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# Awareness and Use of Digital Reference Services in Academic Libraries in Ghana

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## ABSTRACT

The traditional reference service in academic libraries is gradually integrating digital modes of communication culminating in digital reference services (digital reference services). This study seeks to explore the extent to which digital reference services support user needs in academic libraries in Ghana. Specifically, the study was concerned with users' awareness, preference and motivation for using digital reference services in three selected Academic Libraries in Ghana. Making use of a mixed-method research design, a total of 413 digital reference services users, 3 heads of university libraries, 3 heads of Information Technology (IT) and 7 digital reference services Librarians, from across three Academic Libraries, were selected to participate in the study. The results indicated that despite the utility of both, there was a preference for traditional reference in the three Academic Libraries. However, the use of digital reference services surged during quizzes, mid-semester examinations, interim assessments and end-of-semester examinations. With respect to the popularity of the various digital reference services platforms, users preferred email over other digital platforms. The results also indicated that the respondents used digital reference services when they were off-campus, while mobile phones were the most common digital tool for accessing digital reference services. Ultimately, digital reference services were found to considerably improve the use of library services. Implications of the results are discussed.

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## 1. Introduction

The advancement of information and communication technologies (ICT), increase in the use of the internet and other technologies have impacted hugely on reference services as well as the approaches and expectations of librarians and patrons. Consequently, academic libraries are adopting more technologies to enhance reference services to accomplish users' needs in the virtual environment. The provision of reference services is a link between patrons' needs and the resources available in the libraries

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(Yonus, 2014). According to Cummings, Cummings, and Frederiksen (2007), digital reference services is extensively helping in the delivery of quality library services. Digital reference services in one way or the other satisfy the informational needs of users as librarians can deliver materials and other relevant resources to the user. Yonus (2014) underscores how digital reference services enhance virtual access to information and reduces the cost of information. The service may extend when the library is closed. Digital reference service provides a faster method of accessing and utilizing information. This serves as a useful channel for the dissemination of knowledge and also powerful machinery that can help improve study performance (Okongo, 2014).

The provision of real-time reference services, collaborative networks among libraries, development of quality technical standards for digital reference services in academic libraries are very limited (Kasowitz, 2001) and virtually non-existent in many academic libraries in Ghana. Limited literature has been found to establish the level of application of digital reference services in Ghanaian academic libraries. For instance, Ahenkorah-Marfo (2015) examines the knowledge and use of social media by reference and user services librarians in Ghana. This study, however, fails to assess the knowledge level from library user perspectives. Idan (2017) also studied digital reference services in academic libraries in Ghana but limited the scope to only one public university, KNUST. From the literature, there is no confirmation whether patrons have received adequate education on digital reference services and whether they receive prompt responses to their queries or are satisfied with the responses provided by the librarians (Nordin, Kassim, & Baharuddin, 2012). Thus the extent of users' dissatisfaction or complaint of poor information service delivery by the academic library may continue to be ignored. As a result, this study attempts to provide evidence of the level of knowledge of digital reference services from both user-side and service provider (librarians) perspectives. Aside, the sample of this study allows for comparative analysis among academic libraries in Ghana, thus bridging the gap in the study of digital reference services in Ghana. It is for this reason that the study seeks to explore the extent to which digital reference services support user needs in academic libraries in Ghana. Specifically, the study seeks to:

- To investigate users' awareness and use of digital reference services in the three selected Academic Libraries in Ghana.
- To determine users' preference of digital reference services in the three selected Academic Libraries.
- To explore users' motivation for using digital reference services in Academic Libraries.

## 2. Literature Review

The review of the related literature section focuses on the following thematic areas: traditional reference services vs digital reference services; awareness of digital reference services in academic libraries; digital reference services through library websites; and how librarians work with digital reference services.

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### *2.1. Traditional Reference Services versus Digital Reference Services*

The traditional reference service remains the most used service in the library. It is the first point of getting help in the library. According to Granfield and Robertson (2008), traditional reference counter remains users' first choice in getting information. Also, it is the most used reference method for getting help in the library. Lankes, McClure, and Gross (2001) opine that reference services are constantly rising from the traditional method to automated, hybrid, and digital as part of the function of library services. Quadri and Aboidun (2017) also aver that academic libraries were the first to implement digital reference services in the early 1980s, whereas the study of Kadir Wan Dollah and Singh (2012) made it clear that libraries and librarians are trying their best to satisfy library customer through digital reference service.

### *2.2. Awareness of Digital Reference Services in Academic Libraries*

There are several ways in which libraries and librarians could adopt in creating awareness of digital reference services. In a study by Qobose and Mologanyi (2015) at the University of Botswana Library, students were asked if they were aware of digital reference services in the library, about 74% strongly agreed that they were aware whilst the remaining 26% disagreed. A greater number agreed because, at the University of Botswana Library, digital reference services were promoted at library exhibitions, important occasions on campus such as information literacy week and also during presentations at faculty and departmental meetings. This indicates that at the University of Botswana, most students are aware of the service in the library.

Academic libraries need to develop a high marketing strategy to create awareness about the availability of digital reference services in the library. Librarians should have a clear professional understanding of the help-seeking preference of library clients. Awareness and exposure to digital reference services in the library can influence the help-seeking choices and preferences of library clients (Pomerantz & Luo, 2006). According to Yonus (2014), one of the strategies of marketing digital reference services is to place a link to digital reference services on the library's homepage. The position of the digital reference services link on the library's website is a good strategy that enables users to discover the digital reference service easily. However, in Pakistan half of the libraries have buried digital reference services links under some other links on their homepages which had made it difficult for users to locate the service. Continuously, academic libraries must put in place effective marketing strategies to publicize their digital reference services. The marketing strategies would help to expose and promote digital reference services to users. However, it is not enough to put a link to digital reference services on the library's website on digital reference services but it is equally important to promote digital reference services with the use of library instruction and posters. To keep digital reference services going staff promotion of the service is another important marketing approach. Librarians must work diligently to liaise with academic staff and researchers in the use of digital reference services (Connaway & Radford, 2011).

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### *2.3. Digital Reference Services through Library Websites*

To fulfill users' information needs in the web environment, some African countries are embracing new technologies to reshape and improve their reference services. Nowadays, more and more academic libraries are developing their websites. The emphasis has shifted from processing printed materials to providing access to information via the web. For instance, Aman's (2004) study in Malaysia indicates that all 10 public academic libraries have their websites. The study of Sekyere (2011) in 10 West African countries with 60 academic libraries confirms that 11 libraries (18%) had digital reference services on their library website. Ayiah and Kumah's (2011) results at the University of Education, Winneba indicates that the library has a website but there were no digital reference services attached to the library website. Nevertheless, Ahenkorah-Marfo (2015) states that in Ghana, the use of social media, which is another tool for digital services in reference services, is gradually catching up with librarians in universities. He observed the websites of some universities in Ghana including the University of Ghana, Kwame Nkrumah University of Science and Technology Library (KNUST), University of Cape Coast, Valley View University, Ghana Technology University College, and Ashesi University College and confirmed that these universities had websites linked to at least two social media sites as a tool for digital reference services.

### *2.4. Librarians Working with Digital Reference Services*

As libraries evolve to digital, some librarians have considered how to adjust reference services to the new virtual environment. Over the last two decades with the emergence of information technology, the role of the librarian has changed greatly and this has brought a huge impact on librarianship and information provision. The reference librarian duty has developed from collector and preserver of information resources to very complex issues of the organization, dissemination, and access to information (Schement, 2002). According to Gross, McClure et al. (2002), selecting staff to handle digital reference services depends on the library's choice and the distribution of workload. In some libraries, the reference staff handles both traditional and digital references at the reference desk, while in some other libraries select staff provides the digital reference services.

Sloan (1998) opines that the work of digital reference should be designated to a separate library staff devoted exclusively to the operation of digital reference services or equally allocated among library staff. Lankes and Kasowitz (1998) urge that librarians who are selected to work with digital reference services must be physically competent in reference services to be trained to raise their competency, skills and comfort level in working with digital reference services. Furthermore, Strong (2006) states that many librarians working with digital reference services are used to traditional reference services. It is commendable for digital reference services librarians to have competencies such as the ability to respond to all inquiries, being a proactive, knowledgeable, active listener and being neutral in opinions about the information provided. Also, librarians should possess good searching skills, the ability to write concise messages and the ability to deal with stressed and demanding users. They require new skills to be able to thrive in a digital environment (Francoeur, 2001).

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Rodwell (2001) avers that librarians require higher technological skills. They should be knowledgeable beyond the collections of their libraries' resources. He further concludes that a librarian in charge of digital reference services must understand the dynamics of production and dissemination of information in a virtual field and how it is received and accessed by clients. To improve and strengthen library support to users, it is critical for librarians in developing countries to understand how library practices are changing and what is required of them concerning skills (Koelen & Quaye-Ballard, 2009). According to IFLA (2008) guidelines, for libraries to continue the use of digital reference services, responsibilities should be shared among staff. Also, the selection of digital reference services staff should be selected based on ability, interest, availability, and skills to use the supporting technology.

### 3. Methodology

The study was completed through a mixed-method research design. This design was used to gather data to address the research questions. The target population for the study consisted of the following groups in the three selected academic libraries in Ghana: digital reference services users, heads of the libraries, heads of Information Technology (IT) and digital reference services Librarians. Preliminary information indicated that UG had a digital reference services user population of about seven hundred and thirty-two (732), two (2) digital reference services Librarians and the head of IT at its Balme Library. KNUST had a user population of about six hundred and forty-seven (647), three (3) digital reference services Librarians and the head of IT. Also, UCC had a user population of six hundred and twenty-one (621), 2 digital reference services Librarians and the head of IT. Together with the heads of the various selected libraries, the population for the study was two-thousand and thirteen (2,013) (field data, 2017). Data on digital reference services was obtained between the periods of August 2017 and March 2018. This can be seen in **Table 1**.

**Table 1.** Sampling

Academic library	Heads of Library	digital reference services Librarian	Heads of IT	Users (20%)	Total
UG	1	2	1	146.4	150.4
KNUST	1	3	1	129.4	134.4
UCC	1	2	1	124.2	128.2
Total	3	7	3	400	413

Source: Survey data (2017)

Finally, the researcher stratified the digital reference services users in the various institutions and employed the convenience sampling procedure. The convenience sampling method was used to sample individual respondents of digital reference services users' from the three institutions. The researcher contacted heads of IT for phone numbers and emails of users who had used the digital reference services for their informational needs from August 2017 to March 2018. The researcher

then contacted users who were available and willing to answer the research questions. The researcher used Google Forms as a means of generating and administering the online questionnaire. Different Uniform Resource Locator (URL) links to the questionnaire were generated from Google form for the three institutions to obtain varied responses from each institution. The URL links were sent to respondents through WhatsApp and e-mails to answer the questions. The researcher introduced the subject to the respondents who answered the research questions online. The questionnaire contained open and close-ended questions on a five (5) point Likert scale in the following order, strongly disagree, disagree, neutral, agree and strongly agree. The close and open-ended questions enabled the respondents to choose from alternative answers given as well as expressing their views on the topic. This enabled the researcher to cover a broader area for better deductions and analysis.

The questionnaires were distributed to the target samples until the required number was obtained. Also, one-on-one interviews were scheduled with the heads of the library, digital reference services librarians, and heads of IT and these were structured under themes. Section A of the questionnaires and the interviews centered on biographic data of respondents while the rest of the section addressed the objectives of the study. The Google form tool was used for the analysis of the questionnaires. Descriptive statistics such as frequencies and percentages were used to discuss the results based on the objectives of the study. This tool was employed because the tool can be used to collect, analyze and organize data (Bennett, 2016). The interviews were transcribed qualitatively using the thematic content analysis based on the objectives of the study. Content analysis has been used by survey researchers to understand the lived experiences of subjects (McKenna, Brooks, & Vanderheide, 2017).

## 4. Results

### 4.1. Reference Service Type

The researcher probed from users the type of reference service used for reference questions in their libraries. The researcher asked respondents to indicate whether they use Traditional Reference Service (traditional reference services), Digital reference service (digital reference services) or both services. The result is found in **Table 2**.

In **Table 2**, the total respondents who used the traditional reference services constituted 70 (23.3%), 60 (20%) used digital reference services for their reference queries while 170 (56.7%) used both the traditional face-to-face and digital reference services for reference questions. It can be said that users from the three institutions used both digital reference services and traditional reference services for their reference queries. Comparatively, among the three institutions, users from UG 62 (20.7%) used both traditional reference services and digital reference services than all the other two institutions.

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**Table 2.** Types of reference service

Variable	UG		KNUST		UCC		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Traditional reference services	30	10	20	6.7	20	6.7	70	23.3
Digital reference services	20	6.7	20	6.7	20	6.7	60	20
Both	62	20.7	50	16.7	58	19.3	170	56.7

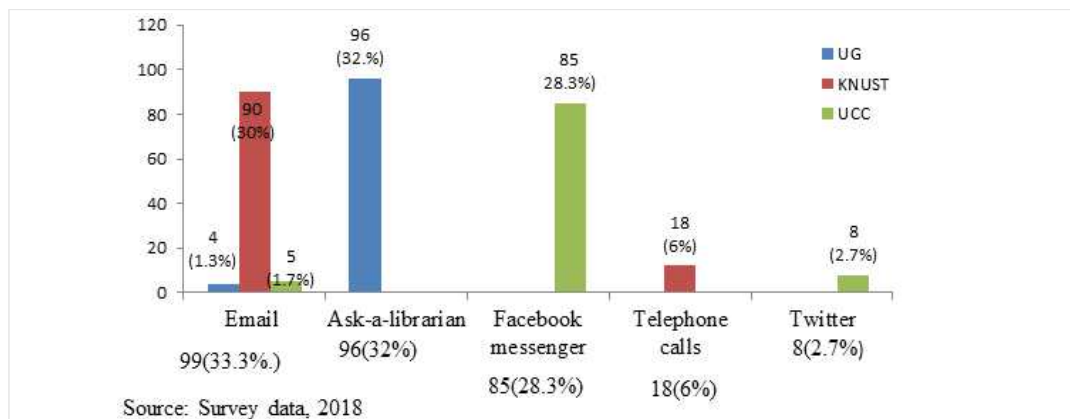
Source: Survey data (2018)

#### 4.2. Awareness of digital reference services

This section involves results on respondents’ awareness of digital reference services.

#### 4.3. Digital reference services platforms used in Libraries

The researcher asked users to indicate the digital reference services platform they use in asking their reference questions. The responses are depicted in **Fig 1**. **Fig. 1** revealed that the total respondents of 99 (33%) use email for their reference questions. 90 (30%) use Ask-a- librarian mainly for UG users, at UCC, 85 (28.3 %) and 14 (4.7%) users used Facebook messenger and Twitter handle respectively, whereas 12 (4%) used telephone calls at KNUST. However, none of the institutions used text messages. It was found that the three libraries used different types of digital reference services at their libraries; however, email was a common digital reference services platform among the three institutions KNUST 90 (30%) used email reference services than all the three institutions. The interviews also revealed that all the involved libraries used at least two platforms for their digital reference service. The email was the common digital reference services platform among the three institutions; also UG was the only institution with Ask-a-Librarian service. It was revealed that KNUST used the email platform and telephone calls. Formally KNUST operated the text message services but currently, the service was unavailable. UCC used the Facebook messenger and Twitter handle. Moreover, participant librarians pointed out that the preferred digital reference services platform was based on the availability of that particular digital reference services in the institution.

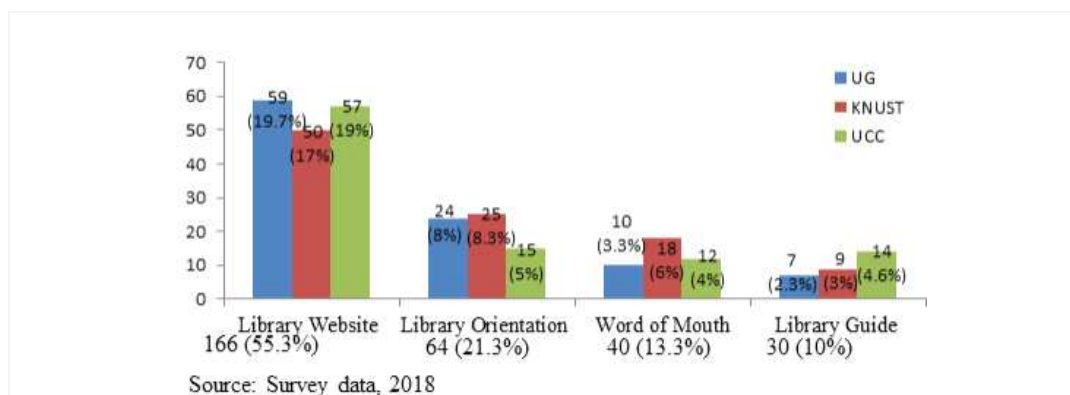


**Fig. 1.** digital reference services platforms used in academic Libraries

#### 4.4. Channels of Awareness

The researcher asked respondents how they found out about digital reference services. It was discovered from the analysis that respondents got to know about digital reference services from the library’s website. The results are represented in **Fig. 2**.

From **Fig. 2** more than half of the total respondents 166 (55.3%) got to know about digital reference services via the library website, 64(21.3%) got to know about digital reference services during library orientation, 40 (13.3%) was by word of mouth, while 30 (10%) got to know from the library guide. This indicated that the library website plays a role in creating awareness in the use of digital reference services and users of UG 59 (19.7%) recorded the highest response, followed by UCC 57 (19%) and KNUST 50 (17%).



**Fig. 2.** Channel of Awareness

Librarians indicated that digital reference services were marketed through their institutional websites, during orientations, training programs, flyers and posters were used to create awareness among users. One of the participants in one of the institutions had this to say about awareness creation:



“The library does a lot of publicity on digital reference services. The library website, orientation and training programmes…”.

#### 4.5. Places of Access

Additionally, the researcher asked users about the place of access. The responses are presented in **Table 3**. From **Table 3**, it was recorded that more than half of the total respondents 165 (55%) access digital reference services off-campus, while the rest 135 (45%) accessed digital reference services on-campus. This revealed that it is possible to access digital reference services off-campus. Among the three institutions, the highest respondents on the above question were from UG 65 (21.7%), followed by KNUST 58 (19.3%) before UCC 43 (14.3%).

**Table 3.** Place of Access

Variable	UG		KNUST		UCC		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
On-campus	35	11.7	45	15	55	18.3	135	45
Off-campus	65	21.7	58	19.3	43	14.3	165	55

Source: Survey data (2018)

This was also confirmed by librarians that digital reference services can be accessed on-campus and off-campus. This was affirmed by a participant as follows:

“Digital reference services save students time and energy used for coming to the library. On-campus campus and non-residence students may not have to travel to the library…”

#### 4.6. Access to digital reference services after Library Hours

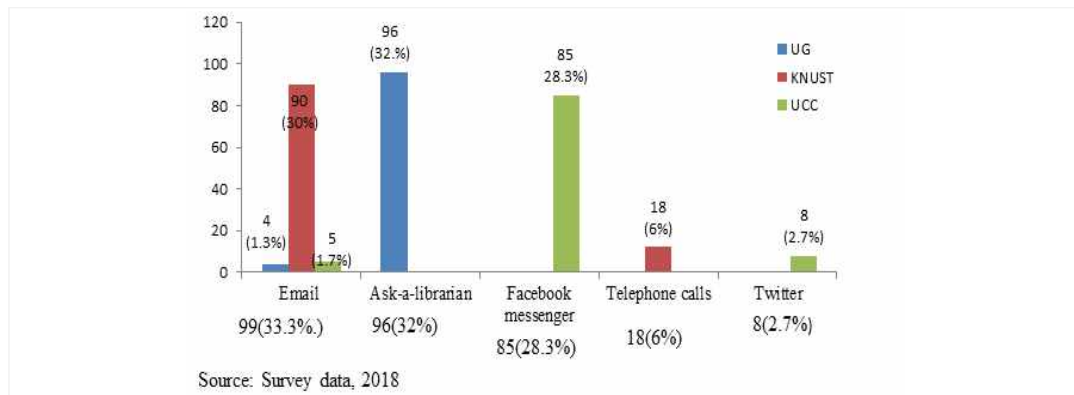
The researcher further asked users if they could get access to digital reference services outside the library working hours. The results are presented in **Table 4**. **Table 4** depicted that, the majority of the total respondents, 200 (66.7%) indicated ‘no’ while 100 (33.3%) said ‘yes’ they had access even after library closing hours. The majority of the respondents had no access to digital reference services after library hours especially in KNUST 70 (23.3%). This means that digital reference services were mostly inactive after library hours.

**Table 4.** Access to digital reference services after Library Hours

Variable	UG		KNUST		UCC		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
No	50	16.7	70	23.3	50	16.7	200	66.7
Yes	50	16.7	32	10.7	48	16	100	33.3

Source: Survey data, 2018

The opinions of librarians on the subject of digital reference services and library closing hours vary. While some librarians maintained that the service closed after library hours (5:00 pm), others stated that the service runs and extends to the evening hours of the library which is 10:00 pm.

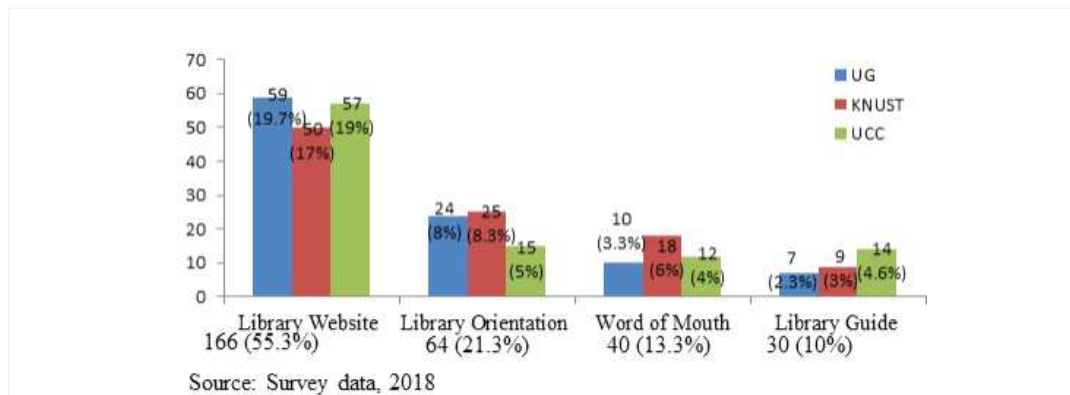


**Fig. 3.** Preferred reference service

#### 4.7. Motivation for using digital reference services

The researcher further asked users their purpose of using digital reference services and the motivation behind the use of digital reference services for their reference questions. The researcher discovered that respondents were motivated to use digital reference services most especially when they were off-campus. The result is displayed in **Fig. 4**.

From **Fig. 4** total respondents of 160 (53.3%) responded that they used digital reference services because they were off-campus with the highest number of respondents from UG (n=80; 26.7%), 70 (23.3%) used it for asking quick reference questions, 40 (13.3%) did not want to be physically present in the library, 26 (8.6%) used it to ask reference questions after library closing hours, while 4 (1.3%) used digital reference services because respondents felt shy to ask face-to-face questions. It can be said that more than half of the respondents used digital reference services off-campus especially in UG (n=80; 26.7%).



**Fig. 4.** Motivation for using digital reference services

The interview data revealed that most users used digital reference services because they were off-campus. This was expressed by one student:

“digital reference services are mostly preferred by Distance Learning Students and off-campus students... they use digital reference services ...the service helps them to acquire information and answer their ready reference questions. They are more interested in digital reference services...”

## 5. Discussion

The results indicated that more than half of the respondents used both Digital Reference Services (digital reference services) and Traditional Reference Services (traditional reference services) for their reference queries in the library. Participant librarians affirm that both traditional reference services and digital reference services are channels used for reference queries in the libraries. Bunge and Bopp (2001) support the results that academic libraries provide reference services either by traditional reference, digital reference or both services. It is not surprising in the results that users predominately use both traditional reference services and digital reference services for their reference queries in three academic libraries because the previous study confirms that in practice, many libraries use both traditional reference services and digital reference services. Both synchronous and asynchronous were used in the three Libraries. Singh’s (2012) study in four academic libraries in India supports that several libraries offer digital reference services on both synchronous and asynchronous transactions

In creating awareness, academic libraries need to market digital reference services to users. Data gathered from the results indicate that respondents got to know about digital reference services from their institution’s library website. Also, librarians affirm that digital reference services were marketed through institutional websites, during orientations, training programs, flyers, and posters. Aman (2004) and Ahenkorah-Marfo (2015) confirm this results that academic libraries have their websites linked to at least two social media sites. Connaway and Radford (2011), however, stress that it is not enough to put a link on your library website, rather, it is important to promote digital

reference services among users with the use of library instruction and posters. This implies that, though it is important to have basic information on digital reference services on the libraries websites, it is equally important to create offline exposure through information literacy, workshops, and training programs for library users who do not visit the library's website to be aware of digital reference services in the library. This would attract prospective users to the service.

Again, in terms of preferences for digital reference services, more than half of the respondents preferred traditional reference services to digital reference services. A study by Granfield and Robertson (2008) in two academic libraries in Toronto affirms that the traditional method of reference remains the most used reference service and as well as the first choice in getting assistance from the library. Kadir Wan Dollah and Singh (2010) also confirm in their study in four selected Malaysian academic libraries that, regardless of the introduction of digital reference services, about 56% of users prefer the traditional reference services for their reference queries. Despite the advantages and potential usefulness of digital reference services to respondents, they still indicated their preference for traditional reference services. This may not be surprising; so many challenges are associated with the use of digital reference services such as lack of prompt responses, internet challenges, among others. This may be the reason why respondents indicated their preference for traditional reference services despite the advantages of digital reference services over traditional reference services. There is the need to develop existing digital reference services that ensure that users would appreciate and adopt them more than the traditional reference services.

In this technological era, emails play a significant role in our lives. Results gathered from the study revealed that email was the preferred platform among the digital reference services platforms. Also, the results revealed that KNUST recorded the highest response in the use of an email platform. This result aligns with that of Roesch (2006) and Idan (2017). Email platforms are less expensive and easy to access. Emails help to cut off the barriers which prohibit users from seeking physical assistance from the library. KNUST offers digital reference services in the form of email service and off-campus electronic resources which enable users to get answers from the library. It was expected in the results that emails will be users' preference because emails have become a normal channel of communication in everyday life. Emails enhance selective dissemination of information (SDI) services as well as document delivery. For instance, requested articles can be sent to users and easily be downloaded via email. It is therefore natural for respondents to prefer the use of email services to supplement traditional reference services.

Another result from the study showed that more than half of the respondents were motivated to use digital reference services mostly when they were off-campus. This view is affirmed by librarians that, users used digital reference services especially when they are outside the walls of the library or off-campus. Pace (2003) confirms that digital reference services is an additional service to the library's existing reference service programme which permits patrons to write from work, home, or other locations. It is clear from the results that, most users access digital reference services because they were off-campus which implies that digital reference services permit off-campus. Users need not travel from their homes and offices to access library facilities. The use of digital reference services bridges the gap between on-campus and off-campus library users.

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## 6. Conclusion

The results of the study revealed that the three academic libraries used both traditional and digital reference services to answer users' queries. However, users prefer the traditional reference to digital reference services. This result is surprising considering the adoption of new technological tools by users. Notwithstanding, many factors could account for this. For instance, Okocha and Eyiolorunshe (2017) noted that South African librarians were not appropriating web 2.0 tools for digital reference services despite the improved availability of technological tools. Regarding the popularity of the various digital reference services platforms, users preferred email to the others in the three academic libraries. Moreover, the digital reference services platforms were promoted especially via the library websites of the institutions. Furthermore, it emerged from the results that the existence of digital reference services has increased the use of library services. The results from the study indicated that the respondents were mostly motivated to use digital reference services when they were off-campus. Most of the digital reference services users are final and postgraduate students who need scholarly information to complete their research. Finally, mobile phones were found to be the most common medium for accessing digital reference services among users.

## 7. Recommendations

Based on the findings of the study, the following are recommended to improve digital reference services in the academic libraries:

- Library users must be sensitized during library orientations and information literacy courses, on the advantages inherent in and procedures during digital reference services to encourage them to embrace and develop an interest in the use of digital reference services for their information needs.
- User-training in digital reference services must demystify traditional reference services by focusing on query formulation, expression and clarification, integrating results, and following-up.
- Academic libraries must actively employ social media/ digital technologies to integrate digital reference services into the users' workspaces.
- Since there is a high preference for mobile-based digital reference services, academic libraries must implement mobile-based digital reference services applications to enhance digital reference services visibility, ease of use, and vogue among especially student-users.

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[Appendix 1]

Questionnaire for DRS Users at UG, KNUST, and UCC

I am Miss Naomi Amofah-Serwaa, a post graduate Student at the University of Ghana, Legon offering MPhil in Information Studies. I am undertaking a research on the Digital Reference Service (DRS) in academic libraries in Ghana.

Dear User,

I would be grateful if you could answer the follow questions to enable me have a fair idea on the topic. I promise to protect your privacy as you assist me to undertake this study. Thank you.

NOTE: Digital Reference Service (DRS) involves the use of digital platforms such as Ask-a-librarian, text message, Telephone calls, email, Facebook messenger, Twitter handle, WhatsApp and other social media applications to seek information virtually from the library.

SECTION A: BIOGRAPHICAL DATA OF RESPONDENTS

1. Gender

- a) Male [ ]
- b) Female [ ]

2. User category

- a) Student [ ]
- b) Faculty [ ]
- c) Private User [ ]

3. Profession

Please indicate.....

4. Level of education

- a) SHS [ ]
- b) Tertiary [ ]

SECTION B: REFERENCE SERVICE PREFERENCES

5. What are the channels of reference services used for reference questions in your library?

- a) Traditional Reference Service (TRS) [ ]
- b) Digital Reference Service (DRS) [ ]
- c) Both TRS and DRS [ ]

6. What is your preferred channel of reference services?

- a) TRS [ ]
- b) DRS [ ]

7. Which DRS platform do you prefer in asking your reference questions?

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- a) Email [ ]
- b) Ask-a-librarian [ ]
- c) Facebook Messenger [ ]
- d) Twitter Handle [ ]
- e) Telephone Calls [ ]

### SECTION C: LEVEL OF AWARENESS OF DIGITAL REFERENCE SERVICES

8. How did you get to know about DRS in your Library?

- a) Library website [ ]
- b) Library orientation [ ]
- c) Word of mouth [ ]
- d) Library guide [ ]

9. Where do you access DRS?

- a) On-campus [ ]
- b) Off-campus [ ]

10. Do you get access to DRS after library hours?

- a) Yes [ ]
- b) No [ ]

### SECTION D: USE OF DIGITAL REFERENCE SERVICES

11. Why do you use DRS?

- a) I am off- campus [ ]
- b) To ask quick reference questions [ ]
- c) I don't want to be physically present [ ]
- d) I feel shy to ask some question [ ]

12. How often do you use DRS for their queries?

- a) Occasionally [ ]
- b) Regularly [ ]
- c) Once a while [ ]
- d) Rarely [ ]

13. What medium do you use to access?

- a) Laptop [ ]
- b) Mobile phone [ ]
- c) Tablet [ ]

14. What reference information do you request on DRS?

- a) For Research consulting [ ]
- b) For Ready Reference questions [ ]
- c) For Bibliographic verification [ ]
- d) For Interlibrary loan [ ]
- e) For Readers advisory service [ ]
- f) For Instruction [ ]

### SECTION E: USER'S VIEW

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15. Should DRS be replaced, integrated or separated from traditional reference service (TRS)?

- a) Replaced [ ]
- b) Integrated [ ]
- c) Separated [ ]

16. Are you able to clarify your questions on DRS?

- a) Yes [ ]
- b) No [ ]

17. How long does it takes for your questions to be answered.

- a) Typically a day [ ]
- b) Week [ ]
- c) Hours [ ]
- d) 1-10 min [ ]

18. Are you satisfied with the feedback received on DRS?

- a) Yes [ ]
- b) No [ ]

19. Have you been referred to other sources of information?

- a) Yes [ ]
- b) No [ ]

20. Have you been referred to other libraries outside their institution for assistance?

- a) Yes [ ]
- b) No [ ]

21. What is the first response you usually received from the library to demonstrate approachability?

- a) Hello how may we assist you [ ]
- b) Sorry none of the support team is available [ ]
- c) No response [ ]
- d) Someone will be with you shortly [ ]
- e) Thank you without further response [ ]

22. Has the existence of DRS increased your use of library services?

- a) Strongly disagreed [ ]
- b) Disagree [ ]
- c) Neutral [ ]
- d) Agreed [ ]
- e) Strongly agreed [ ]

23. DRS is useful?

- a) Strongly disagreed [ ]
- b) Disagree [ ]
- c) Neutral [ ]
- d) Agreed [ ]
- e) Strongly agreed [ ]

## [Appendix 2]

### Interview Schedule for DRS LIBRARIANS AT UG, KNUST and UCC

I am Miss Naomi Amofah-Serwaa, a post graduate Student at the University of Ghana, Legon offering MPhil in Information Studies. I am undertaking a research on the Digital Reference Service (DRS) in academic libraries in Ghana.

Dear DRS librarian,

I would be grateful if you could help me answer the follow questions to enable me have a fair idea on the topic. I promise to protect your privacy as you assist me to undertake this study Thank you.

NOTE: Digital Reference Services (DRS) involves the use of digital platforms such as Ask-a-librarian, text messages, telephone calls, email, Facebook messenger, Twitter handle, WhatsApp and other social media applications to seek information virtually from the library.

#### SECTION A: BIOGRAPHIC DATA

1. Gender
2. Job tenure
3. Rank

#### SECTION B: REFERENCE SERVICE

4. Types of Reference service in the library?
5. How many staff are in charge of DRS?
6. Should DRS replace, integrate, or be separated from DRS in the library?

#### SECTION C: TYPES OF DRS

7. What types of DRS do you provide in the library?
8. What are the DRS platforms used in the library?

#### SECTION D: AWARENESS AND USE OF DRS

9. How many staff are in charge of DRS?
10. Are users aware of DRS?
11. How do you create user awareness?
12. How often do users visit DRS platforms?
13. Does DRS close after library hours?

#### SECTION E: VIEWS OF LIBRARIAN

14. Should DRS replaced, integrated or separated from the traditional reference service?
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15. Are users able to clarify their questions through DRS?
  16. Do you follow up on users question with a telephone call or regular mail when users question is not clear on the DRS platform?
  17. How long does it take to respond to users' queries?
  18. Do you refer users to other sources of information when necessary?
  19. Do you have any collaboration network with other DRS libraries?
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### [Appendix 3]

#### INTERVIEW GUIDE FOR HEADS OF LIBRARY AT UG, KNUST and UCC

I am Miss Naomi Amofah-Serwaa, a post graduate Student at the University of Ghana, Legon offering MPhil in Information Studies. I am undertaking a research on the Digital Reference Service (DRS) in academic libraries in Ghana.

Dear Head librarian,

I would be grateful if you could help me answer the follow questions to enable me have a fair idea on the topic. I promise to protect your privacy as you assist me to undertake this study  
Thank you.

NOTE: Digital Reference Service (DRS) is the use of digital platforms such as Ask –a- librarian, text message, Telephone calls, email, Facebook messenger, Twitter handle, WhatsApp and other social media applications to seek information virtually from the library.

#### SECTION A: BIOGRAPHIC DATA

1. Gender
2. Job tenure
3. Rank

#### SECTION B: REFERENCE SERVICE

4. Types of Reference service in the library
5. How many staff are in charge of DRS
6. Should DRS replace, integrate, or be separated from DRS in the library
7. What types of DRS do you provide in the library?
8. What are the DRS platforms used in the library?

#### SECTION C: AWARENESS

9. How many staff are in charge of DRS
10. Are users aware of DRS?
11. How do you create user awareness?
12. Does DRS close after library hours?

#### SECTION D: VIEWS OF LIBRARIAN

13. Should DRS replaced, integrated or separated from the traditional reference service?
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[Appendix 4]

INTERVIEW GUIDE FOR HEADS OF IT AT UG, KNUST and UCC

I am Miss Naomi Amofah-Serwaa, a post graduate Student at the University of Ghana, Legon offering MPhil. in Information Studies. I am undertaking a research on the Digital Reference Service (DRS) in academic libraries in Ghana.

Dear IT Staff,

I would be grateful if you could me have a fair view on the topic. I promise to protect your privacy as you assist me to undertake this study. I would also need your assistance by providing contact address of users in other to solicit their views about DRS in your library. Thank you.

NOTE: Digital Reference Service (DRS) is the use of digital platforms such as Ask –a- librarian, text message, Telephone calls, email, Facebook messenger, Twitter handle, WhatsApp and other social media applications to seek information virtually from the library.

SECTION A: BIOGRAPHIC DATA

1. Gender
2. Job tenure
3. Rank

SECTION B: REFERENCE SERVICE

4. What types of DRS do you provide in the library?
5. What are the DRS platforms used in the library?

SECTION C: AWARENESS

6. How often do users visit DRS platform?
7. Does DRS close after library hours?

SECTION D: VIEWS OF IT STAFF

8. Should DRS replaced, integrated or separated from the traditional reference service?
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