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**INFLUENCE OF CLOUD-BASED RESEARCH TOOLS ON RESEARCH
WRITING OF POSTGRADUATE STUDENTS IN AL HIKMAH UNIVERSITY,
ILORIN, KWARA STATE**

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Abstract

The study was conducted to determine the effects of cloud-based research tools on the research writing practices of postgraduate students at Al-Hikmah University, Ilorin, Kwara State, Nigeria. One major research question and four hypotheses guided the study. The study employed non-experimental survey design. The population for the study focused on all postgraduate students of the department of educational management and counselling, encompassing 532 postgraduate students. The researcher opted for convenience sampling, which was the method utilized for selection of the students that participated in the study which comprised 30 postgraduate students. Data collected were analyzed using t-tests and ANOVA to test the hypotheses, and frequency count and percentage for the demographic

data. The instrument used was Utilizing Cloud Computing Application Scale (UCCAS) which stands as a robust metric adapted to capture the nuances of the research. Data was collected through the convenience of online platforms like Google Form, a cloud-based computing tools which was distributed through WhatsApp, a social media messaging mobile application majorly for sharing messages across mobile contact, maximizing reach within a targeted population, in this case, Al-Hikmah postgraduate students. The results revealed that there was a relatively uniform adoption of cloud-based research tools among postgraduate students at Al-Hikmah University, regardless of age, gender, level of study, or years of experience. This aligns with the growing trend of ubiquitous adoption observed in other research settings. Based on the finding, it is recommended that cloud-based research tools should be encouraged and improved upon through workshops, encouragement of the exploration of more advanced and sophisticated features.

Keywords: *Al-Hikmah University, Cloud-based Research Tools, Postgraduate Research Writing*

Introduction

The introduction of cloud-based research tools has resulted in a significant change in the environment of academic research. This study explored the complex interaction between these resources and the postgraduate research writing process at Al-Hikmah University in Ilorin, Kwara State. Administrators, teachers, and students must comprehend the subtle influences of technology as it continues to transform learning environments. A vital component of postgraduate education, research writing is a concrete representation of a student's research proficiency and intellectual strength. It requires painstaking articulation and synthesis of intricate research findings into a compelling story. Proficiency in communicating research findings is critical for postgraduate students since it advances knowledge and improves their prospects for employment and professional reputation (Creswell, 2012).

A paradigm shift in research methods has been brought about by the introduction of cloud-based research tools, which have given postgraduate students access to a plethora of cutting-edge resources to help them with their research projects. These instruments cover an extensive range of features, for instance: Students can quickly arrange, annotate, and cite academic materials by using cloud-based reference management systems like Mendeley and Zotero. This simplifies the process of conducting a literature review. Platforms for collaborative writing: Programmes such as Google Docs and Microsoft Teams provide in-the-moment communication between students and mentors, creating a lively atmosphere for ideation and information exchange. Software for data analysis and visualization: Students can analyse and visualize complex research data to derive important insights and patterns by

using statistical software packages like R and SPSS. The potential for revolutionizing the research landscape is enormous when cloud-based research tools and postgraduate research writing come together. By examining the complex relationship between these two factors, this study hopes to shed light on the advantages and disadvantages of using cloud-based technologies in postgraduate research settings.

Statement of the Problem

The combination of cloud-based research tools and postgraduate research writing has the potential to completely transform the research landscape. The goal of this study was to shed light on the benefits and drawbacks of utilizing cloud-based technologies in postgraduate research settings by investigating the intricate relationship between these two factors. By understanding how these tools impact the research writing process, we can work to maximize their use and empower postgraduate students to produce outstanding, influential research.

Previous studies on cloud-based research tools have mostly concentrated on how user-friendly and useful they are thought to be, with less emphasis on how directly they affect research writing productivity and quality (Hew, 2011; Alzahrani & Alzahrani, 2013). Only a few studies have looked at the connection between research writing results and cloud-based research tools. Alzahrani and Alzahrani (2013), for example, discovered that cloud-based writing platforms had a positive impact on students' perceptions of communication and teamwork during the research writing process. Likewise, Cheung and Ho (2013) found that students' efficiency and organisation in handling academic sources were enhanced by cloud-based reference management systems.

The fast development of technological know-how has revolutionized quite a few sectors, such as education. One considerable improvement is the emergence of cloud-based research tools, which provide postgraduate students with new methods to conduct investigations and write scholarly papers. These tools, which encompassed Google Scholar, Zotero, Mendeley, and cloud storage offerings such as Google Drive and Dropbox, supply enormous sources and collaborative opportunities. Despite their manageable benefits, the real impact of this equipment on the research writing of postgraduate students stays under-explored, specifically in precise institutional contexts such as Al-Hikmah University in Ilorin, Kwara State. This research effort aimed at supplying a complete perception of the effect of cloud-based research equipment on the research writing of postgraduate students at Al-Hikmah University, Ilorin, Kwara State. The findings will be precious for educators, policymakers, and technology providers in improving the research competencies and educational performance of postgraduate students

Although these results point to possible advantages of cloud-based tools, they are unable to offer solid proof of their influence on the calibre and productivity of research writing. Furthermore, the studies' use of self-reported data and small sample sizes limited how broadly their conclusions could be applied. By carrying out a thorough empirical investigation into the effects of cloud-based research tools on postgraduate students' research writing at Al-Hikmah University in Ilorin, Kwara State,

Purpose of the Study:

The main purpose of this study is to establish the influence of demographic factors on using cloud-based research tools for research conduct among postgraduate students at Al-Hikmah University, Ilorin, Kwara State.

The following are the specific purposes

Examining the influence of age on using cloud-based research tools for research conduct among postgraduate students at Al-Hikmah University, Ilorin, Kwara State.

Determining the influence of gender on using cloud-based research tools for research conduct among postgraduate students at Al-Hikmah University, Ilorin, Kwara State.

Exploring the influence of experience on using cloud-based research tools for research conduct among postgraduate students at Al-Hikmah University, Ilorin, Kwara State.

Showing the influence of level of education on using cloud-based research tools for research conduct among postgraduate students at Al-Hikmah University, Ilorin, Kwara State.

Hypotheses

The following hypotheses are tested at a 0.05 significant level

H0₁: There is no significant difference in the influence of cloud-based research tools on research writing of postgraduate students in Al-hikmah University based on age.

H0₂: There is no significant difference in the influence of cloud-based research tools on research writing of postgraduate students in Al-hikmah University based on gender.

H0₃: There is no significant difference in the influence of cloud-based research tools on research writing of postgraduate students in Al-hikmah University based on experience.

H0₄: There is no significant difference in the influence of cloud-based research tools on research writing of postgraduate students in Al-hikmah University based on their level of education.

Research Methodology

This section is concerned with the procedure in which the study was carried out. A non-experimental survey design was adopted for this paper. A cross-sectional investigation to illuminate the influence of cloud tools on postgraduate research writing. The population for this study focused on all postgraduate students within the Department of Educational Management and Counselling, encompassing 93 PGDE students, 335 master's students, and 104 PhD students (Postgraduate School of Al-Hikmah University). Recognizing resource constraints and time limitations, the researcher opted for convenience sampling, a strategic approach that facilitates swift data collection while yielding a valuable sample size of 30 participants. Embracing the convenience of online platforms, Google Forms, a cloud-based computing tool was distributed through WhatsApp, a social media messaging mobile application primarily for sharing messages across mobile contacts, maximizing reach within the targeted population through Al-Hikmah University postgraduate class groups. The chosen instrument, the Utilizing Cloud Computing Application Scale (UCCAS), stands as a robust metric, meticulously adapted to capture the nuances of the research. This well-validated tool provided quantitative data on cloud tool utilization and perceived impact on research writing. The data collected was analyzed using descriptive and inferential statistics. Frequency count and percentage were used to analyze the demographic data while t-test and ANOVA were used to test the hypotheses at 0.05 level of significance. Participants were comprehensively informed about the study's objectives and their participation was purely voluntary and anonymous, safeguarding their privacy and upholding the integrity of the research.

RESULTS

This aspect of the report presents the results of data analysis and interpretation of the results. These were presented concerning the research hypotheses formulated for the study.

Demographic Information

Table 1

Demographic Analysis of Respondents

Demographic data	Freq.	%
Gender		

Male	15	50
Female	15	50
Age		
26-35	7	23.3
36-45	15	50
46-55	6	20
56-65	2	6.7
Level of study		
700 Level	7	23.3
800 Level	10	33.3
900 Level	13	43.3
Level of experience using cloud-based Application		
0-5 years	14	46.7
5-10 years	8	26.7
10-15 years	6	20
16-20 years	2	6.7

From the result in Table 1, the demographic analysis shows that 50% (15) of the respondents are male and female. 50% (15) are between the age range of 36-45 years, 23.3 % (7) are between 26-35 years, 20% (6) are between 46-55 years while the least of the respondents 6.7% (2) are between the age range of 56-65 years respectively. Furthermore, most of the respondents 43.3% (13) are in the 900 level, 33.3% (10) are in the 800 level, and 23.3% (7) are in the 700 level respectively. Finally, 46.7% (14) have 0-5 years' experience using cloud-based applications, 26.7% (8) have 5-10 years of experience, 20% (6) have 10-15 years of experience while least of the respondents 6.7% (2) have 16-20 years' experience using cloud-based application respectively.

Research Hypothesis One: There is no significant difference in the influence of cloud-based research tools on research writing of postgraduate students at Al-Hikmah University based on age.

To test this research hypothesis, the computed scores of the utilization of cloud-based research tools among postgraduate students in Al-Hikmah University were subjected to ANOVA using Age as a grouping variable. The result of the ANOVA is presented in the table below.

Table 2:

ANOVA showing the difference in the utilization of cloud-based research tools among postgraduate students in Al-Hikmah University based on Age

Cloud Based Research	Sum of Squares	df	Mean Squares	F	Sig.
Between Groups	171.920	3	57.307	.300	.825 > 0.05
Within Groups	4775.529	25	191.021		Not significant
Total	4947.448	28			

The result from Table 2 shows that there exists no significant difference in the influence of cloud-based research tools on research writing among postgraduate students in Al-Hikmah University based on Age. Hence the null hypothesis is not rejected, and it is therefore concluded that there is no significant difference in the influence of cloud-based research tools on research writing among postgraduate students in Al-Hikmah University based on Age.

Research Hypothesis Two: There is no significant difference in the influence of cloud-based research tools on research writing of postgraduate students at Al-hikmah University based on Gender.

To test this research hypothesis, the computed scores of the utilization of cloud-based research tools among postgraduate students at Al-Hikmah University were subjected to the test of difference using Gender as a grouping variable. The result of the t-test is presented in Table 3 below.

Table 3:

The T-test shows difference in the utilization of cloud-based research tools on research writing among postgraduate students in Al-Hikmah University based on Gender

	Gender	N	Mean	SD	df	t	P
Cloud-based research	Male	14	94.2857	9.31854	28	0.836	0.361 > 0.05
	Female	15	90.1333	16.24309			

The result from Table 3 shows that there is no significant difference in the influence of cloud-based research tools on research writing among postgraduate students at Al-Hikmah University based on Gender. Hence the null hypothesis is not rejected, and it is therefore

concluded that there is no significant difference in the influence of cloud-based research tools among postgraduate students in Al-Hikmah University based on Gender.

Research Hypothesis Three: There is no significant difference in the influence of cloud-based research tools on the research writing of postgraduate students at Al-hikmah University based on their level of study.

To test this research hypothesis, the computed scores of the utilization of cloud-based research tools among postgraduate students at Al-Hikmah University were subjected to ANOVA using the level of study as a grouping variable. The result of the ANOVA is presented in Table 4 below.

Table 4:

ANOVA shows difference in the influence of cloud-based research tools on research among postgraduate students in Al-Hikmah University based on the level of study

Cloud Based Research	Sum of Squares	df	Mean Squares	F	Sig.
Between Groups	308.467	2	154.234	.864	.433 > 0.05
Within Groups	4638.981	26	178.422		Not significant
Total	4947.448	28			

The result from Table 4 shows that there exists no significant difference in the influence of cloud-based research tools on research writing among post graduate students in Al-Hikmah University based on level of study. Hence the null hypothesis is not rejected, and it is therefore concluded that there is no significant difference in the influence of cloud-based research tools on research among post graduate students at Al-Hikmah University based on level of study.

Research Hypothesis Four: There is no significant difference in the influence of cloud-based research tools on the research writing of postgraduate students at Al-Hikmah University based on years of experience.

To test this research hypothesis, the computed scores of the utilization of cloud-based research tools among postgraduate students at Al-Hikmah University were subjected to ANOVA using years of experience as a grouping variable. The result of the ANOVA is presented in the table below.

Table 5:

ANOVA shows the difference in the influence of cloud-based research tools on research writing among post graduate students in Al-Hikmah University based on years of experience.

Cloud Based Research	Sum of Squares	df	Mean Squares	F	Sig.
Between Groups	399.091	3	133.030	.731	.543>0.05
Within Groups	4548.357	25	181.934		Not significant
Total	4947.448	28			

The result from Table 5 shows that there exists no significant difference in the influence of cloud-based research tools on research writing among post graduate students in Al-Hikmah University based on years of experience. Hence the null hypothesis is not rejected, and it is therefore concluded that there is no significant difference in the influence of cloud-based research tools on research writing among post graduate students at Al-Hikmah University based on years of experience using cloud-based applications.

Discussion of Finding

One of the findings that emanated from the study indicated no significant difference in the use of cloud-based research tools for research conduct among postgraduate students based on their age. The ANOVA results supported this hypothesis, with a p-value of 0.825 (>0.05). This aligns with the findings of Adams and Davis (2022), who found similar levels of cloud-based tool adoption across different age groups of students. However, Johnson et al. (2023) reported a slight but significant preference for collaborative cloud tools among younger students, suggesting potential age-related nuances in tool choice within the broader trend of uniform adoption.

The findings of this study also disclosed that there was no significant difference in cloud-based tool utilization for conducting research among postgraduate students based on their gender. The t-test results supported this, with a p-value of 0.361 (>0.05). This finding aligns with Wang et al. (2021), who observed no gender-based differences in cloud platform adoption or perceived benefits among academic researchers. However, Clark and Smith (2020) found that female researchers reported facing more challenges in accessing and

utilizing advanced technology resources, suggesting potential gender disparities in access and confidence, even with uniform adoption rates.

Additionally, the findings of this study showed that there was no significant difference in cloud-based tool utilization among postgraduate students based on their level of study (700, 800, or 900 level). The ANOVA results supported this, with a p-value of 0.433 (>0.05). This finding aligns with Chen and Li (2023), who observed similar levels of cloud-based research tool integration across different academic years in a university setting. However, Miller and Brown (2018) reported that PhD students displayed a higher preference and reliance on sophisticated cloud-based research tools compared to undergraduate or master's students, suggesting potential level-specific variations in tool usage patterns.

Finally, the findings of this study indicated that there was no significant difference in cloud-based tool utilization based on students' years of experience with these tools. The ANOVA results supported this, with a p-value of 0.543 (>0.05). This aligns with Lee and Kim (2021), who found that prior experience with cloud-based tools did not significantly influence the overall adoption rate among academic users. However, Brown and Lee (2019) reported that experienced users tended to utilize more advanced features and functionalities within cloud-based research platforms, suggesting that years of experience might influence the depth and sophistication of tool engagement, even with similar adoption rates.

Al-Hikmah University's study on the use of cloud-based research tools yields encouraging findings, with widespread acceptance across demographics. This is consistent with cloud platforms becoming more widely used and accessible in academic settings. To guarantee that everyone can utilize these tools efficiently and optimize their advantages for research writing and academic performance, it is necessary to go beyond simple acceptance and concentrate on deeper involvement, focused instruction, and removing any potential access hurdles. This is bound to open a hub for inclusive practices when it comes to research writing, particularly in the field of the use of cloud-based research tools which will eventually improve the quality of advanced writings in the future.

Conclusion

The findings of this study suggest a relatively uniform adoption of cloud-based research tools among postgraduate students at Al-Hikmah University, regardless of age, gender, level of study, or years of experience. This aligns with the growing trend of ubiquitous adoption of cloud-based research tools by all students. Further studies on this or similar topics should explore the motivational factors behind this adoption, investigate the impact of these tools on research outcomes, and address potential limitations to inform effective integration and maximize the benefits of cloud-based tools for postgraduate research.

Recommendations

Based on the findings and conclusions drawn in this study, it is recommended that:

1. While age did not significantly impact tool utilization, consider offering introductory workshops or targeted resources for younger students who may be less familiar with technology.
2. Address any potential gender disparities in access or confidence regarding technology by offering supportive workshops and encouraging female researchers to explore advanced features since it was found that they experience more challenges compared to their male counterparts in accessing and utilizing advanced technology resources.
3. Considerations should be made in providing specialized training workshops on advanced and sophisticated cloud-based research tools for students at different levels of learning from the undergraduate level, Master's, and PhD levels focusing on tools and functionalities relevant to their specific research stages and needs.
4. Developing mentorship programmes where experienced users would share their expertise to guide the less experienced researchers in using cloud-based tools effectively in research writing which might influence the depth and sophistication of tool engagement.

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