. Members of administrative staff category possess high level of knowledge and expertise in their administrative responsibilities, and indicated abilities for problem-solving to efficiently manage work processes, meet deadlines and communicate effectively. The administrative also showed adaptability to new work demands and technologies, portrayed willingness to learn and generate innovative ideas for task completion and indicated capacities to cope well with new challenges and high flexibility in handling difficult work situations.

The federal tertiary institutions in South-west, Nigeria are undergoing significant digital transformation. The institutions have strong commitment to digital leadership at all levels and integrating digital technology into their strategic plans. Innovation practices are prevalent, the institutions are agile and responsive, identifying new digital opportunities, enhancing human capacities for emerging technologies, and effectively utilizing digital resources. The institutions have wide range of digital technologies, including IT-enabled internal communication networks, internet resources, and are utilizing virtual platforms, emphasizing interoperability and data sharing for administrative and other purposes. Overall, the digital transformation reflects in digital data generation, automated functions and processes, virtual collaboration etc.

Work environment of the administrative staff of federal tertiary institutions in South-west, Nigeria was revealed as moderately conducive. Office furniture, lighting, ventilation, layout, and arrangement of the office space are conducive, and support workflow and spatial needs of the administrative staff. Communication, interactions with colleagues as well as social integration and support from co-workers and supervisors are favourable, indicating that administrative staff of federal tertiary institutions in South-west, Nigeria work in a moderately high conducive environment.

Digital transformation (transformational capabilities, digital capabilities and digital operation efficiency) has positive and strong relationship with job performance of administrative staff in federal tertiary institutions in South-west, Nigeria. The null hypothesis 1 was rejected, confirming that digital transformation significantly influences the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. Transformational capability (digital leadership, innovation culture, and digital agility) had the most significant relative influence on job performance, followed by digital capability (digital technologies and

digital competence), while digital operation efficiency exerts insignificant relative influence on job performance. In all, digital transformation predicted 50.7% of the changes in job performance of the administrative staff of federal tertiary institutions in South-west, Nigeria.

Work environment (physical and behavioural components of the workplace) has a positive and statistically significant relationship with the job performance of the administrative staff in federal tertiary institutions in South-west, Nigeria. Null hypothesis 2 was rejected as work environment was found to have significant influence on the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. Specifically, behavioural environment factors have a higher influence on job performance than physical environment factors. on the aggregate, the environment in which the administrative staff carry out their duties, including tools, resources, office materials, ventilation, lighting, social interactions, relationships with supervisors, and social support, impacts significantly on their job performance.

There is a positive and statistically significant joint relationship of digital transformation and work environment with the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. The third null hypothesis was rejected and it was upheld that digital transformation and work environment have significant combined influence on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

Digital transformation initiative, efforts and in federal tertiary institutions of South-west, Nigeria, level of technological developments, availability and access to digital technologies, administrative staff competence in technology use, and the conduciveness of both physical and behavioural factors of the work environment collectively have significant influence on the discharge of administrative duties, their adaptability to emerging changes in work roles and technology, and overall job performance of the administrative staff.

Work experience and digital transformation when taken together and treated as predictor variables, accounted for significant change in job performance. The influence of the variables is statistically significant, indicating that work experience and digital transformation jointly have favourable and significant impact on job performance of the administrative staff. When introduced and measured as a moderating factor in the interaction of digital transformation and job performance, work experience had a negligible moderating impact on the influence of digital transformation on job performance. Hence, it was upheld that work experience does not have any significant moderating impact on the influence of digital transformation on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria.

5.2 Conclusion

Job Performance of administrative staff is an important success factor for desirable administrative activities of federal tertiary institutions in South-west, Nigeria and other similar higher educational institutions. The nature of work of the administrative staff of federal tertiary institution requires a good blend of task and adaptive performance signifying remarkable proficiency in task and operational expertise, problem-solving abilities, efficiency at work, and oral and written communication and administrative core job functions as well as abilities to adjust and adapt to changes in work roles, methods, technology, disposition toward resilience, open-mindedness, flexibility in handling difficult work situations effectively. The versatility of the administrative staff in their core job roles, possession of wide range of administrative skills, willingness and readiness to learn new skills, adaptability to emerging job requirements, and ability to generate innovative ideas are indicative of administrative workforce that is well-rounded to meet the challenges of their roles, and

contribute to the advancement of federal tertiary institutions in South-west, Nigeria and other tertiary institutions in an ever-evolving environment.

Federal tertiary institutions in South-west, Nigeria are witnessing a moderately high digital transformation experience which is a reflection of the institutions' capability for digital change, digital tools deployment, integration of digital processes and platforms as well as the level of digital skills of the staff which are necessary to facilitate the activities, processes and operations of the institutions for efficiency and effectiveness in administrative functions and services. The institutions' efforts and capacity for identifying and embracing new digital opportunities, developing and enhancing human capacities for emerging technologies, IT-enabled internal communications, cyber security system, etc. are essential for efficient, effective and seamless administrative operations and qualitative service delivery.

The provision and access to tools, equipment and office resources, office design and layouts, arrangement of works, individuals and groups, and the general physical conditions of the workplace are equally important as the social setting, relationship among people, communication and interactions among workers, co-worker and supervisory support in facilitating the conduciveness of the environment and the wellbeing of the administrative staff of federal tertiary institutions in South-west, Nigeria.

The nature and level of job performance of administrative staff of federal tertiary institutions in South-west, Nigeria is significantly related and dependent on the level of digital transformation taking place in the institutions. Transformational capability (innovation Culture, digital leadership and Agility) and digital capabilities (availability of digital resources and the people's competence in digital tools and processes) are critical digital transformation factors that could largely influence the performance of the administrative staff and are essentially required to facilitate improvement in administrative functions,

responsibilities and service delivery. Implementation of digital transformation initiatives and sustenance of digital ecosystem within the federal tertiary institutions and similar educational institutions will ignite new work patterns, propel adaptive use of technology, facilitate staff flexibility and versatility on task and generate innovative ideas which are necessary to enhance internal and external communications, simplify and streamline students enrolment and support services, improve inter-departmental workflow, foster digitalized staff and students records management, information security and general institution's administrative effectiveness and efficiency.

The entirety of physical and behavioural components of work environment of administrative staff of federal tertiary institutions in South-west, Nigeria signifies the workplace-related wellbeing and conduciveness of this staff category and is significantly instrumental in stimulating good work attitude, disposition to task accomplishment, team cohesion and goal achievement. Availability of working tools and office materials in the right quantity, quality and condition will have positive bearing on the level of performance of the administrative staff while social interactions, interpersonal relationships and social supports from team members and supervisors are essential to achieve desirable job performance of administrative staff. A work environment of peaceful and supportive co-habitation through desirable networks of informal social relationship and mutuality will enliven workers' attitude, enthusiasm and job performance.

The level of digital transformation activities and the conducive nature of workplace environment are among the central factors that are impactful on the job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. A good blend of management commitment to digital changes, digital technologies adoptions and mastery of digital resources utilization in a conducive and well-integrated institutional environment is

contributory to the adaptability of administrative staff to technology-driven changes in the institutions and will lead to improved performance of tasks and enhanced administrative service delivery to the benefits of all stakeholders in the tertiary institutions.

While work experience is an important factor of consideration for determining person-job-match and is related to individual employee's knowledge, understanding and proficiency in a job or an organisation that are brought to bear on the employee's attitude, adaptability to work situations, performance standards and expectations, it may not be responsible for any digital transformation-triggered changes in job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. Observable changes in the job performance of administrative staff as a result of institutional adoption of digital technologies, approaches and work designs may not be directly linked to the number of years of the staff on the job or in the organisation.

5.3 Recommendations

Based on the findings of this study, the following recommendations were made:

1. Management of federal tertiary institutions in South-west, Nigeria should focus more attention on the performance of the administrative staff in their core functions and adaptability to new work demands, technology-enabled work processes and adjustment to emerging roles and expectations through domain-specific and purpose-driven digital training.
2. Management of federal tertiary institutions in South-west, Nigeria should intensify efforts on digital transformation and ensure sustainable digital ecosystem across their institutions by stimulating digital leadership in heads of units and departments, inspiring digital culture in every part of their institutions and encouraging

commitment of everyone to the successful implementation of digital transformation initiatives.

3. Registry departments of federal tertiary institutions should tailor more efforts towards improving the efficiency of digital operations by refining digital data generation and management processes and platforms, fostering digitalized collaboration among administrative units and officers, reviewing and restructuring digital platforms for administrative service offerings, monitoring the effectiveness and efficiency of administrative operations and emphasizing value added administrative activities.
4. Management of federal tertiary institutions in South-west, Nigeria should provide more office resources, tools and equipment in the right quantity, quality and condition for their administrative staff - lighting, illumination, natural ventilations and artificial cooling system should be provided while office layout should be made to favourably support work flow, characteristics and needs of individual administrative personnel.
5. Administrative staff of federal tertiary institutions in South-west, Nigeria should make conscious personal efforts towards self-development in the skillful use of digital technologies for effective functioning in a digital environment, be willing and ready to adapt to technology-related changes and expectations in their jobs
6. Administrative staff of federal tertiary institutions in South-west, Nigeria should imbibe reputable culture of efficiency, effectiveness and qualitative service delivery in their heterogeneous administrative functions involving course advertisement, admission and student registration, office management, personnel management, salaries and wage administration, budgeting, information management, academic support services, examinations and students records management, public relations, etc.

7. The Federal Government of Nigeria should provide adequate funds to its tertiary institutions in South-west, Nigeria and other regions of the country, provide sufficient interventions for the procurement of state-of-the-art digital equipment, the training of administrative personnel and other categories of staff in digital technology use and the provision of necessary physical facilities for offices, departments and personnel.

5.4 Contributions to Knowledge

This study examines the influence of digital transformation and work environment and job performance of administrative staff of federal tertiary institutions in Southwest Nigeria. the study offers significant contributions to existing body of knowledge conceptually, theoretically and empirical.

Conceptually, the study takes an in-depth exploration of the variables examined - digital transformation, work environment and job performance, explores viewpoints and operationalization of the concepts, identifies the gaps in existing literature and offers additional insights into the understanding of the variables especially in relation to administrative staff of tertiary institutions. The conceptual framework of this study also shows the interactions of the key variables and other constructs used for the description and measurement of each key variable. The framework provides a workable blueprint for examining the influence of the independent variables (digital transformation and work environment) on the dependent variable (job performance of administrative staff) as well as the metrics of each variable.

From the theoretical perspective, the study further strengthens the Job Performance Theory of John Campbell and the application of the theory across different jobs and occupations and specifically to the administrative staff job performance in tertiary institutions. The theory was used to provide robust insight into the components of the core job elements of

administrative staff of tertiary institutions and pinpoints ‘task performance’ in the taxonomy as a key indicators of job-specific task proficiency (core job tasks) of the administrative staff. In addition, this study explores the application of the Individual Adaptability Theory (I-Adapt Theory) developed by Pulakos et al. as an expansion of the Campbell’s Theory by introducing a new dimension tagged ‘*adaptive performance*’ as the hidden part of performance, that is usually brought to bear on other dimensions of performance. The exploration of the I-Adapt Theory in this study emphasizes the importance of adaptive dimension as a unique performance criterion showing employees’ adaptability to changes in a work, job functions, job designs, procedures, tools, technologies, etc. in the ever-dynamic work organisations.

Furthermore, the study builds on Digital Excellence Model and dwells on its component factors to provide robust understanding and measurement of digital transformation efforts, initiatives, activities and progress of federal tertiary institutions in South-west, Nigeria and other similar educational institutions. The characteristics, activities, resources and how organisations respond for dynamic growth towards achieving digital transformation are specified in the theory. This also broadens the frontiers of knowledge on digital transformation and the applicability of the Digital Excellence Model in public organisations.

Empirically, the study expands the landscape of empirical submissions and findings on digital transformation, work environment and job performance. While studies on job performance abound in extant literature, empirical studies on task and adaptive performance of administrative staff of tertiary institutions in Nigeria seems to be rare. Similarly, there is dearth of empirical studies on digital transformation in developing countries like Nigeria while the available few in both developed and developing countries were conducted in private sector organisations. This study closed this gap by offering empirical evidences on

digital transformation of public tertiary institutions in Nigeria. The findings of this study offer empirical references and support for future studies on the variables examined and their metrics and sub-measures which scholars and researchers can use to buttress empirical submissions in future studies.

Work experience has been described in a number of literature and previous studies as having influence on employees' productivity, adaptability, task-related decisions, work attitude, and performance. The examination of the moderating influence of work experience on the interaction of digital transformation with job performance of the administrative staff enriches knowledge on the fact that work experience may not always have positive or substantial impact on performance in every type of job and for every category of workers.

The above-mentioned emphasizes the contributions of this study to existing knowledge and practical implication of the findings to the management and administrative staff of federal tertiary institutions in South-west, Nigeria and other similar tertiary institutions.

5.5 Areas for Further Studies

This study focused on the influence of digital transformation and work environment on job performance of administrative staff of federal tertiary institutions in South-west, Nigeria. Nevertheless, to further broaden the frontiers of knowledge, the following areas are suggested for further research.

The present study was carried out in the federal tertiary institutions in South-west, Nigeria, on one hand, further studies in the similar area can be carried out in other geo-political zones of Nigeria. On the other hand, state government-owned tertiary institutions can as well be studied so that the knowledge gained from this study could be extended to all public tertiary institutions in Nigeria. In addition, future studies on the variables could be carried out in privately owned tertiary institutions in Nigeria. A comparative study between federal

government tertiary institutions and state government-owned tertiary institutions in Nigeria could be carried out while the variables of interest here could also be studied comparatively between public and private tertiary institutions in Nigeria.

A mixed method of data collection was used during the survey for this study in order to capture both quantitative trends and qualitative nuances regarding the impact of digital transformation and work environment on job performance among the administrative staff of federal tertiary institutions in South-west, Nigeria. Because digital transformation is a progressive process and the workplace is constantly changing, future research may consider longitudinal survey design to explain causality among the variables over time. Triangulation could also be used to compare findings from different data sources to enhance the validity and reliability of future research findings.

Work experience used as the moderating variable in this study was measured as a demographic factor which revealed only years of work experience, future research may examine work experience as a variable with measurable indices on a scale with likert characteristics.

The present study was carried out among administrative staff, further research may focus on academic staff of the tertiary institutions in order to give room for broader generalization in the context of tertiary institutions and to foster desirable performance among the different cadres of staff of tertiary institutions in Nigeria.

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Appendices

Lead City University, Ibadan

Faculty of Communication and Information Sciences (FCIS)

Department of Information Management

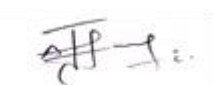
Digital Transformation Work Environment and Administrative Staff Job Performance Questionnaire

Dear Respondent,

I am a Post-graduate student of the above-named Institution and presently collecting data on the research topic “**Digital Transformation, Work Environment and Administrative Staff Job Performance in Federal Tertiary Institutions, South-west, Nigeria**”.

I solicit your support, cooperation and sincerity in responding to the items on the following questionnaire. Be assured that your responses will be kept confidential and used for academic purposes only.

Thank you.



Tajudeen Adisa JIMOH
Researcher

SECTION A: DEMOGRAPHIC INFORMATION

Instruction: This section consists of personal data, please choose as applicable to you with a tick in the available spaces

1. **Gender:** Male () Female ()
2. **Cadre:** Secretarial Cadre () Executive () Admin Officer () Registrar Cadre ()
3. **Work Experience in the Organisation:** Below 5 yrs () 6 – 10 yrs ()
11 - 15 yrs () 16- 20 yrs 21- 25 yrs () 26 – 30 years () Above 30 years ()
4. **Age:** Below 25yrs () 26-35yrs () 36 - 45 yrs () 46-55 yrs () 6 yrs & above ()
5. **Educational Qualification:** ND/NCE () HND/BSc. () Master’s Degree () Ph.D ()

SECTION B: JOB PERFORMANCE

Please indicate your opinion on the job performance of administrative staff in your Institution in terms of the following:

Key: VH = Very High; H = High; L = Low; VL = Very Low

Task Performance

S/N	Items	VH	H	L	VL
	Task and Operational Expertise				
1.	Knowledge of administrative tasks				
2.	Versatility on administrative job roles				
3.	Up-to-date knowledge on core responsibilities				
	Problem Solving Abilities				
4.	Ability to identify problems and issues				
5.	Proffering solutions to work issues				
6.	Taking responsibility for problems and challenges				
	Efficiency at Work				
7.	Ability to streamline work processes for efficiency				
8.	Task completion with minimal time and effort				
9.	Meeting deadlines on assigned tasks/responsibilities				
	Oral and Written Communications				
10.	Understanding of directives and instructions				
11.	Active listening and attention to details				
12.	Providing feedback on assigned task/responsibilities				

Adaptive Performance

S/N	Items	VH	H	L	VL
	Showing resilience and Open-mindedness				
1.	Ability to cope with new work demands				
2.	Flexibility to challenges				
3.	Handling difficult work situations				
	Adjusting to Emerging Job/Tasks Requirements				
4.	Adjusting to new work processes and tools				
5.	Accepting new technologies				
6.	Readiness to meet emerging work demands				
	Learning New Skills				
7.	Learning new technologies				
8.	Mastery of new work processes				
9.	Generating new ideas for task completion				

SECTION C: DIGITAL TRANSFORMATION

Transformational Capabilities: Please indicate the level of your Institution's capabilities in the following

KEY: VH = Very High; H = High; L = Low; VL = Very Low

S/N	Items	VH	H	L	VL
	Digital Leadership				
1.	Emphasizing and ensuring digital leadership at all levels				
2.	Commitment of management to digital changes				
3.	Integration of digital technology into strategic planning				
	Innovation Culture				
4.	Innovation practices across sections and departments				
5.	Freedom for creativity and idea generation among staff				
6.	Cultivating digital culture across the Organisation				
	Digital Agility				
7.	Identifying new digital opportunities				
8.	Developing and enhancing human capacities for emerging tech				
9.	Taking advantage of digital resources				

Digital Capabilities

These include digital technologies, tools, applications/resources as well as human expertise and competence required for driving the Institutions' digital transformation

Keys: HA = Highly Available; A = Available; FA = Fairly Available; NA = Not Available

HC = Highly Competent; C = Competent; FC = Fairly Competent; NC = Not Competent

S/N	Digital Technologies: Please indicate the level of availability of the following digital resources in your Institution	HA	A	FA	NA
1.	IT-enabled internal communication networks				
2.	Internet resources/facilities				
3.	Cloud computing facilities				
4.	Virtual interactions resources				
5.	Staff database architecture				
6.	Students database management system				
7.	Cyber security system				
8.	E-service platforms and architecture				
	Digital Competence: Indicate your opinion on the competence of administrative staff of your Institution in terms of the following:	HC	C	FC	NC
9.	Communication in online interactions				
10.	Office suites and applications usage				
11.	virtual collaboration for data creation and sharing				
12.	Cyber security competence				

13.	Multi-media Usage				
14.	Digital information security				

Digital Operational Efficiency: Indicate the level of efficiency of the following digital operations in your Institution

Key: *HE = Highly Efficient; E = Efficient; FE = Fairly Efficient; NE = Not Efficient*

	<i>Digitized/Automated Processes</i>	HE	E	FE	NE
1.	Digital data generation				
2.	Digital data management system				
3.	Automated work flow				
4.	Flexible digital operations				
	<i>Digitized Collaboration</i>				
5.	Digitalized collaboration among departments and persons				
6.	Virtual communication and meetings				
7.	Electronic records management				
	<i>Lean and Continuous Improvement</i>				
8.	Seamless Inter-departmental work flow				
9.	Digital Service delivery				
10.	Value added operations				
11.	Operational efficiency				

SECTION D: WORK ENVIRONMENT

Physical Work Environment: *Please indicate how conducive your physical work environment is in terms of the following:*

Key: *HC = Highly Conducive; C = Conducive; FC = Fairly Conducive; NC = Not conducive*

S/N	ITEMS	HC	C	FC	NC
	Office facilities				
1.	Furniture and fittings				
2.	Office cabinets				
3.	Office decorations				
	Lighting and Ventilation				
4.	Natural lighting of the office				
5.	Artificial lights provided				
6.	Natural air cross ventilation				
7.	Air conditioning system				
	Layout/Spatial Arrangement				
8.	Arrangement of furniture and fittings				
9.	Demarcations provided				

10.	Arrangements of people				
11.	Arrangement of work units				

Behavioural Environment: *Please indicate how conducive your behavioural work environment is in terms of the following*

Key: HC = Highly Conducive; C = Conducive; FC = Fairly Conducive; NC = Not conducive

S/N	ITEMS	HC	C	FC	NC
	Interpersonal Relationship				
1.	Interactions among staff				
2.	Informal communication				
3.	Reporting and feedback channels				
	Social Support				
4.	Supervisory support to subordinates				
5.	Co-worker support to each other				
6.	Nature of Team work				

Digital Transformation, Work Environment and Administrative Staff Job Performance in Federal Tertiary Institutions, South-West, Nigeria

Interview with Registrar of Federal Tertiary Institutions in South-west, Nigeria

INTERVIEW GUIDE

Sir/Ma, kindly give your opinions/answers objectively and freely on the following in relation to digital transformation, work environment and job performance of administrative staff in your Institution.

Job Performance

1. *As the Registrar, how will you describe or rate the performance of Administrative Staff in their core areas of responsibilities especially in terms of administrative expertise, problem solving abilities, efficiency and communication skills?*

Answer:

.....

.....

2. *In view of changes in work processes, technology use and expectations that are constantly evolving in modern organizations, what is your view on the level of adaptability of your administrative staff in terms of ability to cope with new work demands, accepting and learning the use of new technologies and generating ideas for work accomplishment?*

Answer:

.....

.....

Digital Transformation

1. *As a Principal Officer and a member of the Management, how will you place your Institution's capabilities for adopting digital methods, processes, tools and applications, cultivating digital culture across sections and departments and developing human capacities for emerging technologies?*

Answer:

.....

.....

2. *Can you please describe your Institution's digital capabilities in terms of availability of digital technologies, tools, applications and resources as well as human expertise and competence to drive the Institutions' digital transformation?*

Answer:

.....

.....

3. *Please give your opinion on the efficiency of digital operations in administrative functions in terms of automated processes, data generation and management, virtual collaboration between persons and department and digital service delivery.*

Answer:
.....
.....

Work Environment

1. *How conducive do you see physical work environment of administrative staff in terms of office furniture, lighting and ventilation, office layout and arrangement of work units and sections?*

Answer:
.....
.....

2. *Can you please describe the nature of interpersonal relationships among administrative personnel as well as the social support from supervisors and among co-workers?*

Answer:
.....
.....

Digital Transformation and Administrative Staff Job Performance

1. *How would you describe the influence of digital transformation (availability of digital technologies, adoption of digital processes and staff digital competence/expertise) on the performance of administrative tasks and functions in your institution?*

Answer:
.....
.....
.....

Work Environment and Administrative Staff Job Performance

1. *Do you think that the work environment of the administrative staff (physical facilities and the relationship among persons and teams) influence the level of their job performance?*

Answer:
.....
.....
.....
.....

Results of Regression Statistics

Hypothesis One

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.715 ^a	.512	.507	.29101

a. Predictors: (Constant), DigitalOpeeff, TransformationCap, DigitalCap

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27.786	3	9.262	109.371	.000 ^b
	Residual	26.506	313	.085		
	Total	54.292	316			

a. Dependent Variable: Jobperformance

b. Predictors: (Constant), DigitalOpeeff, TransformationCap, DigitalCap

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.755	.092		19.021	.000
	TransformationCap	.418	.041	.600	10.241	.000
	DigitalCap	.151	.048	.234	3.160	.002
	DigitalOpeeff	-.060	.044	-.095	-1.369	.172

a. Dependent Variable: Jobperformance

Hypothesis Two

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.594 ^a	.353	.349	.33451

a. Predictors: (Constant), BehWE, PhysicalWE

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	19.156	2	9.578	85.596	.000 ^b
	Residual	35.136	314	.112		
	Total	54.292	316			

a. Dependent Variable: Jobperformance

b. Predictors: (Constant), BehWE, PhysicalWE

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.843	.122		15.057	.000
	PhysicalWE	.163	.034	.271	4.852	.000
	BehWE	.317	.045	.394	7.061	.000

a. Dependent Variable: Jobperformance

Hypothesis Three

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.686 ^a	.470	.467	.30265

a. Predictors: (Constant), WorkEnvironment, DigitalTransformation

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	25.530	2	12.765	139.361	.000 ^b
	Residual	28.762	314	.092		
	Total	54.292	316			

a. Dependent Variable: Jobperformance

b. Predictors: (Constant), WorkEnvironment, DigitalTransformation

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.642	.106		15.476	.000
	DigitalTransformation	.341	.039	.473	8.687	.000
	WorkEnvironment	.213	.042	.275	5.056	.000

a. Dependent Variable: Jobperformance

Hypothesis Four

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.654 ^a	.427	.425	.31423	.427	234.840	1	315	.000
2	.665 ^b	.442	.438	.31073	.014	8.151	1	314	.005
3	.665 ^c	.442	.436	.31122	.000	.007	1	313	.935

a. Predictors: (Constant), DigitalTransformation

b. Predictors: (Constant), DigitalTransformation, Workexperience

c. Predictors: (Constant), DigitalTransformation, Workexperience, moderating

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.189	1	23.189	234.840	.000 ^b
	Residual	31.104	315	.099		
	Total	54.292	316			
2	Regression	23.976	2	11.988	124.161	.000 ^c
	Residual	30.317	314	.097		
	Total	54.292	316			
3	Regression	23.976	3	7.992	82.514	.000 ^d
	Residual	30.316	313	.097		
	Total	54.292	316			

a. Dependent Variable: Jobperformance

b. Predictors: (Constant), DigitalTransformation

c. Predictors: (Constant), DigitalTransformation, Workexperience

d. Predictors: (Constant), DigitalTransformation, Workexperience, moderating

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.895	.097		19.504	.000
	DigitalTransformation	.471	.031	.654	15.324	.000
2	(Constant)	1.857	.097		19.160	.000
	DigitalTransformation	.449	.031	.623	14.335	.000
	Workexperience	.031	.011	.124	2.855	.005
3	(Constant)	1.840	.233		7.910	.000
	DigitalTransformation	.455	.077	.631	5.947	.000
	Workexperience	.036	.060	.144	.592	.554
	moderating	-.002	.019	-.023	-.082	.935

a. Dependent Variable: Jobperformance

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Bio-data

A. Personal Data

Name: Tajudeen Adisa JIMOH

E-Mail: tajudeen.jimoh@federalpolyilaro.edu.ng

Phone Number: 08033625858

Date and Place of Birth: 22nd April, 1974, Ilaro, Ogun State

Nationality: Nigerian

Name and Address of Next of Kin: Amotul-basit Jimoh, 26, Aregbeye Street, Ikosi, Ilaro, Ogun State.

B. Educational Background with Dates

Qualifications	Year	Institution
▪ Ph.D Office and Information Management	In view	Lead City University, Ibadan
▪ M.Sc. Business Administration (Office and Information Management)	2019	Lead City University, Ibadan
▪ B.Sc. Business Administration	2018	University of Lagos, Akoka, Lagos
▪ Masters in Personnel Psychology	2012	Olabisi Onabanjo University, Ago-iwoye
▪ Higher National Diploma, Secretarial Studies (Distinction)	2002	The Federal Polytechnic, Ilaro
▪ National Diploma, Secretarial Studies (Distinction)	1999	The Federal Polytechnic, Ilaro

C. Work Experience with Dates

▪ Department of Office Technology and Management, The Federal Polytechnic, Ilaro, Ogun State	2016 - Date
▪ Registry Department, The Federal Polytechnic, Ilaro, Ogun State	2007 – 2016
▪ Skye Bank Plc, Ilaro, Ogun State	2006 – 2007
▪ Cooperative Bank Plc, Ilaro, Ogun State	2005 – 2006
▪ Nigerian Navy Finance and Logistics School, Owerrinta, Abia.	2003 – 2004

D. Awards and Fellowships

- Federal Polytechnic, Ilaro Governing Council Academic Prize Award for the Overall Best HND Graduand in 2001/2002 Academic Session.
- Dean, School of Management Studies, Federal Polytechnic Ilaro Prize Award for the Best HND Graduand in 2001/2002 Academic Session.
- Departmental Academic Prize Award for the Best HND Graduand in the Department of Secretarial Studies in 2001/2002 Session.
- National Association of Secretarial Students, FPI) Award for the Best HND Student in Secretarial Studies for 2002
- Federal Government of Nigeria Scholarship Award for HND Programme in 2001
- Federal Polytechnic, Ilaro Award for the Best ND Student in Secretarial Studies in 1998/1999

E. Membership of Academic Professional Bodies

- Member, National Institute of Office Administrators and Information Managers,
- Member, Association of Business Educators of Nigeria

F. Publications

Published Journal Articles

Jimoh, T. A. & Kehinde, O. A., *Technical and Vocational Education and Training (TVET): A Vital Tool for Entrepreneurship Opportunities for Office Technology and Management Students*. **International Journal of Women in Technical Education and Employment**, 3(1), 2022, 53-61. <https://fpiwitedjournal.federalpolyilaro.edu.ng>

Iro-Idoro, C. B. & Jimoh, T. A., *Graduates' Employability Index of Generic and Innovative Skills: A Survey of Employers in Ogun State, Nigeria*. **International Journal of for Research in Social Science and Humanities**, 8(3), 1-8, 2022, 18-25. ISSN: 2208-2697. <https://doi.org/10.53555/ssh.v8i3.2039>

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Adenekan, T. E. & Jimoh, T. A. (2021). Technological Innovation, Digital Competence and Job Performance of Secretaries in Public Tertiary Institutions in Ogun State,

Nigeria. **International Journal of Innovative Science and Research Technology**, 6(12), 2021, 5-12. ISSN 2456-2165, www.ijisrt.com.

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Jimoh, T. A. & Banjo, A. O., *Post-National Diploma Industrial Training and Academic Achievement of Higher National Diploma Students*. **Timbou-Africa International Journal of Social Science Research and Anthropology**, 6(6), 2021, 382-397, ISSN: 2977-5745. https://www.hummingbirdpubng.com/wp-content/uploads/2021/10/TIJSSRA_Vol6_No6_August_2021-23.pdf

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Iro-Idoro, C. B. & Jimoh, T. A., *Empowering Youths for Self-Reliance through Technical and Vocational Education and Training*. **Journal of Women in Technical Education and Employment**, 1(2), 2020, 86-95. <https://fpiwitedjournal.federalpolyilaro.edu.ng>

Iro-Idoro, C. B. & Jimoh, T. A., *Gender Mainstreaming in STEM and Admission Policy of Nigerian Tertiary Institutions*. **Journal of Women in Technical Education and Employment**, 1(1), 2020, 47-55. <https://fpiwitedjournal.federalpolyilaro.edu.ng>

Jimoh, T. A. & Ogunsanwo, A. O., *Complaint Management Approach and Customer Loyalty: A Cross-Sectional Survey of Commercial Banks' Customers in Ogun State*. **Journal of Business & Educational Policies**, 15(1), 2019, 47-61.

Iro-Idoro, C. B. & Jimoh, T. A., *Knowledge Management in Technological Innovation: Correlate of Job Performance of Non-Teaching Staff of the Federal Polytechnic, Ilaro, Nigeria*. **Nigerian Communication and Information Technology Journal**, 1(1), 2019, 180-192. <https://www.ncitj.com/the-journal/vol-1-no-1-harmattan-2019>.

Iro-Idoro, C. B. Osore, A. F. & Jimoh, T. A., *Knowledge and Use of Computer Application Packages by Office Managers/Secretaries in Higher Institutions in Ogun State, Nigeria: Implication on Performance Enhancement*. **World Academy of Science, Engineering and Technology International Journal of Humanities and Social Sciences**, 12(8), 2018. <https://waset.org/abstracts/90868>.

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Iro-Idoro C. B. & Jimoh, T. A. (2017). *Social Media Use Among Students of Federal Polytechnic Ilaro, Ogun State, Nigeria: Implication on Academic Performance*. **Journal of International Organisation of Scientific Research**, 22(3), 2017, 59-66. <http://www.iosrjournals.org/iosr-jhss/papers/Vol.%2022%20Issue4/Version-8/K2204085966.pdf>.

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Iro-Idoro, C. B., Ayodele, Kolawole O. & Jimoh, T. A., *National Transformation Agenda as A Veritable Tool for Challenges Facing Entrepreneurship Education in Federal Polytechnics in Nigeria: Students' Perspectives*. **International Review of Management and Business Journal**, 4(2), 2013, 441-447. www.irmbrjournal.com

Textbooks

Iro-Idoro, C. B. Jimoh, T. A. & Jimoh, I. B., *New Approach to ICT Office Applications: ICT, Computer & Ms-Word with Practice Exercises*. Abeokuta: Renny Publishing Limited, 2023.

Adeyanju, O., Jimoh, T. & Bako, Z., *Purchasing and Procurement Management: Practice and Techniques*, Lagos: Golden Cross Publications Limited, 2022.

Iro-Idoro, C. B., Adaramola, O. J. & Jimoh, T. A., *ICT Office Applications*, (Revised Standardised Edition), Lagos: Olas Print Nigerian Enterprises, 2017.

Iro-Idoro, C. B., Adaramola, O. J., Jimoh, T. A. & Jimoh, I. B., *Advanced Desktop Publishing* (1st edition), Lagos: Olas Print Nigeria Enterprises, 2017.

Olu-Ajibare, F., Iro-Idoro, C. B. & Jimoh, T. A., *Understanding Psychology and Dynamics of Human Behaviour*, Lagos: Olas Print Nigeria Enterprises, 2016.

Jimoh, T. A., Jolaade I. A., Durowaiye, D. A & Iro-Idoro C. B., *Fundamentals of People Communication Skills*. Otta: Femfat Printing Enterprises, 2015.

Bako, Y. A., Taiwo, A. A. & Jimoh, T. A., *Office Management and Organisation*, Lagos: Olas Print Nigeria Enterprises, 2015.

Bako, Y. A., Taiwo, A. A. & Jimoh, T. A., *Production and Operations Management*. Lagos: Olas Print Nigeria Enterprises, 2015.

Iro-Idoro, C. B., Adaramola, O. J. & Jimoh, T. A., *Introduction to ICT Office Applications I*. Lagos: Olas Print Nigeria Enterprises, 2011.

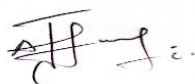
G. Major Conferences Attended with Dates

- 4th International Conference of the Federal Polytechnic, Ilaro (Hybrid) in Collaboration with Takoradi Technical University, Ghana, held on 4th to 7th September, 2023 at Takoradi Technical University, Ghana.
- International Conference of the Association of Technical University and Polytechnics in Africa (ATUPA) held from 27th August to 2nd September, 2023 at the International Conference Centre Accra, Ghana.
- 8th International Conference (Hybrid) of Women in Technical Education and Development (WITED), Nigeria, held on 30th to 2nd November, 2022 at Yaba College of Technology, Yaba, Lagos.
- 3rd International Conference (Virtual) of the Federal Polytechnic, Ilaro, Ogun State, Nigeria, held on 16th to 17th August, 2022.
- 2nd International Conference (Virtual) of the Federal Polytechnic, Ilaro, Ogun State, Nigeria, held from 10th to 11th November, 2020.
- 41st International Conference of Commonwealth Association of Polytechnics and University of Technology in Africa (CAPA), held from 25th to 31st August, 2019 in Kigali, Rwanda.
- 1st International Conference, held from 5th to 8th November, 2018 at the International Conference Centre, the Federal Polytechnic, Ilaro, Ogun State, Nigeria.
- 40th CAPA International Conference Commonwealth Association of Polytechnics in Africa (CAPA) held from 27th – 31st August, 2018 at Federal Capital Territory, Abuja, Nigeria.
- 2nd National Conference of the School of Communication and Information Technology, the Federal Polytechnic, Ilaro, Ogun State, Nigeria, held virtually via Google Meet from 19th to 20th July, 2020.
- 1st National Conference of the National Institute of Office Administrators and Information Managers (NIOAIM), held at Lead City University, Ibadan, Oyo State from 7th to 10th February, 2022.
- 12th National Conference and 1st Virtual Conference of the School of Management Studies, the Federal Polytechnic, Ilaro, Ogun State, Nigeria, held virtually via Zoom Client from 15th to 16th September, 2021.
- 1st National Conference of the School of Communication and Information Technology, the Federal Polytechnic, Ilaro, Ogun State, Nigeria, held via Zoom Client from 8th to 9th October, 2020.
- 1st National Conference of the School of Communication and Information Technology, the Federal Polytechnic, Ilaro, Ogun State, Nigeria, held virtually via Zoom Client from 8th to 9th October, 2020.

- 1st National Conference of Women in Technical Education and Employment (WITED), The Federal Polytechnic, Ilaro Chapter, held from 19th to 23rd August, 2019 at the Federal Polytechnic, Ilaro, Ogun State.
- Joint National Conference of School of Pure & Applied Sciences and School of Communication & Information Technology (SPACIT) held from 5th – 7th December, 2017 at The Federal Polytechnic, Ilaro, Ogun State.
- 3rd National Conference of the School of Vocational and Technical Education, Adeniran Ogunsanya College of Education, Otto/Ijanikin, Lagos held from 13th to 16th November, 2017.
- 5th National Conference of Academic Staff Union of Polytechnics (ASUP) Ilaro Chapter held from 16th – 19th October, 2016 at the Federal Polytechnic, Ilaro, Ogun State.
- 3rd National Conference of Association of Business Educators of Nigeria (ABEN) held from 20th – 23rd September, 2016 at Olabisi Onabanjo University, Ago-Iwoye, Ogun State.
- National Conference of Academic Staff Union of Polytechnics (ASUP), Zone C, held from 22nd – 25th August, 2016 at The Polytechnic, Ibadan, Oyo State.
- 1st International Management Science Research Conference, held from 30th September – 2nd October, 2015) at the University of Ghana, Accra, Ghana.
- 2nd National Conference of the School of Applied Science, The Federal Polytechnic, Ilaro held from 6th – 9th May, 2013 at The Federal Polytechnic, Ilaro.

H. Referees

- **Dr. M. A. Akinde,**
Rector, The Federal Polytechnic, Ilaro, Ogun State.
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E-mail: mukaila.akinde@federalpolyilaro.edu.ng
- **Dr. (Mrs) C. B. Iro-Idoro**
Deputy Rector (Academics), The Federal Polytechnic, Ilaro, Ogun State.
Tel: 08037133216
E-mail: charlotte.iroidoro@federalpolyilaro.edu.ng
- **Dr. J. I. Orija**
Dean, School of Communication and Information Technology,
The Federal Polytechnic, Ilaro, Ogun State.
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Signature

10/10/2023

Date

The University Compliance Certification

This is to certify that this thesis by **Tajudeen Adisa JIMOH**, with Matriculation Number **LCU/PG/002041** in the Department of Information Management, Faculty of Communication and Information Sciences, Lead City University, Ibadan is in full compliance with the University format and style.

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Date

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Tajudeen Adisa JIMOH

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