

Assessing the Role of ICT Training in Bridging Digital Competence Gap among Administrative Staff of Federal Tertiary Institutions in South-West Nigeria

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ABSTRACT

This study examines the role of ICT training in bridging digital competence gap among administrative staff of the Federal tertiary institutions in southwest Nigeria. The study employed the survey approach with the use of questionnaire as instrument for data collection. The population comprised all senior Registry staff of the institutions from which a sample of 373 was selected systematic multi-stage technique. Three hypotheses were formulated and tested with inferential statistics involving regression at 0.05 level of significance. The results indicate that ICT training has significant contributions to electronic information processing skills, virtual communication ability and adaptive technology use among administrative staff of Federal tertiary institutions in South-west Nigeria. It was concluded that ICT training especially in domain specific areas is essential in equipping administrative staff of federal tertiary institutions with relevant and up-to-date digital skills, bridging the digital competence gap and leads to adaptation of the staff to new and emerging technologies. The study recommends that ICT training needs of the administrative staff should be regularly assessed and such trainings should be domain-centered and focused on key areas of administrative roles in which digital competence and mastery are required.

Keywords: Administrative staff, Digital competence, ICT training

INTRODUCTION

All over the world, tertiary education sector is regarded as an important sector responsible for developing human capacities towards social cultural and economic development. institutions of learning in the tertiary education sector are made up of different categories of workers who are brought together to achieve the institution's goals. one of such categories of workers is the administrative staff group found in every section and unit and who perform arrays of functions that are necessary for effective functioning of the tertiary institutions and for desirable service delivery.

Tertiary institutions are established for the purpose of developing critical minds and human capacity that are required for productive engagement. The administrative staff group is one of the occupational categories found in every section of the tertiary institutions. Effective performance of this category of workers lends indispensable support to the major activities of teaching learning, research and development mandates as well as service delivery. However, recent developments in technology use by organisations and the adoption of same for administrative functions and roles in tertiary institutions are expected to naturally

trigger different work behaviors and inclinations of the administrative staff towards skill update, upskilling and re-skilling as well as attitudinal change. Such change reactions and tendencies are quite noticeable in the way and context in which administrative tasks and services are being offered and the consequence on performance outcomes in the institutions. This reflects significant competence gap especially in the effective use of digital technology resources.

As a result of the importance of the administrative staff of tertiary education organisations, attention is being given to ensure optimal level of the performance. In most tertiary institutions today, work processes, procedures and performance of workers are being influenced by the level of technology use (Phyllis & Peter, 2016). The drastic move to the adoption of technology and essential the digital tools by tertiary institutions implies the need for mastery and skillful use of the technology by the workers (Boha & Roth, 2020; Adenekan & Jimoh, 2021). This shows the significance of digital competence of the administrative staff in the use of the emerging digital Technology. The use of digital technologies results in changes in work tools and processes involving the use of big data, internet, cloud computing, virtual tools, artificial intelligence and cyber-physical systems (Adenekan & Jimoh, 2021) and covers all modernization and revolution involving the adoption of emerging information and communication technologies to facilitate and manage work processes, operations and outcomes (Khin & Ho, 2018) that are capable of ensuring desired results and opportunities in organisational activities (Joseph & Yaman, 2016).

According to Adenekan and Jimoh (2021), digital competence refers to the skillful knowledge and expertise necessary for optimal use of digital tools and ICT resources for personal, organizational and general purposes with a view to satisfying particular needs. The term is used to describe abilities and expertise for critical use of digital resources for a long range of purposes (Ghayth & Mundher, 2020). The term covers digital literacy, digital skills, e-skills, and twenty-first-century skills or competence (Rizza, 2014) and denotes abilities or skills of persons responsible for components of jobs or a person's expertise, knowledge and mastery which are essentially required for good use of information and communication technologies either for peculiar or general goals and for fulfilling personal and satisfying profession requirements (United Nations, 2019). It describes the competence to use information technology in a specific context with confidence for personal purposes, employment, learning, research, task performance, stakeholders' satisfaction (Guillén-Gámez et al., 2018; Ghayth & Mundher, 2020). It can also be described as 21st century skills necessary for critical, creative and reflective thinking, problem solving and to meet up with the demands and changes in the digital age (Ayyildiz et al., 2021). Such competence should encompass technical skills, know-how and knowledge on the use of digital tools, devices and processes and participation in digital revolution of businesses and in everyday life, a critical assessment of digital technologies, and participation in digital culture to achieve the goals of innovative and creative thinking (Ilomäki et al., 2016; Çebi & Reisoğlu, 2020) and requires cognitive, social and emotional attributes to exhibit good fit in a digital environment (Eshet-alkalai, 2004).

According to Punie (2015), the indicators of digital competence include mastery and proficiency in information processing and data literacy, communication and collaboration, digital content creation, safety skills in the use of ICT and problem-solving abilities (European Commission, 2020; Adenekan & Jimoh, 2021). While UNESCO Institute of Statistics (2018) considers the abilities to access, manage, understand, integrate, communicate, evaluate and create information suitably with the use of digital technologies, European Commission (2020) cited in Adenekan and Jimoh (2021) submits that the major metrics or indices of digital competence should principally include data and information processing and management skills, virtual communication expertise, collaboration ability, digital content proficiency, problem solving and safety skills within the context of digital technology use. In view of the nature and general job description of administrative staff of tertiary institutions, this study adopts information processing ability, virtual communication competence and adaptive usage of technology as measures of digital competence of the administrative staff.

Information management competence involves an individual abilities in browsing, searching and filtering data, information and digital content, keeping information in digital form and retrieving same appropriately; virtual communication competence entails abilities to interacting through digital technologies, sharing information and communicating through digital tools, participating in virtual engagement using digital resources, collaborating through digital technologies and managing digital identity in a safe way (UNESCO Institute of Statistics, 2018). These competence areas, according to United Nations (2014), are important for problem solving, critical thinking, creativity and communication and to effectively perform in the midst of technological innovations. The individual with a range of digital skills, knowledge of using computer applications, devices and networks will be able to evaluate information, make informed decisions and make information readily available for achieving operational efficiency and better performance of an organisation (Ramya et al., 2019; Abas et al., 2019; Adenekan & Jimoh, 2021).

Each of the factors adopted as measures of digital competence can be related to the digital expertise of administrative staff of tertiary institutions. Information management competence implies the ability to use digital resources for creating or generating information from digital data, translating data into meaningful information, developing same for administrative use in managing staff and students' records, preparing and dealing with different forms of correspondence for decision making and service delivery. Virtual communication and collaboration skills of administrative staff imply abilities to share digital content, receive, download and transmit records and correspondence with the use of digital tools, interact effectively with others and engaging in real-time virtual communications on digital platforms. Adaptive usage of technology covers the ability of the administrative staff to readily adjust to work processes and service procedures and adapt to job redesign that could regularly occur as a result of their Institution's adoption and integration of digital techniques and tools.

One of the strategies and approaches usually adopted by employers, human resource practitioners and researchers to enhance attitudinal change and skill updates necessary to implement changes in organisation's work settings, procedures, tools and practices is training (Slavković & Slavković, 2019). Training is teaching or developing in oneself or others, any skills and knowledge or fitness that relate to specific useful competencies with the specific goals of improving capability, capacity, productivity and performance (Viljoen, 2021). It is a planned and systematic effort to change or build competence, skills, attitude and expertise through learning experiences with a view to achieving effective performance in an activity or range of activities (Kapur, 2020). With the continuous changes in organisations where technology is evolving thus requiring digital input, the training of workers in the use of ICT and digital tools is gaining attention. ICT training implies the teaching, development and updating of skills and abilities in the use of information and communication technology tools and digital resources (Viljoen, 2021). According to Kapur (2020), the purpose of this form of training is to close digital skill gap that could militate against adequate and advantaged use of technology.

The essence of undergoing ICT training especially in work places is to increase the capabilities of an individual so as to satisfy the current and prospective needs of the organisation particularly in the use of technology for changing work procedures and relationships (Viljoen, 2021). The increasing use of technology and the high expectation from job holders in modern enterprises requires critical thinking, ICT-driven communication abilities, up-to-date knowledge and mastery of digital facilities usage by workers. This is where formal and informal training in digital tools becomes paramount (Adenekan & Jimoh, 2021). While ICT skills that could understand and operate a wide range of technology software are acquired through ICT training, understanding what these skills are and how to develop them could be helpful in any profession or career path and individual chooses to explore (Rok, 2022). Thus, this study focused on technology driven changes and digital competence of the administrative staff of public tertiary institutions and examines the extent to which ICT-based training is significant in bridging digital competence gap

among administrative staff of such institutions with particular coverage of federal tertiary institutions in South-west Nigeria. The objectives are to determine the extent to which ICT Training contribute to information processing abilities, virtual communication and collaboration and adaptive usage of technology among administrative staff in Federal tertiary institutions, Southwest Nigeria.

METHODOLOGY

This study utilized the quantitative research approach involving the use of questionnaire. The population comprised all administrative staff in the Registry Departments of the federal tertiary institutions in South-west Nigeria. A sample of 373 administrative staff obtained through Taro Yamane’s method of sample size determination was selected through a systematic sampling procedure involving categorization of the institutions into university, polytechnic and colleges of education, allocation of sample proportion to each category and selection of sample elements from each tertiary institution.

In order to statistically determine the influence of ICT training on Digital competence of administrative staff, the following hypotheses were formulated:

H_{01} : ICT Training does not have any significant influence on electronic information processing abilities of administrative staff of federal tertiary institutions in South-west Nigeria.

H_{02} : ICT Training does not have any significant contribution to virtual communication and collaboration abilities of administrative staff of federal tertiary institutions in South-west Nigeria.

H_{03} : ICT Training does not have any significant influence on adaptive usage of technology by administrative staff of federal tertiary institutions in South-west Nigeria.

A-4-point likert scale questionnaire was used as instrument of data collection. Inputs for digital competence were adapted from Abbass et al. (2019) and Digital Excellence Model of Polska (2018), a digital transformation framework which specifies digital capabilities (digital technology and digital competence) as part of the characteristics, activities and resources required to facilitate successful digital transformation in organisations with the human element depicted by the competence of people in organisation to use digital tools. Inputs for ICT training were adapted from Slavković & Slavković (2019) to assess the coverage and content of ICT training undergone by the administrative staff. Analysis of data collected was done with frequency count and mean while the hypotheses were tested with regression statistics at 0.05 level of significance. For the acceptance or otherwise of the hypotheses, the criteria was to reject the null hypotheses if the p-value is greater than 0.5 level of significance and accept the alternative

RESULTS AND DISCUSSION

H_{01} : ICT Training does not have any significant influence on electronic information processing abilities of administrative staff of federal tertiary institutions in South-west Nigeria.

Table I: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.505 a	.152	.140	.44299

a. Predictors: (Constant), IT

b. Dependent variable: eIPA

Source: Field Survey Results (2023)

Table I shows the model summary of the statistical relationship between ICT training and electronic information processing abilities. The result indicates that there is a moderate positive relationship between ICT training and electronic information processing abilities of the respondents as shown in the correlation coefficient of 0.505. The result also indicates that ICT training could account for 14% of the variation in electronic information processing abilities of the respondents.

Table II: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.036	1	.000	.332	.002 _b
	Residual	13.933	241	.196		
	Total	13.933	242			
a. Dependent Variable: eipa						
b. Predictors: (Constant), IT						

Source: Field Survey Results (2023)

As shown in Table II, P-value of 0.002 is significantly less than 0.05 level of significance which implies that the model used to relate ICT training with electronic information processing abilities is statistically adequate.

Table III: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.307	.710		4.657	.000
	IT	.168	.192	.165	.042	.002
a. Dependent Variable: eIPA						

Source: Field Survey Results (2023)

Table III gives the co-efficient of the influence of the independent variable (ICT training) on the dependent variable (electronic information processing abilities). The result shows a p-value of 0.002 < 0.05 level of significance, which indicates significant influence of ICT training on electronic information processing abilities of administrative staff. As depicted in the result, a unit change in ICT training will yield about 17 unit increase in electronic information processing abilities. At t-value of 4.657 and significant value of 0.002 which is less than 0.05 level of significance, the null hypothesis is rejected. Thus, it is upheld that ICT Training has significant influence on electronic information processing abilities of administrative staff of federal tertiary institutions in South-west Nigeria.

H_02 : ICT Training does not have any significant contribution to virtual communication and collaboration abilities of administrative staff of federal tertiary institutions in South-west Nigeria.

Table IV: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.490 a	.036	.212	.43495
a. Predictors: (Constant), IT				
b. Dependent variable: VCCA				

Source: Field Survey Results (2023)

The table above shows the model summary of the statistical relationship between ICT training and virtual communication and collaboration abilities. The result indicates that there is a statistical relationship between ICT training and virtual collaboration and communication abilities of the respondents with correlation coefficient (R) being 0.490. The result also indicates that 21% of the total variation in virtual collaboration and communication abilities of the respondents is attributable to ICT training.

Table V: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.502	1	.502	2.653	.000 b
	Residual	13.432	241	.189		
	Total	13.933	242			
a. Dependent Variable: VCCA						
b. Predictors: (Constant), IT						

Source: Field Survey Results (2023)

As shown in the above table, P-value of 0.002 is significantly less than 0.05 level of significance which is an indication that the model used to relate ICT training with virtual communication and collaboration abilities is statistically adequate.

Table VI: Coefficient^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.298	.593		7.253	.000
	IT	.273	.168	.190	1.629	.000
a. Dependent Variable: VCCA						

Source: Field Survey Results (2023)

Table VI gives the co-efficient of the influence of the independent variable (ICT training) on the dependent variable (virtual communication and collaboration abilities). The result shows a p-value of 0.000 < 0.05 indicating that ICT training has significant influence on virtual communication and collaboration abilities of administrative staff and that a unit increase in ICT training will lead to about 27.3 unit increase in virtual communication and collaboration abilities. Hence, at the significant value of 0.000 < 0.05, the null hypothesis is rejected and it is accepted that ICT Training has significant influence on virtual communication and collaboration abilities of administrative staff of federal tertiary institutions in South-west Nigeria.

H_{03} : ICT Training does not have any significant influence on adaptive usage of technology by administrative staff of federal tertiary institutions in South-west Nigeria.

Table VII: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.623 a	.179	.167	.40141

c. Predictors: (Constant), IT

d. Dependent variable: AUT

Source: Field Survey Results (2023)

The result above indicates that there is a statistical relationship between ICT training and adaptive usage of technology ($R = 0.623$). It is revealed that ICT training could account for 16.7% of the total variation in adaptive usage of technology by the respondents.

Table VIII: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.493	1	2.493	15.475	.001 b
	Residual	11.440	241	.161		
	Total	13.933	242			
a. Dependent Variable: AUT						
b. Predictors: (Constant), IT						

Source: Field Survey Results (2023)

As indicated in the table above, P-value of 0.001 is significantly less than 0.05 level of significance, thus showing that the model used in relating ICT training with adaptive usage of technology is statistically adequate and sufficient for the test.

Table IX: Coefficient^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.600	.697		.861	.000
	IT	.656	.192	.423	3.934	.000
a. Dependent Variable: AUT						

Source: Field Survey Results (2023)

Table IX shows the co-efficient of the influence of the independent variable (ICT training) on the dependent variable (adaptive usage of technology). The result shows a p-value of $0.000 < 0.05$ indicating that ICT training has significant influence on adaptive usage of technology by the administrative staff and that a unit increase in ICT training will lead to about 66 unit increase in adaptive usage of technology. With the

significant value of $0.000 < 0.05$, the null hypothesis H_0^3 is rejected. Hence, it is accepted that ICT training has significant influence on adaptive usage of technology by the administrative staff of federal tertiary institutions in South-west Nigeria.

The results revealed a significant influence of ICT training in enhancing information processing abilities of the administrative staff especially in the use of electronic tools. It was revealed that participation in relevant ICT training could be helpful to the administrative staff abilities in terms of identifying reliable sources of information, creating information using digital tools, ensuring data and information on digital resources at their disposal are well secured and seamless sharing or transmission of information. It was also found that, use of media devices and social networks to find information to task and administrative jobs is facilitated through the training administrative staff in the use of ICT tools and resources. These findings are in line with Ramya et al. (2019) that the provision ICT tools cannot translate into effective and efficient information management until the information manager shows readiness and competence for such tools. This also supports Kapur (2020) that development of capacities of office staff is critical to information processing and security of records in organisations.

The result of also revealed that there is significant influence of ICT training on virtual communication abilities of administrative staff of federal tertiary institutions in South-west Nigeria. It is clear from the results that the training of administrative staff in the use of digital technologies and platforms will equip them with the requisite skills needed to participate and communicate effectively and skillfully in virtual environment. Administrative staff trained in the use of ICT resources will be skillful in collaborating effectively with others online to share document or presentation, safely communicating information to others in real-time, using reliable social networks for organisational communication, using e-mail services effectively, sharing audio and video with others in a secured manner, exhibiting and maintaining desirable online communication etiquette, maintaining secured identity on a network, etc. which are critical skills relevant to online collaboration and communication as submitted by Adenekan & Jimoh (2021). The result is also in tandem with the submission of Slavković and Slavković (2019) that employees' skills need to be updated to cater for modern communication needs of organisation in which internal and external communication are being driven by digital technologies.

From the results, it was found that ICT training has significant influence on adaptive use of technology by administrative staff of federal tertiary institutions in South-west Nigeria. The results revealed that ICT training bridges the digital competence gap of administrative staff as they tend to show adaptation to new and emerging technologies. It is shown from the results that the attitude of the administrative staff towards new technology, their disposition to new job demands as a result of technology, learning attitude towards the use of new devices and digital resources and adapting to new work processes and procedures are better enhanced with training and exposure to the use and dynamics of ICT tools. It implies that ICT training will make it easier for administrative to adapt themselves to new work processes and tools and will boost their confidence in the use of ICT equipment. This result is in line with Viljoen (2021) skills and abilities in the use of information and communication technology tools and digital resources will guarantee the relevance of people in a 21st century organisation. The finding also corroborate Adenekan & Jimoh (2021) formal and informal training in digital tools is essential to having up-to-date knowledge and mastery of digital facilities and usage by office personnel.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of the study, it is concluded that ICT training have significant positive contributions digital competence of administrative staff of federal tertiary institutions in South-west Nigeria. the training of administrative staff in the use of ICT tools and technology-based work processes will enhance their digital competence in terms of electronic information processing and management, communication and

collaboration in virtual environment and will facilitate their adaptive use of technology. When administrative staff are well trained and exposed to relevant ICT tools, they will be able to function effectively and efficiently in the discharge of their administrative roles and responsibilities and will exhibit fitness for emerging work processes as dictated by modern technologies.

Based on the finding of this study, it is concluded that ICT training is important in bridging the digital competence gap among administrative staff of public tertiary institutions in Nigeria and that such training will lead to improved and better information processing abilities, virtual communication and adaptability to new technologies. It is therefore recommended that

- Effort should be made regularly by the appropriate organ of federal tertiary institutions and other public tertiary institution to identify the relevant ICT training needs of their administrative staff with a view to training them in key areas of administrative roles in which digital competence is required.
- Training programmes for administrative staff category should be regular so as to equip them with skills for ever-changing technologies and work procedures.
- Administrative staff in public tertiary institutions should make stringent effort and personal development in digital competence so as to remain relevant and fit for their administrative roles.
- Adequate funding should be provided by government to tertiary for the training and upskilling of staff competence in digital technology use.

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