

Perceived Ease of Use and Usefulness of Digital Research Support Tools for Thesis and Dissertation Writing by Postgraduate Students in Ahmadu Bello University

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Abstract

This study examined the perceived ease of use and perceived usefulness of digital research support tools for thesis and dissertation writing among postgraduate students in Ahmadu Bello University, Zaria, Nigeria, using the Technology Acceptance Model (TAM). A quantitative research design was adopted, involving a sample of 372 postgraduate students, with 299 valid responses analyzed using mean and standard deviation. Findings revealed that ChatGPT and Mendeley were perceived as the easiest tools to use, while QuillBot, EditGPT, and PaperPal were considered less user-friendly. In terms of usefulness, digital tools were highly valued for minimizing errors, easing writing, and supporting referencing and citation tasks. However, respondents expressed lower perceptions regarding the overall impact of these tools on academic performance and their general user-friendliness. The study concludes that although digital research support tools significantly enhance specific academic writing tasks, but their full potential is limited by challenges related to usability, awareness, and skill levels. The findings support TAM, emphasizing that perceived ease of use and perceived usefulness are critical determinants of technology adoption. The study recommends increased training, institutional support, and integration of these tools into postgraduate research practices to improve their effective utilization.

Keywords: Digital Research Support Tools; Perceived Ease of Use; Perceived Usefulness; Postgraduate Students; Thesis and Dissertation Writing; Ahmadu Bello University Zaria; Nigeria.

Introduction

The rapid advancement of digital technologies has significantly transformed academic research and scholarly writing processes across higher education institutions worldwide. Digital research support tools such as reference management software (e.g., Zotero, Mendeley), plagiarism detection systems, academic databases, collaborative writing platforms, and artificial intelligence–based writing assistants such as ChatGPT, QuillBot, EditGPT, and PaperPal have become integral to thesis and dissertation writing. These tools are designed to enhance efficiency, organization, language refinement, paraphrasing, and the overall quality of scholarly outputs. Empirical evidence from the literature suggests that students' adoption and effective utilization of such technologies are largely influenced by their perceptions, particularly perceived ease of use and perceived usefulness, as conceptualized in the Technology Acceptance Model (TAM) (Davis, 1989; Bakı et al., 2018).

Perceived ease of use refers to the degree to which a user believes that using a particular system would be free of effort, while perceived usefulness relates to the extent to which a user believes that a system enhances task performance. Studies have consistently demonstrated that these two constructs significantly determine users' attitudes toward technology adoption in educational contexts (Alhumsi & Alshaye, 2021; Tan et al., 2024). Academic writing, particularly at the postgraduate level, digital tools have been shown to support literature search, citation management, data analysis, and manuscript preparation, thereby improving research productivity and writing quality (Ferdousi, 2022; Rababah & Rababah, 2024).

Despite these potential benefits, several studies indicate that postgraduate students in developing countries, including Nigeria, face challenges in effectively utilizing digital research support tools. Issues such as limited digital literacy, inadequate training, poor infrastructure, and lack of awareness often hinder optimal usage (Kazoka & Mwantimwa, 2019; Eiriemiokhale & Idowu, 2021). Specifically, research conducted among postgraduate students in Nigerian universities reveals that although awareness of digital tools may exist, their actual adoption and sustained use are often constrained by perceptions of complexity and questionable usefulness (Sabitu & Mohammed, 2026). Furthermore, even when tools are available, students may not fully integrate them into their thesis and dissertation writing processes due to insufficient skills or institutional support.

At Ahmadu Bello University (ABU) Zaria, postgraduate students are required to produce high quality theses and dissertations as a prerequisite for graduation.

However, anecdotal evidence and emerging studies suggest variability in the extent to which these students leverage digital research support tools. While some students effectively utilize these tools to enhance their research workflow, others rely on traditional methods, potentially affecting the efficiency and quality of their academic writing. This disparity raises critical questions about the underlying factors influencing the adoption and use of these tools.

Although digital research support tools have the potential to significantly improve thesis and dissertation writing among postgraduate students, their effective utilization remains inconsistent. Existing studies such as George, 2022, Fernandes, 2023 and Singh, 2023 have largely focused on general technology adoption in education, with limited attention to the specific context of digital research support tools for postgraduate research writing, particularly within Nigerian universities and Ahmadu Bello University, Zaria in particular. Moreover, there is insufficient empirical evidence examining how postgraduate students' perceptions of ease of use and usefulness influence their engagement with these tools during thesis and dissertation writing.

Consequently, the lack of clear understanding of these perceptual factors creates a gap in designing targeted interventions, training programs, and institutional policies aimed at enhancing the adoption and effective use of digital research tools. Addressing this gap is essential to improving research productivity, academic writing quality, and overall postgraduate research outcomes. Therefore, this study seeks to investigate the perceived ease of use and usefulness of digital research support tools among postgraduate students in Ahmadu Bello University Zaria and how these perceptions influence their utilization in thesis and dissertation writing.

Objectives of the Study

The study sought to achieve the following objectives:

1. To examine the perceived ease of use of the digital research support tools for theses and dissertations writing by postgraduate students in Ahmadu Bello University Zaria.
2. To assess the perceived usefulness of digital research support tools for theses and dissertations writing among postgraduate students in Ahmadu Bello University Zaria.

Literature review

The adoption and use of digital research support tools in academic writing have been extensively explained through technology adoption theories, with the Technology Acceptance Model (TAM) serving as the most dominant framework. Developed by Davis (1989), TAM posits that users' acceptance of a technology is primarily determined by two key constructs: *perceived usefulness (PU)* and *perceived ease of use (PEOU)*. These constructs influence users' attitudes, behavioral intentions, and actual usage of technological systems.

Systematic reviews across educational technologies confirm that TAM remains highly relevant in explaining students' interaction with digital tools, including e-learning systems, academic databases, and AI writing assistants (Rosli et al., 2022; Alsharida & Hammood, 2021). In the context of postgraduate research, TAM provides a robust lens for understanding how students evaluate and adopt tools such as ChatGPT, QuillBot, EditGPT, and PaperPal during thesis and dissertation writing.

Technology Acceptance Model (TAM)

The **Technology Acceptance Model (TAM)** is rooted in the Theory of Reasoned Action (TRA), which assumes that individuals' behavior is driven by their intentions, which are in turn influenced by attitudes and beliefs. TAM simplifies this by focusing on two beliefs:

- **Perceived Usefulness (PU):** The degree to which a student believes that using a digital research tool will enhance their academic writing performance.
- **Perceived Ease of Use (PEOU):** The degree to which a student believes that using the tool will be free of effort.

According to TAM, PEOU directly influences PU, and both constructs jointly determine users' attitudes and intentions toward technology use (Bakı et al., 2018). Empirical studies support this relationship, Alhumsi and Alshaye (2021) found that, students' perceptions of usefulness and ease significantly influenced their adoption of digital platforms for academic writing. Similarly, Zou and Huang (2023) demonstrated that doctoral students' acceptance of AI tools like ChatGPT is strongly shaped by these two variables.

Studies shows that postgraduate students with higher digital literacy are more likely to perceive research tools as useful and easy to use. Likewise, institutional support and training significantly enhance the adoption rates (Kazoka & Mwantimwa, 2019). In AI-powered writing tools, recent research highlights that trust, ethical considerations, and perceived reliability also play important roles in shaping acceptance (Al-Bukhrani et al., 2025).

Application of TAM to Digital Research Support Tools

The application of TAM to digital research tools has been widely documented in literature. These tools include: Reference management systems (e.g., Mendeley, Zotero), Academic databases and search engines, AI writing assistants (e.g., ChatGPT, QuillBot, PaperPal, EditGPT) and automated writing evaluation systems. Studies indicate that postgraduate students perceive these tools as useful for improving writing quality, managing references, and saving time, they are more likely to adopt them (Ferdousi, 2022). If tools are perceived as complex or difficult to use, adoption is significantly reduced.

Zhai and Ma (2022) found that automated writing tools improve academic writing performance, but their effectiveness depends on how easy students find them to use. Similarly, Islam and Sheikh (2020) emphasize that students' satisfaction with digital research databases is strongly linked to perceived usefulness and usability.

In Nigeria, emerging studies suggest that although postgraduate students are increasingly exposed to digital tools, their usage remains inconsistent due to skill gaps and institutional limitations. This highlights the need to contextualize TAM within specific institutional environments such as Ahmadu Bello University, Zaria.

Conceptual Implications for the Present Study

Based on the reviewed theories, this study is anchored on TAM, with a focus on:

- Perceived Ease of Use → Perceived Usefulness
- Perceived Usefulness → Use of Digital Research Tools
- Perceived Ease of Use → Use of Digital Research Tools

The model assumes that postgraduate students will adopt digital research support tools for thesis and dissertation writing if they:

1. Find the tools easy to use
2. Believe the tools improve their research and writing outcomes

This theoretical framework provides a basis for examining how tools such as ChatGPT, QuillBot, EditGPT, and PaperPal are perceived and utilized within the postgraduate research process.

Methodology

A quantitative research method was adopted, and the population consisted of all postgraduate students across faculties and college of medical sciences of Ahmadu Bello University, Zaria who were admitted during the 2021/2022 session, totaling 3717. A sample of 372 respondents (10% of the population based on Nueman, (2006)'s recommendation) was used. A questionnaire was employed as the research instrument for this study. A Pilot Study was conducted among Postgraduate Students of Kaduna State University, Kaduna where twenty (20) copies of the questionnaire were used. Split-half method of reliability estimate was used together with the

Spearman-Brown Formula by splitting the administered questionnaires into two sets after numbering them in order of odd and even numbers. A reliability of co-efficient of 0.88 was obtained. The analysis is based on mean scores, where a higher mean indicates a higher level of perceived ease of use.

Finding and Discussion

Out of the 372 copies of the questionnaire distributed to the respondents, 299 copies of the questionnaire were successfully retrieved from the respondents and used for the analysis.

The results on the perceived ease of use of selected digital research support tools by postgraduate students in Ahmadu Bello University was analyzed, presented and discussed in line with the research questions and objectives formulated for this study.

Perceived ease of use of the digital research support tools for theses and dissertations writing by postgraduate students in Ahmadu Bello University Zaria

The respondents were asked to determine their perceived ease of use of the digital research tools for theses and dissertations writing through the use of a 5-point likert scale of measurement. The responses of the respondents were presented in table 1:

Table 1 Perceived Ease of Use of Digital Research Support Tools

Research Support Tools	Very easy to use	Easy to use	Sometimes easy to use	Not easy to use	Undecided	Total	Mean	SD
	Freq	Freq	Freq	Freq				
Mendeley	55	102	58	65	19	299	3.36	0.02
Zotero	25	54	63	128	29	299	2.73	0.07
Grammarly	31	98	62	69	39	299	3.04	0.06
ChatGpt	13	189	51	36	10	299	3.53	0.15
Quillbot	3	18	65	198	15	299	2.32	0.71
Paperpal	1	39	41	167	51	299	2.24	2.21
EditGpt	25	34	32	121	87	299	2.29	0.08

Source: field survey 2024

Table 1 shows that the mean values for the various digital research support tools range from 2.24 to 3.53, indicating varying levels of ease of use among the tools examined.

ChatGPT recorded the highest mean score (Mean = 3.53), suggesting that respondents generally perceive it as very easy to use. This is followed by Mendeley (Mean = 3.36), indicating that the tool is also considered easy to use by a majority of postgraduate students. Grammarly recorded a moderate mean score (Mean = 3.04), implying that respondents find it relatively easy to use.

On the other hand, Zotero recorded a lower mean score (Mean = 2.73), suggesting that respondents perceive it as only moderately easy to use. Similarly, QuillBot (Mean = 2.32), EditGPT (Mean = 2.29), and PaperPal (Mean = 2.24) recorded the lowest mean scores, indicating that these tools are generally perceived as not easy to use by the respondents.

Overall, the results indicate that while some digital research support tools are perceived as user-friendly, others present usability challenges to postgraduate students.

The findings of this study revealed significant variations in postgraduate students' perceptions of the ease of use of digital research support tools. The high mean score recorded for ChatGPT suggests that it is the most user-friendly tool among those examined. This may be attributed to its intuitive interface, conversational interaction style, and ability to provide immediate feedback, which reduces the cognitive effort required for use. This finding is consistent with Zou and Huang (2023), who reported that AI-based writing tools are widely accepted due to their simplicity and ease of interaction.

Similarly, Mendeley's relatively high mean score of 3.36 indicates that postgraduate students are familiar with and comfortable using reference management tools, possibly due to prior exposure and institutional recommendations. This aligns with Ferdousi (2022), who noted that tools embedded within academic workflows tend to have higher perceived ease of use.

Grammarly's moderate mean score of 3.04 suggests that while students find it easy to use, there may still be some limitations, such as subscription barriers or partial understanding of advanced features. This indicates that even widely used tools may require additional user support to maximize their usability.

In contrast, the lower mean scores of 2.73, 2.32, 2.29 and 2.24 recorded for Zotero, QuillBot, EditGPT, and PaperPal respectively suggest that these tools are perceived as less user-friendly. For Zotero, this may be due to differences in interface design or lack of familiarity compared to Mendeley. For AI-based tools like QuillBot, EditGPT, and PaperPal, the low scores may reflect limited awareness, insufficient training, or perceived complexity in their functionalities.

These findings are consistent with Kazoka and Mwantimwa (2019), who found that lack of digital literacy and inadequate training significantly influence students' perceptions of ease of use. In developing country such as Nigeria, infrastructural challenges and limited institutional support may further exacerbate these issues.

From a theoretical perspective, the results support the Technology Acceptance Model (TAM), which posits that perceived ease of use is a critical determinant of technology adoption. Tools that are perceived as easy to use, such as ChatGPT and Mendeley, are more likely to be adopted and integrated into academic writing processes. Conversely, tools perceived as difficult to use may experience low adoption rates, regardless of their potential usefulness (Bakı et al., 2018).

Perceived Usefulness of Digital Research Support Tools

This section presents the results on the perceived usefulness of digital research support tools among postgraduate students in Ahmadu Bello University. The analysis is based on mean scores, where higher mean values indicate a higher level of perceived usefulness.

Table 2 Perceived Usefulness of Digital Research Support Tools

Perceived usefulness of Research Support Tools	Highly Useful	Agree to be useful	Highly disagree to be useful	Not Agree to be useful	Undecided	Total	Mean	SD
	Freq	Freq	Freq	Freq	Freq			
Research support tools is useful in generating references	55	102	54	36	52	299	3.24	0.03
research support tools is useful in making citation	55	101	56	35	52	299	3.24	0.03

Research support tools is useful in storing documents	36	65	54	123	21	299	2.91	0.05
Research support tools is useful in paraphrasing information	57	76	52	89	25	299	3.17	0.02
Research support tools is useful in enhancing performance	25	32	68	96	78	299	2.43	0.08
Research support tools is useful in easing the writing	52	102	63	55	27	299	3.32	0.03
Research support tools is useful in minimizing errors	78	96	36	52	37	299	3.42	0.02
Research support tools are user-friendly	18	37	98	85	61	299	2.55	0.11

Research support tools is useful in checking language errors	36	96	51	62	52	299	3.01	0.05
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Source: field survey 2024

The mean values in Table 2 range from 2.43 to 3.42, indicating varying perceptions of usefulness across different functions of digital research support tools.

The findings shows that minimizing errors recorded the highest mean score (Mean = 3.42), suggesting that respondents strongly perceive digital tools as useful for reducing errors in academic writing. This is followed by easing the writing process (Mean = 3.32) and both generating references and making citations (each with Mean = 3.24), indicating that students generally find these tools useful for core academic writing tasks.

Similarly, paraphrasing information recorded a relatively high mean (Mean = 3.17), while checking language errors also showed a moderate level of usefulness (Mean = 3.01). However, storing documents had a lower mean (Mean = 2.91), suggesting moderate usefulness.

In contrast, user-friendliness recorded a low mean (Mean = 2.55), and enhancing performance had the lowest mean (Mean = 2.43), indicating that respondents generally do not strongly perceive these tools as improving overall academic performance or being highly user-friendly.

The findings of this study reveal that postgraduate students perceive digital research support tools as particularly useful for task-specific academic functions, especially in minimizing errors, easing writing, generating references, and making citations. The high mean score of 3.42 for minimizing errors suggests that students strongly rely on these tools for improving the accuracy and quality of their academic writing. This aligns with Zhai and Ma (2022), who found that automated writing tools significantly enhance error detection and correction in academic texts.

The high usefulness with the mean score 3.24 attributed to citation and referencing functions highlights the importance of tools like Mendeley and Zotero in supporting academic research. This finding is consistent with Ferdousi (2022), who emphasized that digital tools are widely adopted when they directly support essential research activities such as referencing and documentation.

Similarly, the relatively high mean for paraphrasing information reflects the growing relevance of AI-powered tools such as ChatGPT and QuillBot in helping students

reframe and improve their writing. This supports recent findings by Zou and Huang (2023), which indicate that AI tools are increasingly valued for their ability to assist in content generation and restructuring.

However, the lower mean scores 2.43 and 2.55 for enhancing performance and user-friendliness suggest that students are not fully convinced of the overall effectiveness of these tools. This may be due to limited digital literacy, lack of adequate training, or inconsistent user experiences across different tools. These findings are in line with Kazoka and Mwantimwa (2019), who noted that students may recognize the functional benefits of digital tools but still struggle with usability and integration into their academic workflow.

The moderate mean of 2.91 for storing documents also indicates that students may not fully utilize digital tools for organizational purposes, possibly preferring traditional methods or alternative storage platforms. This suggests a gap in awareness or training regarding the full capabilities of research support tools.

From a theoretical perspective, the findings support the Technology Acceptance Model (TAM), which posits that perceived usefulness significantly influences technology adoption. The high mean scores of 3.24 for specific functions (e.g., error correction, referencing) indicate that students are more likely to adopt tools that provide clear, immediate benefits. However, the lower scores for overall performance enhancement suggest that perceived usefulness is context-specific and may not extend to broader academic outcomes.

Conclusion

The perceived ease of use and perceived usefulness of digital research support tools for thesis and dissertation writing among postgraduate students in Ahmadu Bello University, Zaria, was justified using the Technology Acceptance Model (TAM) as the guiding framework. The findings make the researcher to conclude that postgraduate students generally perceive some digital tools particularly ChatGPT, Mendeley, and Grammarly as easy to use, while others such as QuillBot, PaperPal, EditGPT, and Zotero are perceived as less user-friendly.

In terms of usefulness, the researcher concluded that digital research support tools are highly valued for specific academic tasks such as minimizing errors, easing writing, generating references, and making citations. However, students expressed relatively low perceptions regarding the overall impact of these tools on academic performance and their general user-friendliness. This confirmed that the students recognize the functional benefits of these tools, challenges related to usability, awareness, and skill level still limit their full potential.

Conclusively, the digital research support tools have significant potentials to enhance postgraduate research writing, but their effective utilization depends largely on improving students' perceptions of ease of use and expanding their understanding of the tools' broader academic benefits.

Recommendations

The following recommendations were made based on the findings of the study:

1. The university should enhance postgraduate students' use of digital research support tools by integrating them into the research curriculum, providing regular training and workshops, ensuring institutional access and reliable internet, creating awareness through orientation programs, establishing technical support services, encouraging peer learning, prioritizing user-friendly tools while supporting more complex ones, and developing clear policies for the ethical use of AI-powered tools such as ChatGPT, QuillBot, EditGPT, and PaperPal.
2. The university should enhance postgraduate students' effective use of digital research support tools by providing targeted training and continuous support that emphasize both their practical benefits (such as error reduction, referencing, and writing support) and their overall impact on academic performance and usability.

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