

Improving online research guides for instructions and utilization in Ghanaian universities: insights from users

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Received 24 May 2024
Revised 5 June 2025
Accepted 26 June 2025

Abstract

Purpose – This study aims to determine the knowledge and awareness of the online research guide among library users, ascertain the level of use/value of online research guides (LibGuides) on academic learning and research among library users and examine the determinants of online research guides (LibGuides) continuance usage intention by library users.

Design/methodology/approach – This study employs a quantitative approach as well as the expectation-confirmation model (ECM), proposed by Oliver in 1980 to investigate the utilization and awareness of LibGuides among library users at the School of Engineering, University of Ghana, Legon. A total of 285 participants were selected.

Findings – The users expressed overall satisfaction with LibGuides and perceived them as valuable resources. The analysis also revealed positive associations between satisfaction, perceived usefulness and continuance intention to use LibGuides.

Originality/value – This paper provides one of the first user-centered evaluations of online research guides (LibGuides) in Ghanaian universities, highlighting key gaps in design, accessibility and instructional relevance. Unlike prior studies from developed contexts, it offers context-specific insights from students and librarians in a developing country. The paper's originality lies in its empirical exploration of how users interact with and perceive research guides as learning tools. Its value rests in proposing practical, evidence-based improvements to enhance guide effectiveness and usability. The findings offer a framework for improving digital research support services across African academic libraries and similar resource-constrained settings.

Keywords LibGuides, Research guides, Universities, Library instructions, Ghana

Paper type Research paper

1. Introduction

In the era of Web 2.0, the emergence of LibGuides represented a significant advancement in providing subject and course assistance within library settings. Developed as a dynamic and library-centric alternative to conventional HTML-based electronic guides, LibGuides incorporate numerous user-friendly features characteristic of Web 2.0 tools (Bowen, 2014). Unlike the simple transition from print to electronic pathfinders, which primarily involved a change in medium, the introduction of LibGuides marked a progressive evolution in electronic pathfinding. LibGuides enable libraries to leverage diverse online resources without requiring advanced web development skills, integrating multimedia elements such as embedded videos, RSS feeds, podcasts, search widgets, visual book covers and chat service widgets (England and Fu, 2011). Furthermore, the platform allows for internal user input solicitation and integration with external social networking applications. Numerous case studies highlight libraries' adoption of LibGuides as digital aids for topic exploration



Global Knowledge, Memory and
Communication
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2514-9342
DOI 10.1108/GKMC-05-2024-0279

and course navigation, praising their user-friendly interface and ease of administration (Ming-der and Shih-chuan, 2012).

In response to technological advancements, digital library services have largely replaced traditional methods in university libraries, with online research guides becoming a prominent offering. These guides, curated and formatted by librarians, help users navigate complex library resources. Despite their importance, online research guides remain underutilized (Castro-Gessner *et al.*, 2013). To address this, many libraries conduct usability studies or focus on creating specialized course guides rather than general subject guides. Lamptey and Agyen-Gyasi (2015) argued that students often struggle to find scholarly resources and turn to alternative sources to meet their research needs. In this context, librarians play a crucial role as educational facilitators, using online LibGuides to impart information literacy skills to students and researchers (Brewer *et al.*, 2017). According to Osorio (2015), LibGuides serve as multimedia educational aids, fostering knowledge exchange and promoting library resources. The platform supports various elements, including RSS feeds, audio/video links, cataloged books and interactive features like polls and surveys, facilitating user engagement.

Grassian and LeMire (2017) emphasized the importance of aligning LibGuides with user expectations to enhance user experiences, stressing clarity, accessibility and relevance in content delivery. By addressing students' informational needs and fostering information literacy, librarians can enhance learning experiences through course-specific materials and information literacy instruction. Understanding user perceptions and preferences is crucial for librarians to create strategically tailored content (Gani and Magoi, 2014; Owusu-Ansah, 2021). Lamptey and Agyen-Gyasi (2015) highlighted the critical role of digital library experiences in shaping the future of university libraries, advocating for continuous improvement of digital resources. Consequently, academic libraries must deliver timely online resources, including LibGuides, to meet the evolving needs of university stakeholders (Soong and Chan, 2010; Owusu-Ansah and van der Walt, 2021).

Providing supportive and valuable materials is essential for fostering positive perceptions of the library among students and researchers. Gilbert *et al.* (2012) underscored the importance of familiarity in user engagement with online materials, highlighting the role of librarians in facilitating online learning. Eghe-Ohenmwene (2015) discussed the transformative impact of digitalization on content dissemination and audience engagement, noting that digital libraries are crucial for knowledge dissemination. The need to provide timely information resources reflects the evolving mandate of university libraries, which are increasingly shifting toward digital repositories and online services to broaden audience reach (Deegan and Tanner, 2006). Librarians must anticipate future advancements in library technology, adopting a proactive approach to deliver remote services tailored to diverse user needs (Smulewitz *et al.*, 2013). Krishnamurthy *et al.* (2018) emphasized that students seek effective guidance from librarians amid the abundance of resources in academic libraries, underscoring the crucial role of librarians in facilitating informed resource discovery through various communication channels. Therefore, the specific objectives of the paper include:

- determine library users' knowledge and awareness of the online research guide;
- ascertain the level of use/value of online research guides (LibGuides) on academic learning and research among library users; and
- examine the determinants of online research guides (LibGuides) continuance usage intention (CUI) by library users.

1.1 Research gaps and problem

In the Western world, the integration of online LibGuides resources contrasts sharply with the landscape of Ghanaian university libraries, where digital tools remain underdeveloped in supporting educational and research endeavors. [Highton \(2017\)](#) observed a trend among Ghanaian institutions to invest in projects aimed at creating digital environments tailored to students' needs, thereby fostering academic success. For instance, at the University of Edinburgh, students utilize various online services, including virtual learning environments, student systems, websites, timetabling systems, maps, data sets, libraries, journal collections, software tools and mobile apps to support their academic pursuits. They also use social media platforms for networking and establishing digital identities reflecting their activities and interests.

In the digital age, user experience encompasses an individual's perception, attitude, emotion and interaction with a product, system or service across different touchpoints and over time. Therefore, the user experience of online LibGuide resources should include the entire interactive process, from perceiving the resource's utility to discovering and utilizing it within diverse contexts.

Addressing theoretical, conceptual and contextual gaps is crucial for enhancing the efficacy of online research guides in Ghanaian universities. Theoretical gaps arise from the limited application of established models, such as the expectation-confirmation model (ECM), to online research guides in Ghanaian higher education. Conceptually, there is a lack of comprehensive understanding of the specific factors influencing students' expectations, confirmation and satisfaction with online research guides. Identifying these gaps is essential for designing interventions to improve the usability and effectiveness of these guides, thus enriching students' satisfaction and usage. Contextual gaps stem from the unique socio-cultural and educational landscape of Ghanaian universities, which shape students' expectations and behaviors regarding online resources.

By addressing these gaps, this paper aims to deepen the understanding of how online research guides can be tailored to better meet the needs of library users in Ghanaian universities. The subsequent sections of this paper will review related literature to identify research gaps, present the theoretical ECM model, outline the methodology, present results and discussions and conclude with implications for research, limitations and directions for future studies.

2. Related literature

[Gonzalez and Westbrook \(2010: 648\)](#) and [Chiware \(2014, p. 31\)](#) explored the correlation between library instructions and LibGuides usage in university libraries. [Miner and Alexander \(2010\)](#) agreed, stating that usage patterns vary by discipline and whether or not users had received library training via LibGuides. Users often use the LibGuides when they support teaching, research and learning values ([Alverson et al., 2015](#)). The use of digital library tools such as LibGuides is also influenced by factors such as the value of the LibGuides and knowledge of the LibGuides ([Gessner, Chandler and Wilcox, 2015; Ojo, 2017: 65](#)). [Gessner et al. \(2015, p. 497\)](#) proposed that library administration may increase direct marketing, improve LibGuides visibility in e-learning spaces, allow users to browse and practice LibGuides and institute course-based designs to encourage the use of LibGuides in academic institutions ([Thorngate and Hoden, 2017](#)).

[Osorio \(2015\)](#) identified the most prevalent application of LibGuides in academic libraries as the development of subject guides for circulating and reference collections, along with research pathfinders tailored to specialized courses. Much of the existing literature on LibGuides originates from developed contexts, particularly in the USA ([Griffin and Lewis, 2011](#);

Erb and Erb, 2015), where LibGuides are widely adopted to support teaching, research and user engagement. However, there is a discernible gap in literature addressing the implementation and impact of LibGuides within African university libraries, especially in Ghana. While studies have explored the pedagogical value and usability of LibGuides in enhancing academic experiences, few have examined their relevance or usage patterns in developing country contexts. This oversight highlights the need for localized investigations that consider user awareness, perceived usefulness and long-term adoption intentions. Consequently, the current study contributes to bridging this gap by focusing on LibGuide utilization in a Ghanaian academic setting, offering user-driven insights that may inform the strategic deployment of digital research guides in similar environments.

Grassian and LeMire (2017) revealed that accessing research guides by users is a critical factor in developing a guide. Irrespective of the learner/user, videos, PDFs, links, etc. guides must be accessible to all. In this survey of online students, 69.7% of those who self-identified as having a disability did not inform their instructor or librarian about their impairment. Any user will be able to use a guide if it is designed with accessibility in mind throughout and follows universal design learning principles. Universities in Ghana are divided into private and government universities that offer degrees and certificate programs (Raju *et al.*, 2016). Unfortunately, just one public institution in Ghana (<https://libguides.ug.edu.gh/e-resources>) uses LibGuides for teaching, learning and research. The LibGuides' content varies, but they all deal with how library users can access various information resources, including undergraduate and postgraduate services, special collections, lecturer-recommended publications and more.

For usability and accessibility, authors such as England and Fu, (2011), Gonzalez and Westbrook (2010), Lewis and Griffin (2011) and Roberts and Hunter (2011) found LibGuides to be user-friendly and simple to maintain and edit. From a service design point of view, Grassian and LeMire (2017) investigated LibGuides for instruction for an academic library. The findings revealed that "as of this writing 5,250 institutions are using LibGuides and 120,840 LibGuide account holders. The breakdown of types of institutions is not equal: academic libraries make up 43% of all LibGuide institutions, elementary or secondary education represents 22% of institutions and public and special libraries account for 10% each, with the final 15% of institutions comprising law libraries, medical libraries and various partner groups (such as professional associations or vendors). With such a high percentage of institutions within the education system, this breakdown might indicate the usefulness of LibGuides informal instruction".

Bangani and Tshetsha (2019) investigated the use of LibGuides by four departments in the Faculty of Community and Health Sciences at the University of Western Cape in South Africa. The research was conducted using a descriptive case study research design with a sequential explanatory mixed-methods methodology. Data was acquired from students, professors and librarians of the faculty through a series of online questionnaires, face-to-face interviews and system-generated LibGuides page views. The librarian had time to construct LibGuides for the users, but only a few students and teaching staff used them, and there was uncertainty about the difference between LibGuides and study or course aids. The LibGuides, particularly course-specific information, were deemed valuable by the respondents. When students and teachers were made aware of LibGuides, they expressed an interest in using them.

2.1 Perceived performance and continuous use intention of LibGuides

Previous studies by Bakare (2018) and Tait *et al.* (2016) have identified several factors influencing users' perceptions of LibGuides' performance. Key elements include user

interface design, ease of navigation and the comprehensiveness of information provided. In addition, the responsiveness and support from library staff enhance users' perceived performance by promptly addressing their needs and concerns. The continuous use intention of LibGuides refers to users' inclination to persist in utilizing the platform over time. Sustaining user engagement and participation is crucial for maximizing the utility of LibGuides in academic libraries. Research suggests that continuous use intention is influenced by user satisfaction with LibGuides' performance. When users perceive the platform as reliable, efficient and conducive to their information-seeking tasks, they are more likely to trust and remain loyal to it, leading to continued usage (Ream and Parker-Kelly, 2016).

Hennessey and Adams (2021) assessed LibGuides' perceived performance through the lenses of information quality, system quality and service quality. Their findings revealed a significant positive relationship between perceived performance and user satisfaction. Users valued LibGuides for their ease of use, reliability and high-quality information, which contributed to their intention to continue using the platform. In addition, organizational support and institutional commitment play crucial roles in sustaining users' continuous use intention of LibGuides. Libraries that prioritize ongoing training, technical support and platform enhancements demonstrate their dedication to meeting users' evolving needs and expectations, fostering a conducive environment for continuous engagement and utilization of LibGuides (Lauseng *et al.*, 2021). Based on this, we propose the following hypothesis:

H1. Perceived performance positively affects the continuous use intention of LibGuides.

2.2 Confirmation of LibGuides and LibGuide's adoption

Confirmation of LibGuides, often assessed through user feedback and evaluations, reflects users' perceptions of the platform's utility, ease of use and overall satisfaction. Studies have explored how users confirm the value of LibGuides in facilitating access to library resources, enhancing research experiences and streamlining information discovery processes. Positive confirmation signals users' recognition of LibGuides' effectiveness, fostering continued engagement and utilization (Mwanzu *et al.*, 2022). Confirmation of LibGuides encompasses users' post-implementation evaluations of the platform's utility, effectiveness and satisfaction. Positive confirmation indicates that users perceive LibGuides as valuable tools for their information-seeking tasks, reinforcing their satisfaction and continued engagement with the platform (Bangani and Tshetsha, 2019). Chee and Weaver (2021) investigated factors influencing LibGuides adoption among academic librarians, highlighting the importance of organizational support, training and perceived benefits. Their study revealed that organizational culture and leadership support significantly influence the successful adoption of LibGuides, underscoring the pivotal role of institutional commitment in driving technology integration initiatives. In addition, comprehensive training and support enhance librarians' confidence and competence in utilizing LibGuides, facilitating adoption and implementation efforts.

LibGuides adoption involves the process by which academic libraries incorporate the platform into their operations and services, encompassing stages such as decision-making, implementation and ongoing support. Factors influencing LibGuides adoption include organizational culture, leadership support, perceived benefits and available resources. Successful adoption efforts often entail comprehensive training programs, technical assistance and a supportive organizational infrastructure to facilitate librarians' proficiency and confidence in utilizing the platform effectively (Logan and Spence, 2021). Moreover, LibGuides adoption is driven by both user preferences and institutional goals

and strategic priorities. Academic libraries may adopt LibGuides as part of broader initiatives to enhance information literacy instruction, support distance learning programs, or streamline access to electronic resources. The alignment of LibGuides with institutional objectives and stakeholders' needs can facilitate its adoption and integration into library workflows (Neuhaus *et al.*, 2021). Based on this, the following hypothesis is established:

H2. Confirmation of LibGuides significantly influences LibGuide's adoption by users.

2.3 Perceived usefulness of the LibGuides and e-learning adoption and continuous use

According to Himoonga (2020), LibGuides have become integral components of e-learning environments, offering versatile tools for accessing and organizing educational resources. E-learning adoption involves the incorporation of technologies like LibGuides into instructional practices and course delivery methods. Factors influencing e-learning adoption include organizational culture, institutional support, faculty readiness and technological infrastructure. Ujakpa (2020) examined the factors influencing faculty members' intention to adopt e-learning technologies, highlighting the significance of perceived usefulness and ease of use in promoting faculty acceptance and adoption of e-learning tools, including LibGuides. LibGuides adoption within e-learning environments involves considerations such as faculty training, institutional support and alignment with pedagogical goals. Studies have shown that perceptions of LibGuides' usefulness influence educators' decisions to incorporate the platform into their courses. Educators are more inclined to adopt LibGuides when they perceive it as a useful tool for enhancing student engagement, supporting research activities and organizing course materials effectively DeVille and Sughrue, (2023).

Continuous use of LibGuides in e-learning environments depends on users' sustained engagement and satisfaction with the platform. User satisfaction is closely linked to perceived usefulness, as users are more likely to continue using LibGuides if they find it beneficial and effective in meeting their needs. Factors such as a user-friendly interface, comprehensive content and responsive support services contribute to users' satisfaction and their intention to continue using LibGuides (Alzahrani, 2013). Empirical studies have examined the relationship between the perceived usefulness of LibGuides and its adoption and continuous use in e-learning contexts. These studies highlight the importance of designing and implementing the platform in ways that enhance its perceived usefulness and user satisfaction. The perceived usefulness of LibGuides plays a crucial role in its adoption and continuous use within e-learning environments. By providing valuable resources, supporting learning objectives and enhancing academic experiences, LibGuides contribute to the effectiveness and efficiency of e-learning initiatives (Jaber, 2016). Based on these findings, the following hypotheses are formulated:

H3. Perceived usefulness of the LibGuides influences e-learning adoption and continuous use.

2.4 Theoretical and conceptual framework

The ECM, proposed by Oliver in 1980, is employed to analyze the usability, accessibility and value of online research guides in higher education institutions (Zhou, 2017; Ouyang *et al.*, 2017). ECM is historically used to explain the intention to continue using various resources, positing that user satisfaction and intention to use online learning resources are influenced by four primary dimensions: initial expectations, perceived performance, confirmation level and satisfaction.

Expectations refer to the features or attributes users anticipate in online research guides, directly impacting perceptions of performance and belief disconfirmation, and indirectly influencing satisfaction through the disconfirmation construct. Users evaluate the product, service or technology against their initial expectations.

Perceived performance encompasses users' impressions of the actual performance of a product, service, or technological artifact. According to the expectation-confirmation hypothesis, perceived performance is directly influenced by initial expectations, which in turn affect belief disconfirmation and satisfaction. Perceived performance also indirectly impacts satisfaction through the disconfirmation construct.

Disconfirmation of beliefs involves users' assessments of a product, service or technological artifact against their initial expectations. Positive disconfirmation, where performance exceeds expectations, is believed to enhance satisfaction, whereas negative disconfirmation, where performance falls short, is thought to decrease satisfaction.

Post-purchase or post-adoption satisfaction measures the extent to which users are pleased with a product, service or technological artifact after direct experience. According to expectation-confirmation theory, satisfaction is directly influenced by disconfirmation of beliefs and perceived performance, and indirectly affected by initial expectations and perceived performance through the disconfirmation construct.

Figure 1 serves as a visual representation of how the ECM applies to the analysis of LibGuides adoption in Ghanaian higher education, emphasizing usability, accessibility and value in the local educational context. It aligns theoretical constructs with practical implications for improving library services and enhancing student learning experiences.

With the introduction of LibGuides, students attribute their learning and research experiences to these tools. Simultaneously, library staff gains insights into user experiences and online library resources to better support effective information literacy resources. This study analyzes LibGuides adoption in Ghana, using the ECM as a guiding framework. ECM is widely used to understand technology adoption in universities and is a credible model for assessing LibGuide usability, accessibility and value. Key factors include satisfaction, perceived usefulness, confirmation and perceived performance. The theory underscores the importance of interpersonal communication, language and dialogue in shaping user experiences in a local context, discussing how LibGuides become integral to students' learning processes.

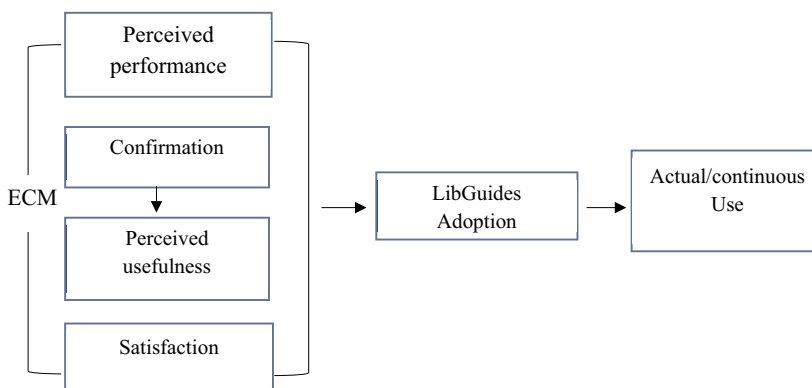


Figure 1. Research model
Source: Figure by Authors (2023)

3. Research methodology

This study employs a quantitative methodology, focusing on the University of Ghana, Legon, the sole Ghanaian institution using LibGuides for library instruction. The University of Ghana Library System (UGLS) encompasses all libraries within the university, providing essential electronic and print resources for students, researchers, faculty and the public. The study targeted the School of Engineering Science, part of the College of Basic and Applied Sciences, including the Schools of Agriculture, Biological Sciences and Physical and Mathematical Sciences. The population comprised 907 students, as the faculty had not yet been introduced to LibGuides and were thus excluded. The researcher, serving as the Subject Librarian for the School of Engineering, had previously introduced students to the digital resource, facilitating access to respondents. Following Saunders, Lewis, and Thornhill's (2012) model, a sample size of 285 was chosen at a 5% error margin for a population close to 1000. This sample size ensures representativeness, aligning with Neuman's (2007) recommendation of 30% for populations under 1000.

The questionnaire, administered to 285 students, comprised two parts: demographic information and items measuring theoretical constructs using Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree). Items from Paré *et al.* (2014) and Chen *et al.* (2013) measured "confirmation, satisfaction, and continuous use intention," with four, three and four items, respectively. Permission was obtained from the Dean of the School, and participants provided informed consent. Data collection occurred over four weeks in January 2022, with participants remaining anonymous. Descriptive statistics were used to analyze demographic data and frequencies of categorical variables. Pearson Correlation analysis, with a significance level of $p\text{-value}=0.05$, evaluated predictors of LibGuides' CUI. Continuous use is crucial for the success of technology-driven services, as users may discontinue use if initial expectations are not met (Khayer and Bao, 2020). Satisfaction with LibGuides is vital; dissatisfaction may lead users to switch to alternative services (Chuah *et al.*, 2017). Thus, the full benefits of LibGuides are realized through sustained user engagement.

4. Results and discussions

As shown in Table 1, the sample consisted of 285 respondents. The majority were male (62.5%), whereas females accounted for 37.5%. Most participants (68.4%) were aged between 18 and 29, followed by 26.0% in the 30–39 age group. Only a small percentage were aged 40 and above. Regarding academic level, respondents were primarily from Level 300 (41.4%) and Level 400 (40.4%), indicating strong representation from upper-level students. This demographic composition is relevant to the study, as it reflects the perspectives of experienced undergraduate users of online research guides in a Ghanaian university context.

Table 2 presents the distribution of LibGuides usage among different academic levels. The majority of users were Level 300 students (32.2%), followed closely by Level 400 students (29.8%). Level 200 students accounted for 23.1% of users, whereas Level 100 students made up the smallest proportion at 14.9%. This suggests that upper-level students are more likely to utilize LibGuides, possibly due to increased academic workload and research demands at higher levels of study.

In Table 3, most respondents who reported infrequent use of LibGuides were from Level 100 (49.6%), followed by Level 200 (37.2%). Fewer students in Level 300 (8.3%) and Level 400 (4.9%) reported infrequent usage. In addition, 13.2% of respondents did not indicate their academic level. These findings suggest that lower-level students (especially those in Level 100 and 200) are less familiar with or less inclined to use LibGuides regularly, possibly due to limited exposure or awareness.

Table 1. Demographic data

Variable	Category	Frequency	%
Gender	Male	178	62.5
	Female	107	37.5
Age	18–29	195	68.4
	30–39	74	26.0
	40–49	9	3.2
	50–59	7	2.5
	Level 400	115	40.4
Level of study	Level 300	118	41.4
	Level 200	34	11.9
	Level 100	18	6.3
<i>Total</i>		285	100.0

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Source(s): Table by authors (2023)

Table 2. Use of LibGuides

Level	Frequency	%
Level 400	36	29.8
Level 300	39	32.2
Level 200	28	23.1
Level 100	18	14.9
<i>Total</i>	121	100

Source(s): Table by authors (2023)

Table 3. Infrequent use of LibGuides

Level	Frequency	%
Level 400	6	4.9
Level 300	10	8.3
Level 200	45	37.2
Level 100	60	49.6
No response	16	13.2
<i>Total</i>	121	100

Source(s): Table by authors (2024)

Table 4 presents a crosstabulation of students' academic levels and their awareness of LibGuides for teaching, learning and research. The majority of students aware of LibGuides for research purposes were from Level 400 (42.9%) and Level 300 (42.9%), with only 8.7% and 5.6% from Levels 200 and 100, respectively. Awareness of LibGuides for learning purposes was also highest among Level 400 and 300 students (both 40.2%), whereas awareness was significantly lower among Level 200 (13.4%) and Level 100 (6.2%) students.

Interestingly, the highest awareness of LibGuides for teaching purposes came from Level 200 students (41.7%), followed by Level 300 (33.3%) and Level 100 (16.7%). Level 400 students showed the least awareness of LibGuides for teaching (8.3%). These findings indicate that senior-level students (Level 300 and 400) are more aware of and utilize

Table 4. Levels* LibGuides awareness (crosstabulation)

Level of study	Teaching	LibGuides Learning	Research	Total
<i>Level 400</i>				
Count	1	45	69	115
% within LibGuides	8.3	40.2	42.9	40.4
<i>Level 300</i>				
Count	4	45	69	118
% within LibGuides	33.3	40.2	42.9	41.4
<i>Level 200</i>				
Count	5	15	14	34
% within LibGuides	41.7	13.4	8.7	11.9
<i>Level 100</i>				
Count	2	7	9	18
% within LibGuides	16.7	6.2	5.6	6.3
<i>Total</i>				
Count	12	112	161	285
% within LibGuides	100.0	100.0	100.0	100.0

Source(s): Table by authors (2024)

LibGuides primarily for learning and research, whereas awareness for teaching purposes is generally low across all levels but relatively higher among Level 200 students.

Table 5 illustrates the levels of use and awareness of LibGuides among students at different academic levels. Overall, 42.5% of respondents reported being aware of LibGuides but having no practical experience using them, whereas 27.4% had some experience, and 30.2% possessed extensive knowledge of their use.

By academic level, Level 400 students had the highest proportion of users with some experience (39.1%) and extensive knowledge (34.8%), indicating relatively advanced engagement with LibGuides. Level 300 students had a high percentage (47.5%) aware but without experience, though nearly one-third (31.4%) had extensive knowledge. Lower levels showed less familiarity: 58.8% of Level 200 and 83.3% of Level 100 students were aware but lacked experience with LibGuides. Notably, no Level 100 students reported having extensive knowledge of LibGuides.

Table 5. Level of use of LibGuides

Level of use	Awareness			Total
	Aware of but have no experience with the use	Aware of but have some experience with its use	Aware of but have a lot of knowledge of its use	
Level 400	30 (26.08%)	45 (39.13%)	40 (34.78%)	115 (40.35%)
Level 300	56 (47.45%)	25 (21.18%)	37 (31.36%)	118 (41.40%)
Level 200	20 (58.82%)	5 (14.71%)	9 (26.47%)	34 (11.93%)
Level 100	15 (83.33%)	3 (16.67%)	–	18 (6.32%)
Total	121 (42.46%)	78 (27.37%)	86 (30.18%)	285 (100%)

Source(s): Table by authors (2023)

These findings suggest that engagement and proficiency with LibGuides increase with students' academic progression, emphasizing the need to enhance early-level students' exposure and practical use of these digital resources.

Cronbach's alpha evaluations of all the variables included in the study revealed that they were reliable because they were determined to be over Sekaran's 6 criteria (2005). Continuance intention to use is shown in Table 6. Cronbach's alpha reliabilities (α) were recorded by LibGuides. Perceived performance was recorded at 0.78. Satisfaction was recorded at 0.80, confirmation had a score of 0.88 and perceived usefulness was 0.71 whereas the adoption of LibGuide was recorded at 0.75. All variables were internally consistent, so they were appropriate for the study, as the least recorded a score of 0.71.

Except for items 5 ($m = 2.4$, $SD = 0.5$) and 6 ($m = 1.4$, $SD = 0.8$), all items resulted in Table 7 shown above 3. The results reveal agreement with the value of LibGuides by the library users. To ascertain the value of LibGuides in the University of Ghana, Table 6 clearly shows that users were extremely pleased with the LibGuides in the University of Ghana ($m = 4.1$, $SD = 1.1$) and the links/resources are relevant to the information needs of users ($m = 4.0$, $SD = 1.8$).

The users of LibGuides responded to the value of LibGuides in universities. Responses are captured in Table 7.

Table 7 presents responses on the level of use/value of online research guides (LibGuides) on academic learning and research among library users. The highest expectation scores by users of Research guides were 4.1 and 4.0. The scores suggest that users are extremely pleased with the LibGuides at the University of Ghana and the links/resources are relevant to

Table 6. Descriptive statistics of study variables

Study variables	N	Mean	SD	Cronbach's alpha	Mean ranking
Continuance intention to use LibGuides	285	3.14	0.393	0.72	
Perceived performance	285	3.89	0.640	0.78	1st
Satisfaction	285	3.73	0.638	0.80	2nd
Confirmation	285	3.62	0.842	0.88	3rd
Perceived usefulness	285	3.47	0.679	0.71	4th
LibGuide adoption	285	3.36	0.581	0.75	5th

Note(s): 5 = Strongly agree, 4 = agree, 3 = neutral, 2 = disagree, 1 = strongly disagree

Source(s): Table by authors (2023)

Table 7. Value of LibGuides in universities

Value	Items	Mean	SD
1	I am extremely pleased with the LibGuides at the University of Ghana	4.1	1.1
2	I am extremely satisfied with the LibGuides	3.7	0.7
3	I am delighted with the LibGuides	3.5	1.5
4	LibGuides provides accurate information resource for my research and learning	3.9	0.3
5	LibGuides provides clear information on how to use the resource	2.4	0.5
6	LibGuides are frequently updated by librarians	1.4	0.8
7	The links/resources are relevant to my information needs	4.0	1.8

Note(s): 1 = Strongly disagree, 2 = disagree, 3= neutral, 4 = agree 5 = strongly agree

Source(s): Table by authors (2023)

my information needs. Except for “Item 5” which had a mean of below 3.0, all expected attributes/factors were slightly high. It was clear that library users provide valuable information (LibGuides) in universities.

Table 8 presents the correlation coefficients among variables influencing the use and adoption of LibGuides. Continuance intention to use LibGuides shows strong positive correlations with perceived usefulness (0.764), satisfaction (0.588), perceived performance (0.562) and confirmation (0.560), all significant at the 0.01 level. LibGuide adoption also correlates positively but more moderately with continuance intention (0.325), satisfaction (0.289), confirmation (0.251) and perceived usefulness (0.246). The only nonsignificant and negative correlation observed is between LibGuide adoption and perceived performance (−0.113). These results suggest perceived usefulness and user satisfaction play key roles in predicting ongoing use and adoption of LibGuides.

This study examined multiple hypotheses relating to the essential components of these theories and Continuance Intention to Use, based on ECM theory. The study’s major findings backed up all the proposed hypotheses. Confirmation, as a post-consumption perception, both directly and indirectly increases the satisfaction and CUI of consumers through perceptions such as perceived utility in utilizing the LibGuides in the University of Ghana, according to previous studies Joo and Choi (2016). Users intend to continue using LibGuides only when libraries achieve a high level of confidence in the information resource.

Table 9 presents (40.5%) indicating unfamiliarity with LibGuides as the primary reason for non-use. Nearly a quarter (24.8%) reported relying on alternative information resources. In addition, 16.5% felt that LibGuides are not well-known or adequately

Table 8. Predictors of online research guides (LibGuides) and CUI

Study variables	1	2	3	4	5
1 Continuance Intention to use LibGuides	–				
2 Perceived performance	0.562**	–			
3 Satisfaction	0.588**	0.519**	–		
4 Confirmation	0.560**	0.650**	0.251**	–	
5 Perceived usefulness	0.764**	0.705**	0.656**	0.452**	–
6 LibGuide adoption	0.325**	−0.113	0.289**	0.251**	0.246**

Note(s): $p < 0.05$; ** $p < 0.01$, 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree 5 = strongly agree

Source(s): Table by authors (2023)

Table 9. Non-use of LibGuides

Reasons for non-use of LibGuides	Frequency	%
I have no idea what LibGuides are	6	5.00
I have other alternative information resources I consult	30	24.8
No response	16	13.2
Unfamiliar with LibGuides	49	40.5
LibGuides are not well-known or well-understood	20	16.5
Total	121	100

Source(s): Table by authors (2024)

understood. A smaller portion (5.0%) had no idea what LibGuides were, whereas 13.2% did not respond to this question. These findings highlight a significant awareness gap and suggest a need for better promotion and user education regarding LibGuides in Ghanaian universities.

Table 10 shows that most respondents (57.54%) are very likely to recommend LibGuides to others, indicating strong approval. An additional 21.05% expressed that they are likely to recommend them. Conversely, 16.14% are unlikely and 5.26% are very unlikely to recommend LibGuides. Overall, the findings suggest positive user perceptions and a high potential for peer advocacy regarding LibGuides in the university setting.

5. Conclusion

The findings of this study shed light on the usage and perceptions of LibGuides among library users in Ghanaian universities. Despite a relatively high level of awareness among respondents, the actual usage of LibGuides for teaching, learning and research purposes remains low, especially among higher-level students. This indicates a disparity between awareness and utilization of this information resource. The article set out to explore library users' awareness, usage and continuance intention regarding online research guides (LibGuides) in Ghanaian universities. The findings reveal that while a significant proportion of users are aware of LibGuides, actual usage varies across academic levels, with higher-level students demonstrating greater engagement. The study also highlights that satisfaction, perceived usefulness and confirmation of expectations are key determinants influencing users' intention to continue using LibGuides. However, lack of familiarity and awareness remains a major barrier to wider adoption.

These insights underscore the critical role librarians play in not only developing but actively promoting and training users on the effective utilization of LibGuides. To maximize the benefits of these digital resources, university libraries must invest in targeted awareness campaigns and user education, ensuring that students across all levels can harness LibGuides to enhance their academic learning and research. Overall, our study contributes valuable evidence to inform strategies that will improve the instructional quality and utilization of online research guides in Ghanaian higher education institutions, supporting the evolving digital mandate of academic libraries.

Strategies aimed at raising awareness, providing training and support and enhancing the visibility and accessibility of LibGuides are essential to address the identified barriers to usage. Subject librarians play a crucial role in promoting LibGuides within their respective departments and colleges, and their efforts can contribute to increasing the adoption and utilization of this valuable resource for academic purposes.

Table 10. Recommending LibGuides

Recommending LibGuides	Frequency	%
Very unlikely	15	5.26
Unlikely	46	16.14
Likely	60	21.05
Very likely	164	57.54
Total	285	100

Source(s): Table by authors (2023)

5.1 Practical and theoretical implication

The outcomes of the research have both practical and theoretical ramifications.

5.1 Practical implications

Promotion and training: University libraries in Ghana should focus on promoting the use of LibGuides among their patrons through targeted promotional campaigns and training sessions. These initiatives can help familiarize users with the features and benefits of LibGuides, thereby increasing adoption rates.

User support: Libraries should provide ongoing user support and assistance to help address any challenges or questions that users may encounter while accessing or using LibGuides. This can include offering online tutorials, help guides and dedicated support channels to enhance the user experience.

Content relevance: Librarians should continuously update and curate the content available in LibGuides to ensure its relevance and usefulness to users' information needs. Regularly reviewing and refreshing the resources and links provided can help maintain user satisfaction and engagement.

Collaboration with Subject Librarians: Subject librarians can play a crucial role in promoting LibGuides within their respective academic departments and colleges. Collaborative efforts between subject librarians and faculty members can help integrate LibGuides into the curriculum and encourage its use among students and researchers.

5.2 Theoretical implications

Extension of ECM: The study extends the application of the ECM to the context of online research guides, specifically LibGuides, in higher education settings. By demonstrating the model's applicability in this context, the study contributes to the theoretical understanding of user acceptance and usage behavior in information systems.

Importance of user satisfaction: The findings highlight the significance of user satisfaction as a determinant of continued usage intention in the context of LibGuides. This underscores the importance of designing and delivering online information resources that meet users' expectations and needs to foster continued engagement and utilization.

Identification of barriers: The study identifies key barriers to the adoption and usage of LibGuides, such as users' unfamiliarity with the platform and the availability of alternative information sources. Understanding these barriers contributes to a deeper understanding of the factors influencing user behavior and can inform strategies to overcome adoption challenges.

Role of subject librarians: The study underscores the influential role of subject librarians in promoting and supporting the use of LibGuides within academic institutions. This highlights the importance of considering organizational and contextual factors, such as institutional support structures and librarian engagement, in the successful implementation of online research guides.

References

- Alverson, J., LeFager, J., Schwartz, J. and Brunskill, A. (2015), "Creating an audience and environment-friendly research guides: findings from a user study", *Association of College and Research Libraries Conference, Portland, OR*, March, pp. 125-133, available at: www.ala.org/acrl/sites/ala.org.acrl/files/content/conferences/confsandpreconfs/2015/Alverson_Schwartz_Brunskill_Lefager.pdf (accessed 8 April 2019).

- Alzahrani, I. (2013), "The impact of using wiki technology in learning biology among Al-Baha university students: perceptions, knowledge, e-learning skills and attitudes", Doctoral dissertation, University of Southampton.
- Bakare, O.D. (2018), "The use of social media technologies (SMTs) in the provision of library and information services in academic libraries of South-West, Nigeria", Doctoral dissertation.
- Bangani, S. and Tshetsha, V. (2019), "The deployment and impact of LibGuides at public universities in South Africa", *International Information and Library Review*, Vol. 51 No. 2, pp. 107-119.
- Bowen, A. (2014), "LibGuides and Web-Based library guide in comparison: is there a pedagogical advantage?", *Journal of Web Librarianship*, Vol. 8 No. 2, pp. 1-25.
- Brewer, L., Rick, H. and Grondin, K.A. (2017), "Improving digital library experiences and support with online research guides", *Online Learning*, Vol. 21 No. 3, pp. 135-150, doi: [10.24059/olj.v21i3.1237](https://doi.org/10.24059/olj.v21i3.1237).
- Castro-Gessner, G., Wilcox, W. and Chandler, A. (2013), "Hidden patterns of LibGuides usage: another facet of usability", *ACRL*, pp. 10-13.
- Chee, M. and Weaver, K.D. (2021), "Meeting a higher standard: a case study of accessibility compliance in LibGuides upon the adoption of WCAG 2.0 guidelines", *Journal of Web Librarianship*, Vol. 15 No. 2, pp. 69-89.
- Chen, S.C., Liu, M.L. and Lin, C.P. (2013), "Integrating technology readiness into the expectation–confirmation model: an empirical study of mobile services", *Cyberpsychology, Behavior, and Social Networking*, Vol. 16 No. 8, pp. 604-612, doi: [10.1089/cyber.2012.0606](https://doi.org/10.1089/cyber.2012.0606).
- Chiware, M. (2014), "The efficacy of course-specific library guides to support essay writing at the university of Cape Town", *South African Journal of Libraries and Information Science*, Vol. 80 No. 2, pp. 27-35, available at: <http://sajlis.journals.ac.za/pub/article/view/1522/1425> (accessed 25 September 2019).
- Chuah, S.H.W., Rauschnabel, P.A., Marimuthu, M., Thurasamy, R. and Nguyen, B. (2017), "Why do satisfied customers defect? A closer look at the simultaneous effects of switching barriers and inducements on customer loyalty", *Journal of Service Theory and Practice*, Vol. 27 No. 3, pp. 616-641.
- Deegan, M. and Tanner, S. (Eds) (2006), *Digital preservation*, London: Facet publishing.
- DeVill, S.D. and Sughrue, J.A. (2023), "Linking library use to student engagement", *Journal of Library Administration*, Vol. 63 No. 2, pp. 179-199.
- Eghe-Ohenmwun, A. (2015), "Best practices for repositioning, towards global competitiveness in academic libraries of Privately-Owned universities (ALPUS) in Nigeria", *Journal of Education and Practice*, Vol. 6 No. 13, pp. 50-53.
- England, L. and Fu, L. (2011), "Electronic resources evaluation central: using off-the-shelf software, web 2.0 tools, and libguides to manage an electronic resources evaluation process", *Journal of Electronic Resources Librarianship*, Vol. 23 No. 1, pp. 30-42.
- Erb, A.R. and Erb, B. (2015), "An investigation into the use of LibGuides for electronic resources troubleshooting in academic libraries", *The Electronic Library*, Vol. 33 No. 3, pp. 573-589.
- Gani, E. and Magoi, J.S. (2014), "The emergence of digital libraries services in northwest Nigerian universities: challenges and prospects", *Library Philosophy and Practice*, No. 1.
- Gessner, G.C., Chandler, A. and Wilcox, W.S. (2015), "Are you reaching your audience? The intersection between LibGuide authors and LibGuide users", *Reference Services Review*, Vol. 43 No. 3, pp. 491-508.
- Gilbert, J., Knutson, K. and Gilbert, C. (2012), "Adding an integrated library component to an undergraduate research methods course", *PS: Political Science and Politics*, Vol. 45 No. 1, pp. 112-118, doi: [10.1017/S1049096511001788](https://doi.org/10.1017/S1049096511001788).
- Gonzalez, A. and Westbrook, T. (2010), "Reaching out with LibGuides: establishing a working set of best practices", *Journal of Library Administration*, Vol. 50 Nos 5-6, pp. 638-656, doi: [10.1080/01930826.2010.488941](https://doi.org/10.1080/01930826.2010.488941).

- Grassian, E. and LeMire, S. (2017), "LibGuides for instruction: a service DesignPoint of view from academic library", *Information Literacy and Instruction*, Vol. 56 No. 3, pp. 162-167.
- Griffin, M. and Lewis, B. (2011), "Transforming special collections through innovative uses for LibGuides", *Collection Building*, Vol. 30 No. 1, pp. 5-10.
- Hennesy, C. and Adams, A.L. (2021), "Measuring actual practices: a computational analysis of LibGuides in academic libraries", *Journal of Web Librarianship*, Vol. 15 No. 4, pp. 219-242.
- Highton, M. (2017), *Student Digital Experience*, Information Services Group, The University of Edinburgh, Edinburgh.
- Himoonga, R. (2020), "Increasing the use of e-learning platforms in tertiary learning institutions for blended distance programmes in Zambia", Doctoral dissertation, The University of Zambia.
- Jaber, O.A. (2016), "An examination of variables influencing the acceptance and usage of E-learning systems in Jordanian higher education institutions", Doctoral dissertation, Cardiff Metropolitan University.
- Joo, S. and Choi, N. (2016), "Understanding users' continuance intention to use online library resources based on an extended expectation-confirmation model", *The Electronic Library*, Vol. 34 No. 4, pp. 554-571.
- Khayer, A. and Bao, Y. (2020), "The continuance usage intention of alipay: integrating context-awareness and technology continuance theory (TCT)", *The Bottom Line*, Vol. 32 No. 3, pp. 211-229, doi: [10.1108/BL-07-2019-0097](https://doi.org/10.1108/BL-07-2019-0097).
- Krishnamurthy, M., Roopa, G. and Reddy, S. (2018), "Provision of E-resources in engineering college libraries in India: a pilot study", *International Journal of Library and Information Science*, Vol. 10 No. 8, pp. 85-93, doi: [10.5897/IJLIS2018.0849](https://doi.org/10.5897/IJLIS2018.0849).
- Lamprey, R., and Agyen-Gyasi, K. (2015), *A Vision of the Future Academic Libraries in Ghana*, University Library, Kwame Nkrumah University of Science and Technology, Ghana, pp. 1-21.
- Lauseng, D.L., Howard, C., Scoulas, J.M. and Berry, A. (2021), "Assessing online library guide use and open educational resource (OER) potential: an evidence-based decision-making approach", *Journal of Web Librarianship*, Vol. 15 No. 3, pp. 128-153.
- Lewis, B. and Griffin, M. (2011), "Special collections and the new web: using LibGuides to provide meaningful access", *Special and Digital Collections Faculty and Staff Publications. Paper*, Vol. 23 No. 1, available at: <http://scholarcommons.usf.edu/tlsdc/12>
- Logan, J. and Spence, M. (2021), "Content strategy in LibGuides: an exploratory study", *The Journal of Academic Librarianship*, Vol. 47 No. 1, p. 102282.
- Miner, J. and Alexander, R. (2010), "LibGuides in political science: improving student access, research, and information", *Literacy. Journal of Information Literacy*, Vol. 4 No. 1, pp. 40-54.
- Ming-der, W. and Shih-Chuan, C. (2012), "How graduate students perceive, use, and manage electronic resources", *Aslib Proceedings*, Vol. 64 No. 6, pp. 641-652, doi: [10.1108/00012531211281779](https://doi.org/10.1108/00012531211281779).
- Mwanzu, A., Nakaziba, S., Karungi, J., Ayebazibwe, E. and Gatiti, P. (2022), "Adoption of LibGuides as a reference service in academic libraries: insights from Aga khan university, Uganda", *The Journal of Academic Librarianship*, Vol. 48 No. 4, p. 102560.
- Neuhaus, C., Cox, A., Gruber, A.M., Kelly, J., Koh, H., Bowling, C. and Bunz, G. (2021), "Ubiquitous LibGuides: variations in presence, production, application, and convention", *Journal of Web Librarianship*, Vol. 15 No. 3, pp. 107-127.
- Neuman, W.L. (2007), *Basics of Social Research: Qualitative and Quantitative Approaches*, 2nd ed., Allyn and Bacon, Boston, MA.
- Ojo, A.I. (2017), "Validation of the DeLone and McLean information systems success model", *Healthcare Informatics Research*, Vol. 23 No. 1, pp. 60-66.
- Osorio, N.L. (2015), "Electrical engineering reference resources: a survey from LibGuides", *Collection Building*, Vol. 34 No. 1, pp. 6-12.
- Ouyang, Y., Tang, C., Rong, W., Zhang, L., Yin, C. and Xiong, Z. (2017), "Task-Technology fit aware Expectation-Confirmation model towards understanding of MOOCs continued usage intention",

- Proceedings of the 50th HI International Conference on System Sciences*, Waikoloa, HI, USA, 4–7 January 2017.
- Owusu-Ansah, S. (2021), “Reshaping strategies of university libraries in Ghana towards sustainable development goal 4”, *Mousaion: South African Journal of Information Studies*, Vol. 39 No. 1, p. 25, doi: [10.25159/2663-659X/7126](https://doi.org/10.25159/2663-659X/7126).
- Owusu-Ansah, S. and van der Walt, T. (2021), “Responding to COVID-19 pandemic: applying the dynamic capability framework in university libraries”, *Handbook of Research on Library Response to the COVID-19 Pandemic*, doi: [10.4018/978-1-7998-6449-3.ch004](https://doi.org/10.4018/978-1-7998-6449-3.ch004).
- Paré, G., Trudel, M.C. and Forget, P. (2014), “Adoption, use, and impact of e-booking in private medical practices: a mixed-methods evaluation of a two-year showcase project in Canada”, *JMIR Medical Informatics*, Vol. 2 No. 2, p. e24, doi: [10.2196/medinform.3669](https://doi.org/10.2196/medinform.3669).
- Raju, R., Raju, J. and Johnson, G. (2016), *Research support services in South African academic libraries, In Quality and the Academic Library*, Chandos Publishing, pp. 167-177.
- Ream, T. and Parker-Kelly, D. (2016), “Expanding library services and instruction through LibGuides”, *Medical Reference Services Quarterly*, Vol. 35 No. 3, pp. 342-349.
- Smulewitz, G., Celano, D., Andrade, J.L. and Leshner, M. (2013), “ROI or bust: a glimpse into how librarians, publishers, and agents create value for survival”, *The Serials Librarian*, Vol. 64 Nos 1-4, pp. 216-223.
- Soong, S. and Chan, D.L.H. (2010), “Strategic Re-positioning in a dynamic environment”, *ALSR 2010: Conference towards future possibilities*, pp. 1-16
- Tait, E., Martzoukou, K. and Reid, P. (2016), “Libraries for the future: the role of IT utilities in the transformation of academic libraries”, *Palgrave Communications*, Vol. 2 No. 1, pp. 1-9.
- Thorngate, S. and Hoden, A. (2017), “Exploratory usability testing of user interface options in LibGuides 2”, *College and Research Libraries*, Vol. 78 No. 6, pp. 844-861.
- Ujakpa, M.M. (2020), “Developing an expanded technological acceptance model for evaluating e-learning in the Sub-Saharan African environment”, Doctoral dissertation.
- Zhou, J. (2017), “Exploring the factors affecting learners’ continuance intention of MOOCs for online collaborative learning: an extended ECM perspective”, *Australasian Journal of Educational Technology*, Vol. 33, pp. 123-135.

Further reading

- Bergstrom-Lynch, Y. (2019), “LibGuides by design: using instructional design principles and user-centred studies to develop best practices”, *Public Services Quarterly*, Vol. 15 No. 3, pp. 205-223.
- Bielat, V., Befus, R., and Arnold, J. (2013), “Integrating LibGuides into the teaching-learning process”, in Dobbs, A.D., Sittler, R.L. and Cook, D. (Eds), *Using LibGuides to Enhance Library Services*, ALA, Chicago, pp. 121-142.
- Clever, K.A. (2020), “Connecting with faculty and students through course-related LibGuides”, *Pennsylvania Libraries: Research and Practice*, Vol. 8 No. 1, pp. 49-57.
- Dobbs, A.W., Sittler, R.L. and Core, D.C. (2013), *Using LibGuides to Enhance Library Services: A LITA Guide—eEditions*, ALA Neal-Schuman CorE.
- Ghaphery, J. and White, E. (2012), “Library use of web-based research guides”, *Information Technology and Libraries*, Vol. 31 No. 1, pp. 21-31, doi: [10.6017/ital.v31i1.1830](https://doi.org/10.6017/ital.v31i1.1830).
- Habiba, U. and Ahmed, S.Z. (2020), “ICT infrastructure and access to online services: determining the factors affecting faculty satisfaction with university-subscribed resources”, *International Information and Library Review*, Vol. 53 No. 2, pp. 112-130.
- Hixon, E., Barczyk, C., Ralston-Berg, P. and Buckenmeyer, J. (2016), “The impact of previous online course experience RN students’ perceptions of quality”, *Online Learning*, Vol. 20 No. 1, pp. 25-40.
- Hopper, T.L. (2021), “Accessibility and LibGuides in academic libraries”, *The Southeastern Librarian*, Vol. 68 No. 4, p. 4.

- Huang, Y.M. (2019), "Examining students' continued use of desktop services: perspectives from expectation-confirmation and social influence", *Computers in Human Behavior*, Vol. 96, pp. 23-31.
- Joo, Y.J., Park, S. and Shin, E.K. (2017), "Students' expectation, satisfaction, and continuance intention to use digital textbooks", *Computers in Human Behavior*, Vol. 69, pp. 83-90.
- Khailova, L. (2022), "Developing and incorporating impactful library research guides for online and hybrid learners", *Creating Inclusive and Engaging Online Courses*, Edward Elgar Publishing, New York, NY, pp. 103-119.
- Korkuvi, P.J., Budu, S. and Owusu-Ansah, S. (2022), "Promoting university research output in Ghana through open access institutional repository", *African Journal of Library, Archives and Information Science*, Vol. 32 No. 2, pp. 193-213.
- Lahiya, A. and Mokodenseho, S. (2023), "Examining the relationship between technological infrastructure and the quality of online education programs", *West Science Interdisciplinary Studies*, Vol. 1 No. 2, pp. 74-83.
- Mamun, M.R.A., Senn, W.D., Peak, D.A., Prybutok, V.R. and Torres, R.A. (2020), "Emotional satisfaction and is continuance behavior: reshaping the expectation-confirmation model", *International Journal of Human-Computer Interaction*, Vol. 36 No. 15, pp. 1437-1446.
- May, D. and Leighton, H.V. (2013), "Using a library-based course page to improve research skills in an undergraduate international business law course", *Journal of Legal Studies Education*, Vol. 30 No. 2, pp. 295-319, doi: [10.1111/jlse.12003](https://doi.org/10.1111/jlse.12003).
- Mensah, M. and Onyancha, O.B. (2022), "Ghanaian academic libraries' use of social media: a structural equation modelling approach", *Information Development*, Vol. 38 No. 2, pp. 323-342.
- Mtebe, J. and Gallagher, M. (2022), "Continued usage intentions of digital technologies Post-Pandemic through the Expectation-Confirmation model: the case of a Tanzanian university", *International Journal of Education and Development Using Information and Communication Technology*, Vol. 18 No. 1, pp. 125-145.
- Osorio, N.L. (2014), "Content analysis of engineering LibGuides", *Proceedings of 2014 American Society for Engineering Education Annual Conference, Engineering Libraries Division, ASEE, Washington, DC*, p. 22, available at: www.asee.org/public/conferences/32/papers/10718/ (accessed 15 July 2019).

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