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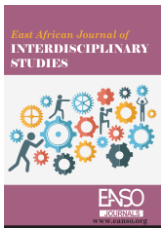

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Original Article

Technology Use and Job Performance of Academic Staff of Bishop Stuart University

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Job Performance, Managerial, Research, Teaching, Technology Use.

ABSTRACT

The study investigated the impact of technology use on job performance of academic staff. In particular, the study examined the influence of teaching technological use, managerial technological use, and research technological use on job performance of academic staff. Utilising a quantitative research approach, the study employed a correlational research design on a sample of 158 academic staff of Bishop Stuart University in Uganda. Data was collected using a self-administered questionnaire (SAQ). Data was analysed using descriptive statistics to show how the respondents rated academic staff technology use and job performance and Partial Least Squares Structural Equation Modelling to examine intricate relationships between variables and indicators. Descriptive results revealed that academic staff job performance was moderate while technology use was high. Structural equation analysis revealed that while managerial technology use had a significant and positive impact on academic job performance, research technology use and teaching technology use had a positive but insignificant influence on academic job performance. The study concluded that technology use for teaching and research has less contribution to job performance of academic staff but technology use for managerial purposes is vital for job performance of academic staff. The study recommended that university managers should employ more academic staff with PhDs such that besides teaching, they can effectively participate in research and community service activities, university managers should enhance academic staff use of technologies for research activities, and university managers should encourage academic staff to use technology for managerial purposes.

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INTRODUCTION

Effective academic staff job performance has profound significance on learning, the institutions they work for, society at large, and their academic life. Their effective job performance leads to improved student learning outcomes, enhanced research productivity and impact (Donohoo, 2018; Jalal, 2020), stronger community engagement and service, effective mentorship and advising of students, enhanced institutional reputation (Law et al., 2020; Yamamura & Koth, 2018), and improved student retention and graduation rates (Barbera et al., 2020). Job performance of academic staff is crucial in three key areas namely teaching, research, and community engagement. Effective teaching shapes students' academic experiences and outcomes (Tadesse et al., 2020) while research advances knowledge and understanding in various fields (Gonzales & Núñez, 2021). Community engagement fosters partnerships and collaborations with local and global communities, and fulfilment of the third mission of universities which is applying academic expertise to real-world problems (Mugizi, 2018). By excelling in these areas, faculty members inspire and motivate students (Macaluso et al., 2020), advance their fields, contribute to innovation, and make a positive impact on society (Schimanski & Alperin, 2018). Universities that prioritise academic staff job performance in teaching, research, and community engagement create a vibrant academic environment, drive innovation, and make a meaningful impact on society (Hussain et al., 2019).

University teachers have been under constant pressure to perform especially in the areas of teaching and research especially since the 20th century. Specifically, in the early 1980s, pressure for higher job performance of academic staff mounted following the beginning of the ranking of universities. The practice of ranking universities started in the United States of America (USA) and spread to other countries. This phenomenon triggered the start of a global ranking system of universities all around the world (Sanoff et al., 2007). The ranking of the universities mainly focuses on research excellence, teaching quality, employability of students from the universities, and the international outlook of the universities (Okebukola, 2019). However, the stark reality is that the top 100 are largely comprised of institutions from the United States, United Kingdom, Switzerland Germany, France, Netherlands, Canada, Japan, and Sweden (Vernon et al., 2018). Meanwhile, African universities remain unrecognizable, with only a handful of South African universities managing to appear in the top 500 (Aiyedun et al., 2021). This glaring disparity serves as a damning indictment of low-level performance of academic staff in African universities.

In Uganda, academic staff have been criticised for their low level performance in their core areas of teaching, research, and community engagement. Specifically, they have been accused of using inadequate teaching methods that do not engage students but instead rely on teacher-centred approaches that prioritise content regurgitation over critical thinking and debate (Kasule et al., 2022). This encourages students to merely memorise content rather than develop essential skills. Furthermore, academics have been accused of not meeting the expected contact hours with students, frequently absenting themselves and inconsistency in their attendance (Kato et al., 2023). They dodge lecturers and cover less content than outlined in the programmes. In addition, some of them demonstrate lack of commitment to excellence by falsifying examination marks and cheating examinations on behalf of students. Others rely

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on plagiarised online notes instead of preparing their own lectures (Mugizi et al., 2015; Turyahikayo et al., 2023).

Nevertheless, the advent of digital technologies has transformed the academic landscape, enabling academic staff to accomplish their job performance more effectively. The integration of technologies such as learning management systems, online resources, and multimedia tools has significantly enhanced teaching quality and engagement (Pandita & Kiran, 2023). Moreover, academics have developed the necessary technical, course design, and course communication competencies to teach online (Mugizi et al., 2023). Automation, artificial intelligence, and data analytics have increased efficiency and streamlined administrative tasks, freeing up time for research and teaching (George & Wooden, 2023) and high-performance computing and statistical data analysis tools have improved research capabilities and productivity (Ngulube, 2023). Despite the potential of these technologies to improve job performance, academic staff job performance remained low. This prompted this study to investigate the impact of technology use on job performance of academic staff. Anchoring on Task-Technology Fit (TTF) Theory, technology use was studied in terms of teaching, managerial and research use (Joshi et al., 2013; Usluel et al., 2008) in relation to academic staff job performance. Therefore, this study tested the following hypotheses;

- Teaching technological use has a significant influence on job performance of academic staff.
- Managerial technological use has a significant influence on job performance of academic staff.
- Research technological use has a significant influence on job performance of academic staff.

LITERATURE REVIEW

Theoretical Review

The Task-Technology Fit (TTF) Theory propounded by Goodhue and Thompson (1995) explains the relationship between ICT and job performance. TTF is the extent to which a technology enables an individual to perform his or her portfolio of tasks (Tam & Oliveira, 2016). TTF posits that information technology (IT) whose capabilities match task requirements has benefits in job performance (Fu et al., 2020). When the functionality of a technology and the user's requirements are similar TTF is higher (Mugizi & Amwine, 2020). Therefore, when technology's capabilities closely match the tasks at hand, individuals are more likely to be productive (Presti et al., 2021). The theory posits that employees require technology as a tool for accomplishing tasks, especially those that rely heavily on technology (Wu & Chen, 2017). Automation, resource sharing, multi-tenancy, and remote implementation are integral to tasks performed by individuals (Mugizi & Amwine, 2020). According to TTF, performance impact occurs when technology capacities meet users' requirements and offer features that support task requirements (Omotayo & Haliru, 2020). TTF suggests that in settings where technology is used to perform tasks, performance is created by the alignment or fit of task requirements and technology characteristics (Spies et al., 2020). Technology in educational institutions facilitates activities such as instruction, management and research (Joshi et al., 2013; Usluel et al., 2008). This study examined how technology use in terms of teaching, managerial, and research use influenced job performance of academic staff.

Technology Use and Job Performance of Academic Staff

Technology use encompasses computers and other devices for efficient retrieval, transmission, and manipulation of data (Haleem et al., 2022). A major contribution of technology in education is easy access to learning, enhancing the teaching process and facilitating research. Technology has revolutionised education by providing effortless access to learning resources, augmenting the teaching process, and streamlining research endeavours (Eslamian & Khademi, 2017). Technology tools play a vital role in enhancing the quality and quantity of teaching, learning, and research in both traditional and distance

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educational institutions. Information and Communication Technology (ICT) enriches teaching and learning experiences through its engaging, interactive, and dynamic content (Amadi & Alaputa, 2021). Moreover, technology use facilitates seamless communication, creation, dissemination, storage, and management of information, ultimately boosting job performance (Mugizi & Amwine, 2020). In this study, technology use was conceived in terms of teaching, managerial and research use.

Teaching technology use is the utilisation of programs, procedures and tools oriented to the realisation of the educational process (Murati & Ceka, 2017). The use of technology in the classroom facilitates effective teaching, helps instructors to cater for students with diverse learning needs, fosters active involvement and participation in the learning process and promotes a good understanding of the lesson material. This helps instructors communicate their ideas, feelings and thoughts to their students contributing to good academic performance for both students and educational institutions (Odigwe & Owan, 2020). Studies have (Anud & Caro, 2023; Hero, 2019; Erbas, 2021; Jassim, 2020; Culajara, 2022; Lao et al., 2018; Mugizi & Amwine, 2020; Mdhlalose & Mlambo, 2023; Murati & Ceka, 2017) examined the influence of technology use on job performance of instructors. However, empirical, knowledge and population gaps emerged. Specifically, there was a dearth of studies in the Ugandan context and inconsistent findings. For instance, a study conducted in a primary school setting by Mugizi and Amwine (2020) inconsistent with other studies found that technology had an insignificant influence on teaching, highlighting a population gap and knowledge gap because the of population studied and the inconsistent results. This study thus further explored the use of technology and job performance, using university academic staff in Uganda.

Managerial technological use in educational institutions involves using technology to enhance planning, organization, and management tasks (Kimani et al., 2022). Technology integration improves efficiency and accuracy in tasks such as data processing, communication, and record-keeping (Chika & Wale, 2020). It also enables quick access to information and improves student management, making learners' records more accessible (Joshi & Budhkar, 2015). Overall, technology integration is crucial for effective and efficient management in the education sector (Kimani et al., 2022). Scholars (Joshi & Budhkar, 2015; Chika &Wale, 2020; Faisal & Kisman, 2020; Mugizi & Amwine, 2020; Nwigbo & Madhu, 2016; Wiyono et al. 2021) have related managerial technology use and employee performance. However, empirical and knowledge gaps emerged. Empirically, the existing studies reveal a significant knowledge void in the context of universities in Uganda. On the other hand, the study by Mugizi and Amwine (2020) highlighted a knowledge gap by producing results inconsistent with other scholars, finding that ICT-enabled school administration had an insignificant influence on teacher performance. This inconsistency suggested that the findings are context-dependent. This emphasised the need for this study to address these gaps in the context of Ugandan universities.

Technology research use involves utilising technologies to carry out research activities. Technologies are useful in research, especially in areas such as data collection, processing and analysis (Akpobasah-Amugen & Ayomikun, 2019). In addition, accessing and utilisation of e-resources supports research activities. Access to and utilisation of technological resources by academicians and researchers in higher learning institutions contributes to improved research activities, publication of journal articles, books, collaborative publishing and dissemination of research findings (Mwantimwa et al., 2021). Studies (Akpobasah-Amugen &Ayomikun, 2019; Lawal & Olawale, 2020; Amponsah et al., 2021; Mang'uu et al., 2021) have related technology research use and job performance. However, the study by Amponsah et al. (2021) raised a knowledge gap as its findings were contrary to those of other scholars who indicated technologies enhanced performance in the form of research performance. This suggested that there is no definite position in the relationship between the variables hence each study has to be

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considered on its merit. This thus called for this study.

Methodology

Research Design and Sample

This study utilized a quantitative research approach, employing a correlational research design to investigate the relationships between variables and determine the degree of association among them (Devi et al., 2022). This design allowed for an examination of the interconnections between variables, shedding light on the nature and intensity of their relationships. The study's sample comprised all 184 academic staff members at Bishop Stuart University, as the population was small enough to be studied in its entirety for the quantitative aspects of the research. Although only 158 (85.9%) fully completed questionnaires were retrieved, this sample size was deemed sufficient, as Pielsticker and Hiebl (2020) suggest that a response rate of 50% is adequate in social science research, and our response rate exceeded this threshold.

Data Collection

The researcher employed a self-administered questionnaire (SAQ) to gather data from academic staff, examining two primary variables: job performance and technology use. Job performance was evaluated across three dimensions: teaching, research and publication, and community service (Abba & Mugizi, 2018). Technology use was assessed in three areas: teaching and managerial use (Valverde-Berrocoso et al., 2021), research use (Mugizi & Amwine, 2020), and overall technology use. The questionnaire items were adapted from existing, validated tools to ensure reliability and validity. A five-point Likert Scale (1 = strongly disagree, 2 = disagree, 3 = moderately agree, 4 = agree, 5 = strongly agree) was used to facilitate respondents' ranking of the items. Self-administered questionnaires offer an efficient and effective means of collecting data from a large number of respondents in a short timeframe, while also ensuring ease of understanding and appropriateness of data collection (Harris & Brown, 2019). The questionnaire enabled the collection of quantitative data necessary for analysis.

Data Analysis

Data analysis employed descriptive statistics to show how the respondents rated technology use and job performance of academic staff and Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS 4 hence examining of intricate relationships between variables and indicators (Hair Jr et al., 2020). This allowed for statistical inferences to be drawn necessary for generalisation of findings to a larger population beyond the sample studied. By applying PLS-SEM, the study uncovered the underlying structural relationships between variables, providing a comprehensive understanding of the variables under investigation (Memon et al., 2021). This analytical technique enabled the identification of subtle patterns and relationships that might have gone unnoticed with other methods, offering a clear understanding of the relationships between the variables (Hair Jr et al., 2021). Thus, the strength and direction of the relationships between variables were identified.

Findings

Demographic Characteristics

The study investigated the demographic characteristics of the academic staff, focusing on gender, age, highest academic degree earned, length of service at the university, and position within the academic hierarchy. The findings of this analysis are presented in Table 3, providing a comprehensive overview of the demographic characteristics of the academic staff.

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Table 3: Background Characteristics of Academic Staff

Variables	Category	Frequency	Per cent
Sex	Male	99	62.7
	Female	59	37.3
	Total	158	100.0
Age Groups	Up to 30 years	02	1.3
	30 but below 40 years	38	24.1
	40 years and above	118	74.7
	Total	158	100.0
Highest academic qualification	Bachelor's Degree	19	12.0
	Master's Degree	117	74.1
	PhD	22	13.9
	Total	158	100.0
Years working in the university	Less than one year	4	2.5
	One year but less than 5 years	16	10.1
	5 but less than 10 years	63	39.9
	More than 10 years	75	47.5
	Total	158	100.0
Position in the hierarchy	Teaching assistant	19	12.0
	Assistant Lecturer	17	10.8
	Lecturer	117	74.1
	Associate Professors and Professors	05	3.2
	Total	158	100.0

The results (Table 3) reveal diverse demographic characteristics of academic staff. The data on gender distribution shows a slightly higher proportion of males (62.7%) compared to females (37.3%). The data on age distribution indicates that most respondents (74.7%) were experienced staff aged 40 or older, with a smaller proportion (1.3%) of early-career academics aged 30 or younger. The results on highest level of education show that most held master's degrees (74.1%), followed by PhD holders (13.9%). The results on length of service revealed that most respondents had extensive experience, with 47.5% serving over 10 years and 39.9% serving 5-10 years. Finally, academic rank distribution shows a diverse representation across different levels, with lecturers making up the largest proportion (74.1%). The results on background characteristics indicate that diverse academic staff participated in the study hence the results were representative of a variety of academic staff.

Measurement Models

The measurement models indicate validity and reliability showing the accuracy and consistency of the data. Convergent validity and discriminant validity were tested to confirm that the measures accurately captured the intended concepts and were distinct from one another. The validity and reliability values follow in measurement models 1 and 2.

Measurement Models 1

This measurement model contains validity results. Validity involved establishing content validity and was assessed using SmartPLS 4. This involved carrying out convergent and discriminant validity tests. Convergent validity was evaluated using Average Variance Extracted (AVE), while discriminant validity was examined through the Heterotrait-Monotrait (HTMT) ratio of correlations. In addition, means were added to show how the respondents rated the level of academic staff performance and technology use. The results of these tests are presented in Table 1.

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Table 1: Average Variance Extracted (AVE) and Heterotrait-Monotrait Ratio (HTMT) Correlations

Measures	Means	AVE	ASP	CSP	RP	TP
ASP	3.44					
CSP	3.14	0.650	0.598			
RP	3.35	0.547	0.882	0.209		
TP	3.82	0.630	0.505	0.216	0.380	
Measures	**Means**	**AVE**	**T**	**TU**	**MU**	**RU**
T	3.50					
TU	3.66	0.524	0.740			
MU	3.48	0.565	0.556	0.637		
RU	3.35	0.534	0.661	0.343	0.199	

ASP = academic staff performance, CSP = Community service performance, MU = Managerial Use, RP = research performance, RU = Research Use, T = Technology Use TR = Training, TU = Teaching Use

The means (Table 2) show that the academic staff job performance was moderate (mean = 3.44) because the mean was close to code three for "moderately agree", which is the average. This meant that the academic staff's job performance was just fair. Regarding the measures of community service (mean = 3.14) and research performance (mean = 3.35), they were rated moderate (mean = 2.93) but teaching performance was high (mean = 3.82). This meant that there was more teaching compared to other activities. The mean (mean = 3.50) for technology use (independent) was high with teaching use having a high mean = 3.66 but managerial use (mean = 3.48) and research use (mean = 3.35) being moderate. This meant that technology was used more for teaching purposes. The Average Variance Extracted (AVE) values, which measure convergent validity, exceeded the minimum threshold of 0.5, confirming that the constructs effectively captured their respective variables (Purwanto & Sudargini, 2021). This indicates that the measures used were suitable and valid. For the Heterotrait-Monotrait (HTMT) ratio of correlations, they were all below the maximum threshold of 0.90, demonstrating discriminant validity and confirming that the constructs were distinct. This ensured that the measures used were not only valid but also accurately distinguished between the various constructs measuring the variables.

Measurement Model 2

This measurement model contains the reliability results which were assessed using Cronbach's Alpha and Composite Reliability (CR). While Cronbach's Alpha is a commonly used measure, it has a limitation in that it assumes that indicators should be similar in the population, which can affect reliability values (Viladrich et al., 2017). To address this, CR was also used to potentially increase the number of indicators meeting reliability standards. The results of the reliability analysis are presented in Table 2, providing valuable insights into the consistency and dependability of the data collection instrument. By using both measures, a greater confidence in the reliability of the data was guaranteed.

Table 2: Reliabilities

Measures	α	CR
Community Services	0.863	0.902
Research Performance	0.859	0.893
Teaching Performance	0.711	0.836
Technology Teaching Use	0.853	0.883
Technology Managerial Use	0.805	0.861
Technology Research Use	0.890	0.915

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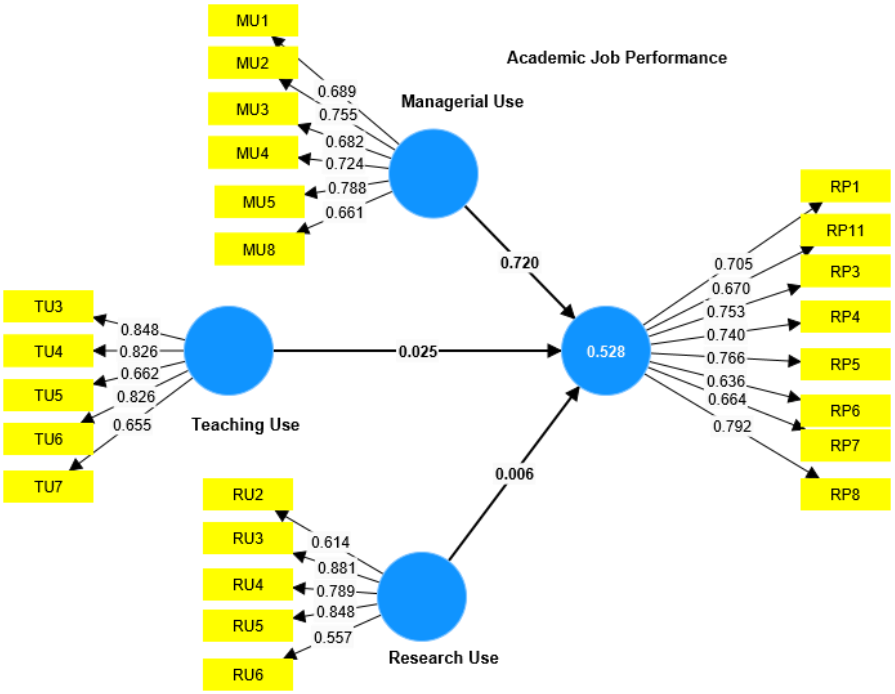
The reliability results shown in Table 2 reveal that both Cronbach's Alpha and Composite Reliability values surpassed the minimum threshold of 0.70 (Purwanto & Sudargini, 2021), indicating that the indicators for each construct measuring the variables exhibited satisfactory reliability. This suggests that the indicators within each measure were highly correlated and interrelated, resulting in reliable data collection. Therefore, the findings were built on a solid foundation, enabling the drawing of robust conclusions.

Technology Use and Job Performance of Academic Staff

To establish the impact of technology use on the job performance of academic staff, a structural model was developed to illustrate the causal relationships between technology use and job performance. The model tested three hypotheses: (H1) that teaching-related technology use has a significant positive impact on job performance, (H2) that managerial-related technology use has a significant positive impact on job performance, and (H3) that research-related technology use has a significant positive impact on job performance. The results follow in Figure 1 and in the path estimates table (Table 4).

Figure 1: Technology Use Structural Model and Academic Staff Job Performance



The results presented in Figure 1 reveal that technology use is made up of three distinct dimensions, namely technology use for teaching, managerial purposes, and research. Factor analysis confirmed that five indicators for technology use, six for managerial use, and all indicators for research use were retained, with factor loadings exceeding the accepted threshold of 0.50. This indicates that the retained indicators were valid measures of their respective constructs, and collectively, these three constructs effectively captured the concept of technology use. Table 4 presents the structural equation path estimates, which reveal the relationships between technology use and academic job performance, providing insights into how different dimensions of technology use impact academic staff's job performance.

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Table 4: Technology Use and Academic Job Performance Path Estimates

Path Estimates		B	Mean	STD	T	P
Teaching Use ⟶ Performance	Academic Job	0.025	0.047	0.081	0.307	0.759
Managerial Use ⟶ Performance	Academic Job	0.720	0.714	0.055	13.202	0.000
Research Use ⟶ Performance	Academic Job	0.006	0.029	0.044	0.144	0.885

R^2	R^2 Adjusted
0.528	0.518

The results of the structural equation analysis (Table 4) reveal that only managerial technology use had a significant and positive impact on academic job performance ($\beta = 0.720$, $p < 0.05$). In contrast, research technology use ($p = 0.889$) and teaching technology use ($p = 0.759$) had a positive but insignificant influence on academic job performance. The model explained 52.8% of the variation in academic job performance ($R^2 = 0.528$), and when adjusted for the non-significant variables, managerial technology use alone explained 51.8% of the variation (adjusted $R^2 = 0.518$). Therefore, the findings suggested that only the use of technology for managerial purposes had a significant influence on academic job performance, highlighting the importance of technology in supporting job performance of academic staff.

Discussion

The study found that while technology use for teaching was high among academic staff, it had a positive but insignificant impact on their job performance. This finding aligns with Mugizi and Amwine's (2020) research in a primary school setting, but contradicts the majority of previous studies (Anud & Caro, 2023; Hero, 2019; Erbas, 2021; Jassim, 2020; Culajara, 2022; Lao et al., 2018; Mugizi & Amwine, 2020; Mdhlalose & Mlambo, 2023; Murati & Ceka, 2017) that reported a significant positive influence. However, the challenge of the findings of the study was that academic staff performed lower in research and community service aspects, which could not be correlated with higher technology use for teaching purposes. This may be attributed to the fact that most academics had not attained a PhD level, limiting their involvement in research and community service activities.

The results revealed that technology use for research purposes was moderate and positively but insignificantly influenced job performance of academic staff. This finding was consistent with Amponsah et al. (2021) who reported similar results. However, the finding was inconsistent with the findings of most previous scholars (Akpobasah-Amugen &Ayomikun, 2019; Lawal & Olawale, 2020; Amponsah et al., 2021; Mang'uu et al., 2021). This finding can also be justified by the fact that most academic staff academic staff performed lower in research and community service aspects largely resulting from the fact that most academics had not attained a PhD level, limiting their involvement in research and community service activities.

Further, the findings revealed that technology use for managerial purposes was moderate but has a positive and significant influence job performance of academic staff. This finding was consistent with the findings of previous scholars (Joshi & Budhkar, 2015; Chika &Wale, 2020; Faisal & Kisman, 2020; Mugizi & Amwine, 2020; Nwigbo & Madhu, 2016; Wiyono et al. 2021). However, this was because academic staff job performance was rated almost equal with technology use for managerial purposes and hence correlated. This means that technology use for managerial purposes is essential for job performance of academic staff.

CONCLUSIONS

The discussion above led to the conclusion that technology use for teaching and research has less contribution on job performance of academic

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staff. With respect to the use of technology for teaching, finding ICT-based methodologies good for teaching, being very supportive in teaching, better than traditional methods, and lecturers being able to easily prepare lecturers due to ICT facilitation do not necessarily influence academic staff performance. This is because performance in the other areas of research and community service is low. With respect to the use of technology for research, low use internet for research and publication purposes, low access to scholarly materials, limited use of the internet to carry out research, and limited internet to access online journals and articles slowly affect job performance of academic staff. However, the use of technology for managerial purposes is vital for job performance of academic staff. This is when academic staff can use ICT to keep students' records, manage personal and official files, attend meetings, communicate and be in constant touch with colleagues through online platforms.

RECOMMENDATION

University managers should employ more academic staff with PhDs such that besides teaching, they are able to effectively participate in research and community service activities. These staff should be equipped with ICT skills for using technologies in teaching, using appropriate ICT pedagogies, and carrying out teaching preparation using technologies. University managers should enhance academic staff's use of technologies for research activities. This should involve equipping them with the skill to use the internet for research and publication purposes, access to scholarly materials, encourage them to highly use the internet to carry out research, and access online journals and articles. Further, university managers should encourage academic staff to use technology for managerial purposes. This should involve equipping them with the knowledge to use ICT to keep students' records, manage personal and official files, attend meetings, communicate and in be constant touch with colleagues through online platforms.

LIMITATIONS

This study makes significant contributions to understanding the impact of technology use on academic staff job performance. However, some limitations emerged. Notably, the findings contradict previous research by showing that technology use for teaching and research purposes had an insignificant influence on teaching performance. This discrepancy may be attributed to the fact that most participants had qualifications below a PhD, limiting their involvement in research and community service activities. Therefore, future studies should investigate this topic in universities with a higher proportion of PhD-qualified staff. Further, the study's reliance on quantitative methods limited the depth of analysis, highlighting the need for future research to incorporate qualitative approaches for a more comprehensive understanding.

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