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Technological Innovation, Digital Competence and Job Performance of Secretaries in Public Tertiary Institutions in Ogun State, Nigeria

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Abstract:- Employees' performance is an important factor in the achievement of short and long term goals, success and growth of an organization. As a result of the rapid development of various forms of new information technology, modern enterprises and public sector organisation are acquiring and adopting digital tools and technological innovations for providing services and meeting obligations. This study assessed technological innovation and digital competence of secretaries and their impact on job performance of the secretaries in public tertiary institutions in Ogun State, Nigeria. A survey of secretaries in public tertiary institutions selected from the three senatorial districts in the State was conducted. Data were collected with the use of questionnaire and analysed with descriptive and inferential statistics. The result indicated remarkable level of technological innovations and digital competence of secretaries in the surveyed institutions. It was found that technological innovations and digital competence of the secretaries have significant bearings on the performance of the secretaries in the face of technology-driven office and secretarial functions. Thus, it was concluded that effective and efficient functioning of secretaries and office administrators requires the availability of technological tools, adoption and use of innovative technologies and essentially, the competence and up-skilling of the secretaries for the ever-changing secretarial functions, office methods, approaches and tools. It is recommended, among others, that public tertiary institutions in Ogun State and similar organisations should make the acquisition and adoption of technological innovation a policy and culture issue to enhance the performance of their secretaries and facilitate service delivery.

Keywords:- *Digital competence, Job performance, Secretaries, Technological innovation.*

I. INTRODUCTION

Globally, human capital remains an important resource and one that plays essential roles in the pursuit and realization of goals, survival and growth of organisations. The performance of the people forms a critical criterion for organizational outcomes and success and serves as a key factor in determining the achievement of an organization's goals. As a result, owners and managers of organisations and businesses are looking out for employees who will be able to do the job well as the performance of workforce underpins the efficient and effective utilisation of other resources deployed for the achievement of corporate objectives and organizational effectiveness.

Job performance, according to Meyer and Peng (2006) as cited in Revenio (2016) refers to the output that an employee has contributed to the goal and purpose of an organization through work behaviour and engagements which the organization considers as either productive or otherwise. It shows whether a person performs a job well and remains a key measure for outcomes and success of an organization over a specific period time (Campbell et al, 1993; Bullock, 2013). Employees' job performance reveals the efficiency and productivity levels that could facilitate organizational goal achievement (Markos & Sridevi, 2010; Leonard, 2019) and may not be possible if performance is not up to expectation and satisfaction (Anitha, 2014). Performance implies the outcomes of the actions of employees in terms of expertise and skills relative to expectation. In organisation and business context, employees' performance reflects the accumulated result of the abilities, proficiency, competence and efforts of individual employee towards enhanced service delivery, increased productivity, profitability and achievement of set goals (Ellinger et al, 2003; Dahkoul, 2018).

While job performance is beneficial to employers through task accomplishment and customers satisfaction, employees who perform well are also recognized, promoted, have better career opportunities and skill mastery (Vanscotter et al, 2000; Kanfer et aL, 2005). To some, job performance is associated with many indices but the common or usual measures coveer efficiency, quality and quantity of work, adherence to organisational values, teamwork, technical know-how, communication and behavioural competences (Mihaiu, Opreana, & Cristescu, 2010; Campbell & Wiernik, 2015; Fernandez, 2017; Vulpen, 2018; Ciner, 2019; Namely, 2019; May, 2020). Work quality represent the value inherent in the array of tasks performed by an individual or a work team which may include quality of task and deliverables (Spacey, 2017). It reflects on the quality of an employee's performance measured and assessed on several quality criteria through performance evaluation models with a view to improving the performance of an organization (Vulpen, 2018). Measuring efficiency takes account of the resources used to produce a certain output and emphasizes a fundamental reduction in the waste of resources put to the production of a given number of goods or services (output). It results from the optimization of resource given by the ratio of inputs to outputs (Mihaiu, Opreana, & Cristescu, 2010; Vulpen,

2018). Behavioural competency is a skill or a behaviour that an individual needs to be able to demonstrate capability to perform his roles effectively. It is structured around the role requirements and depicts the behaviours and attitudes which the job of individuals requires as essential demand of their role within the organisation (May, 2020).

All over the world, employees' performance and the provision of services are being influenced by many factors and essentially, the systematic application of different types of technology (Dauda & Akingbade, 2011; Yang, 2015). In the same way, the adoption and rapid development of various forms of new information technology in the public organisations is fostering integrated use of digital innovations (Yang, 2015) as obtained in competitive business environment (Shah, Ali & Ali, 2015). As digital revolution is changing the fundamental system, approach and methods employed in organisation, the relationship of technological innovations and organizational performance is always an interest to management practitioners and researchers (Devaraj & Kohli, 2003) and appropriate use of such innovation is imperative for organizational efficiency, value added services and national development (Letangule & Letting, 2012; Wang & Wang 2012).

Public tertiary institutions in Nigeria like other public sector organizations have different occupational groups and serve a great number of individuals from diverse backgrounds and roles. Prominent occupational group in most Nigerian public tertiary institutions are the secretaries who, in addition to their traditional roles, perform administrative duties (Onifade, 2010) and operate at the interface of all organisational functions (Iro-Idoro, Osore & Jimoh, 2018). The importance of secretarial functions, office management and the peculiarity of secretaries stem from the fact that the office is a crucial and essential organ for the functioning of any kind of organization and core factor in administration, quality and efficient service delivery of public sector organisations (Obi, 2012; Yang, 2015).

In public tertiary institutions in Nigeria, secretaries belong to an important work group which performs administrative and support functions and plays important roles in ensuring that secretarial and administrative processes of records, information and office management are capable of achieving institutional goals and objectives. Effectiveness, efficiency and good behavioural disposition of secretaries at the various organs of public tertiary institutions lend quality services delivery and fulfilment of the core responsibilities of teaching, learning and research, making the achievement of overall mandate of advancing Nigeria's economic growth and global competitiveness achievable.

Making the performance of secretaries reach high level is becoming more and more challenging especially in the face of changing office functions, roles and expectations that are being influenced by emerging information technologies. With these, tertiary institutions, especially the public owned, are constantly faced with the various demands for change to acknowledge and embrace new learning and knowledge diffusion approaches, take advantage of technological development and re-orient their office personnel on service delivery, thus striving to get the highest possible level of performance from the secretaries.

Despite the opportunities offered by digital technologies for effectiveness and higher performance, the roles and functions of secretaries in public tertiary institutions are being criticized for glaring failure to fulfil expectations of higher efficiency and quality work output with clear evidences of poor performance and inability to activate, update, use and connect their knowledge in the complex, diverse and unpredictable situations dictated by modern technologies. If left unaddressed, this will threaten behavioural, knowledge and procedural shift in secretaries' roles and expectations as well as the competence necessary to make good use of digital innovation and technological improvement in office functions and general administration of public tertiary institutions.

Many studies have attributed success factor in performance of secretarial roles to technological innovations (Emeh, 2012; Mumuni & Sam, 2014; Phyllis & Peter, 2016). This is not dependent only on the technology itself but on availability, use and critical learning in technological innovations, users competence and provision of support mechanism (Buseni 2013; Sengewald, Boha & Roth, 2020). As the changing and growing dimensions of secretarial functions and roles in the era of cutting-edge office tools and processes seem to place noticeable challenging demands on the performance of secretaries, this study assesses the relative and combined impact of technological innovation and digital competence on job performance of secretaries in public tertiary institutions in Ogun State, Nigeria.

As Akpomi and Ordu (2009) submit that administrative efficiency and job performance of secretaries and other office personnel rely heavily on the availability of modern technologies and user's competence and expertise, recent development in technological innovations is characterized by reliance on fast-growing capabilities and increasing use of ICT tools for organisational performance and service delivery (Shah, Ali & Ali, 2015; Yang, 2015). Hence, corporate organisations and government sectors are acquiring and incorporating digital-based technological devices for providing services and there is growing interest in technological innovations for secretarial functions and office management related activities.

Urbinati et al. (2018) defined technological innovation as transformation involving the use and management of big data, internet use, cloud computing, virtual reality, artificial intelligence and cyber-physical systems. Technological innovation, in the context of organisational activities, is an organizational adoption of evolving technological diffusion such as "big data, analytics, cloud, mobile and social media platforms" (Joseph & Yaman, 2016). It refers to innovation involving the adoption of emerging information and communication technologies to support organisational and work processes (Khin & Ho, 2018) such as office administration, educational administration, health care provision, manufacturing, retailing, commerce, etc. leading

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to positive changes and opportunities in businesses and organisations (Joseph & Yaman, 2016). Nambisan et al. (2017) posit that technological innovation implies the use of digital technologies and processes for the creation of business processes, models and offerings to engender new products or goods, better services and enhanced customer experiences and value added offerings. In all, the essence of technological innovation is to facilitate enhanced productivity, service offerings, decision making, communication and connectivity (Demirkan & Dal, 2015; Demirkan, Spohrer & Welser, 2016; Joseph & Yaman, 2016).

Key indicators of technological innovation are digital capability and leadership capability which enable organisations to use innovative technologies to improve elements of the business (George, Didier & Andrew, 2014); digital maturity that defines tools and the IT infrastructure, employee skill levels and software use; organizational agility or organization's adaptation rate to changing circumstances; customer experience improvements and business continuity or continued and constant flow of business in a disruptive digital environment (George, et al, 2014; Gerald, 2017; Didier & George, 2020; Walkme, 2020; Sheffield, 2021).

The growing shift in organisations towards the adoption of digital technology points to the need for human competence and abilities to take advantage of digital innovations, manage and make the best use of such resources and their possibilities (Khin & Ho, 2018). Dauda and Akingbade (2011) noted that the starting point of any technological innovation is people. As the human capital, capability and competence will be explored to create, initiate, use and manage ideas that are the bases and directions of innovation, increasing office automation and digital diffusion in data and information processing seen in computer aided records management, document design; database technologies, spreadsheets and word processing software (Mahmoud, 2011) demand digital competence and skills of persons responsible for managing these components of jobs (Ferrari, 2013; Khin & Ho, 2018) and different levels of digital competence are required for the adoption, use and domestication of technologies (United Nations, 2019). Limited capabilities and competence form part of the factors which impede digital transformation journey while new opportunities offered by digital technologies cannot be achieved without the commitment and competence of people to use digital innovation (Khin & Ho, 2018).

Digital competence reflects an individual knowledge, mastery, and expertise required to be able to use information and communication technology resources and tools for general and peculiar purposes towards meeting personal and profession needs (United Nations, 2019). It is a term used to describe or explain the ability to use information technology (IT) in a specific context or confident and critical use of ICT for learning, employment, job performance, personal development, etc. (Ghayth & Mundher, 2020). What digital competence denotes is used in different literature as digital literacy, digital skills, e-skills, and twenty-first-century skills or competence (Rizza, 2014). According to Eshet-alkalai (2004), digital competency not only deals with technical skills, but also involves cognitive and social and emotional attributes to use technologies for working and living in a digital environment. The indicators of digital competence include mastery and proficiency in information processing and data literacy, communication and collaboration, creation of digital content, safety skills in the use of ICT and problem solving abilities (Punie, 2015; European Commission, 2020). According to European Commission (2020), information processing and data literacy involves "browsing, searching and filtering data, information and digital content; evaluating data, information and digital content; and managing data, information and digital content". Communication and collaboration imply "abilities to interact, sharing, engaging in citizenship and collaborating through digital technologies as well as managing digital identity". Digital content creation involves "developing digital content, integrating and re-elaborating digital content". Safety skill component includes "protecting devices, personal data and privacy, health and well-being as well as the environment" while problem solving means "solving technical problems, identifying needs and technological responses, and identifying digital competence gaps".

The above implies that beyond availability of technological tools and interest in digital approach, there is the need for up-to-date digital competence and expertise of the employees as well as other human skills such as problem solving, critical thinking, and creativity and communication competence to effectively perform in the midst of technological innovations (United Nations, 2014). The individual with a range of digital skills, knowledge of using computer applications, devices and networks, according to Abas, Yahaya and Feedin (2019), will be able to sieve and evaluate information, do logical analysis of information content and make information readily available for decision making.

According to Reilly (2021), paying attention to the performance of the secretary is vital to ensuring that the office runs efficient and remains productive. This will make the key office personnel reflect on ways he or she can improve office procedures. Hence, the essence of performance of office personnel is quality service delivery and is generally considered a strategic tool for achieving operational efficiency and better performance of an organisation. It reflects the ability to meet expectation in an efficient manner (Ramya, Kowsalya & Dharanipriya, 2019).

The present study examines the level of adoption and utilisation of technological innovation, the digital competence involved and their impacts on job performance of secretaries in selected public tertiary institutions in Ogun State, Nigeria.

II. METHOD

The study is descriptive in design but employed the survey approach with the use of questionnaire as instrument

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of data collection. Three public tertiary institutions in Ogun State were covered in the study and the population comprised secretaries in the selected institutions from the three senatorial districts in the State – The Federal Polytechnic, Ilaro in Ogun West, Federal College of Education, Osiele in Ogun Central and Olabisi Onabanjo University in Ogun East. A total of 120 secretaries were randomly selected from the selected public tertiary institutions as the sample size.

To determine the relative and combined impacts of the independent variables on the dependent variable, it was postulated that:

- $H_0$1:Technological innovation and digital competence will not have significant combined contribution to the job performance of secretaries in public tertiary institutions in Ogun State.
- $H_0$2: Technological innovation and digital competence will not have significant relative contributions to the job performance of secretaries in public tertiary institutions in Ogun State.

The main instrument of data collection was a structured questionnaire designed on a 4-point likert rating scale. Previously validated measures of the variables were adapted and used in the development of the questionnaire. Factor inputs for the measurement of technological innovation were adapted from Joseph and Yaman (2016) and Khin and Ho (2018). Input items for digital competence were drawn from Digital Literacy Scale of Abas, Yahaya and Feedin (2019) while Job performance indicators were adapted from Koopmans, et al (2014) and Reilly (2021).

Descriptive and inferential methods of data analysis were applied and the analysis was done using Statistical Package for Social Sciences (SPSS) version 23.

III. RESULTS AND DISCUSSIONS

Variable	No. of items	Cronbach's Alpha	KMO	Bartlett's Test of Sphericity (sig.)	AVE	Composite Reliability
Technological Innovation	17	0.863	0.719	554.321 (0.000)	0.872	0.839
Digital Competence	22	0.821	0.786	453.230 (0.000)	0.781	0.889
Secretaries' Job Performance	21	0.714	0.706	512.437 (0.000)	0.873	0.816

Table 1: Reliability and validity

Source: Researchers' field survey, 2021

The reliability for the study was specified at Cronbach's alpha ≥ 0.7 and for average variance extracts ≥ 0.5 of the items in each factor. Table 1 above, indicates that all variables (technological innovation, digital competence of the secretary and secretary's job performance scales) have KMO values greater than 0.5 which was found to be acceptable according to literatures. The Bartlett's test of sphericity (sig.) had p-values less than 5% significance level for all variables under consideration; an indication that the factors were valid and that there will be significant correlation between the variables. In addition, the Cronbach's alpha values were ≥ 0.7 among the indices of technological innovation, digital competence and secretary's job performance.

Variables	Item	Mean	Stand. Dev.
TI	17	3.43	0.573
DC	22	3.85	0.497
SJP	21	3.56	0.471

Table 2: Summary of Descriptive Statistics

SA – Strongly Agree, A – Agree, D – Disagree, SD – Strongly Agree, U – Undecided

Decision rule: *if mean is ≤ 1.49 = Strongly Disagree; 1.5 to 2.49 = Disagree; 2.5 to 3.49 = Agree; 3.5 to 4.4.0 = Strongly Agree.*

Table 2 is a summary of the descriptive statistics of the variables investigated - Technological Innovation (M = 3.43, SD = 0.573), Digital competence (M = 3.85, SD = 0.497) and Secretaries Job Performance (M = 3.56, SD = 0.571). The result shows the levels of agreement of the subjects to the input items for each of the variables. The respondents indicated high agreement to the indicators of the variables with little or no variation in the response pattern.

- Test of Hypotheses

H_{01}: Technological innovation and digital competence will not have significant combined contribution to the job performance of secretaries in public tertiary institutions in Ogun State.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.406[a]	.165	.158	2.46044

Table 3: Model Summary

The result as presented in Table 3 indicates weak positive combined relationship of technological innovation and digital competence with job performance with correlation coefficient of 0.406 and about 16.5% variation in secretary job performance is attributed to technological innovation and digital competence combined.

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Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	141.247	1	141.247	23.332	.000[b]
	Residual	714.345	118	6.054		
	Total	855.592	119			

Table 4: ANOVA[a]

Table 4 is the analysis of variance table which indicates F-value of 23.332 and the p-value is less than the 5% significance level; indicating that the model is sufficient and adequate in relating the depending and the independent variables. Hence, further analyses were done.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.014	.679		10.332	.000
	TI and DC Combined	.137	.028	.406	4.830	.000

Table 5: Coefficients[a]

From Table 5, the result indicates that a unit increase in technological innovation and digital competence, when combined will result in about 3.7 unit increase in iob performance of the secretary, the sta with t-value of 4.830 and the p-valı significance level. Hence, the alter accepted and it is concluded that tecl and digital competence have si contribution to the job performance of secretaries in public tertiary institutions in Ogun State.

H_{02}: Technological innovation and digital competence will not have significant relative contributions to the job performance of secretaries in public tertiary institutions in Ogun State.

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	177.645	2	88.823	15.329	.000[b]
	Residual	677.946	117	5.794		
	Total	855.592	119			

Table 6: ANOVA[a]

From Table 6, the F-value is 15.329 with p-value (0.000) which is less than the 5% significance level; hence the model is adequate and sufficient in relating the dependent and the independent variables understudy.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	7.244	.670		10.805	.000
	TI	.308	.074	.507	4.183	.000
	DC	.448	.079	.874	5.609	.000

Table 7: Coefficients[a]

As shown in Table 7, a unit increase in technological innovation resulted in 30.8 unit increase in job performance of the secretary with standard error of 0.074 and the t-value is 4.183. Furthermore, a unit increase in digital competence will result in about 44.6% increase in job performance provided technological innovation remains constant. The standard error is 0.079 with t-value of 5.609. Similarly, the p-values are less than the 5% significance level and the alternative hypothesis is accepted and it is concluded that technological innovation and digital competence have significant relative contributions to the job performance of secretaries in public tertiary institutions in Ogun State.

The analysis revealed a moderately high technological innovation level in the tertiary institutions covered in terms of mechanism, structure, infrastructures, resources and policies. This shows appreciable value and vision of the institutions on technological innovation with visible integration of information technology into their strategic planning, thus giving priority to the use technologies for communication, administrative activities, work processes, performance monitoring, information sharing, records management, collaboration, teaching, learning, research and provision of services. The results show that the institutions' new work processes are being built on technologies such as data management (storage, processing, accessibility and sharing), multimedia, analytics, cloud computing, mobile

and social media platforms as they leverage on technology for efficient service delivery.

Respondents' attitude on the digital competence reveal appreciable level of competence to identify, choose and use the right tools and application for communication, sourcing, processing, accessing and distributing information, record keeping, etc. towards delivering efficient and effective secretarial services. It was revealed that the secretaries are familiar with various types and mediums of information technology gadgets/devices for doing their job, they can make comments to blogs, forums, or web pages, use suitable social standards for online communication, can integrate and connect mobile devices and applications with their office assets to conduct everyday work, engage with others online, preserve a digital record of relevant information they acquire online and lawfully share data with others using available media devices.

Effective performance of the secretaries as indicated by the subjects depicts remarkable abilities to complete their work on time using technological devices, ensuring error-free job, coming up with valuable creative solutions to new problems, continually striving to improve performance, display of good judgment and strong analytical skills, setting priorities ahead of time and altering them as needed when unforeseen events happen, and taking on responsibilities within their authority without direct supervision or instruction.

Technological innovation status reflected in the acquisition, organizational adoption and use of evolving information and communication technologies and digital innovations was found to have significant contribution to the performance of the secretaries. From the results, the availability of necessary and relevant technological tools and applications translates to desired job performance of the secretaries in terms of effectiveness, efficiency and job attitude that are required to foster quality services delivery and the provision of support functions in the core areas and other service mandates of public tertiary institutions. This supports Emeh (2012), Buseni (2013) and Mumuni & (Sam, 2014). In addition, digital competence involving the ability to use computer applications, devices, networks and information technology for searching and filtering information and digital content, communication, etc. was revealed to be essentially important for the secretary to dwell in a digital environment or IT-driven workplace and performance effectively. The results clearly revealed that possession of digital expertise, competence and technical skills required to handle and explore evolving office and secretarial methods, resources and technologies will enhance the performance of the secretaries and make them competently fit to be regarded as secretaries of the 21st century. This corroborates Dauda and Akingbade (2011), Khin & Ho (2018), Abas, Yahaya and Feedin (2019).

IV. CONCLUSION AND RECOMMENDATIONS

The wave of technological innovation and transformation cut across almost every segment of human and organisational activities and serve as a major force responsible for the changing nature, demands and requirements of the secretarial positions or roles in public organisations. Secretaries play pivotal roles in public tertiary institutions through their support and administrative functions at the different level and organs of their institutions. Effective and efficient performance of the secretaries hinge on the technological innovations in terms of processes, infrastructures, tools and facilities necessary to perform their job and largely on the acquisition, mastery and up-skilling of the competence and expertise especially in the use of 21st century digital skills. The level, forms and provision of technological resources are significant for secretaries' performance while the competence in the use of such technologies depicts secretaries' readiness to take full advantage of the opportunities and possibilities offered by technology. Hence, technological innovation dictates and shapes the demands of secretarial roles while digital competence, technical skills and other 21st century competence are essential to engender desired level of performance from secretaries and office management personnel.

Thus, it is recommended that public tertiary institutions in Ogun State should make the acquisition, adoption of technological innovation policy and culture issue to enhance the performance of their secretaries on one hand, and to achieve service delivery of other components of the institutions on the other. There should be a sustainable training and development mechanism to update the skill and competence of secretaries in emerging office technologies. Deliberate efforts should be made by secretaries in public tertiary institutions towards self and career development with a view to meeting up with demands of modern day organisations and perform effectively in a digital environment. Government should strengthen the funding of public tertiary institutions to further cater for ICT and other technological needs of the institutions.

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