Developing ICT Competencies: New Skill Sets for Excellent Customer Service in Academic Libraries

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

This study seeks to examine the perception of academic librarians on the acquisition of ICT skills and customer service competencies in order to meet the diverse and increasingly complex information needs of library users in the digital environment. The study adopts the qualitative approach to research by using content analysis of job advertisements and semi-structured interviews with purposively selected academic librarians. Fifty (50) job advertisements published in newspapers and online portals from 2010-2019 were collected and studied. Ten (10) academic librarians were selected from five (5) academic libraries in Ghana to identify existing skill sets and customer service competencies within academic libraries. The findings of the study showed that ICT skills and competencies are an integral requirement for job placement within academic libraries. However, there is more to be done on the use of ICT skills to deliver excellent customer service online. The findings of the study would be useful for librarians, managers of tertiary institutions and policy makers who seek to address the issue of staff competency, skill sets and training for improved service delivery within academic libraries.

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1. INTRODUCTION

Libraries are considered the spine or the nerve centres of educational institutions where information is acquired, organized and made available for all users irrespective of their ethical and political background, age, sex, fields of discipline, religion among others [1]. Academic libraries contain rich and balanced information resources that support teaching, learning and research [2]. Librarians as information gatekeepers are professionally trained persons responsible for maintaining the library and its contents as well as other information related services to meet the needs of information users [3].

Librarianship like all professions is undergoing a lot of transformation. These transformations have largely speared by technology and have brought along many opportunities, changes and challenges to academic libraries and library professionals [4]. As service-oriented professionals bridging the gap between creators of knowledge and seekers of knowledge [5], librarians have had to adopt new skills and competencies to deal with the current demands of their profession.

Today, Information Communication Technologies (ICTs) have become the driving force behind most of the evolution taking place in libraries. To be able to cope with the changing requirements of librarianship, it is important that librarians are equipped with new skills and competencies in order to avoid doing today's job with yesterday's tools and concepts. Therefore, ICT literacy skill is indispensable to functioning effectively in the new technological era. Academic libraries in Ghana are gradually moving away from the provision of traditional library services to hybrid or electronic/digital library services. This has been largely due to the growing demands of patrons and the use of ICT in the organization and management of information [6].

Service is a concept that is essential in librarianship and excellent customer service has been the service philosophy of the profession [7]. However the introduction of ICT presents libraries with the opportunity to reach out to clients outside the confines of their physical locations (traditional library). This consistently comes along with challenges of retooling, re-orientation and re-skilling of librarians for excellent customer service provision. Adjei, Mensah and Amoaful [8] and Chow and

Bucknall [9] emphasized how technology (from Internet of Things (IoT) to the digitization of information, Big Data Analysis and Artificial Intelligence) is being used for both access and services in libraries. According to Chow and Bucknall [9], modern academic libraries have accepted technologies and are applying them in support of excellent customer service. Therefore, this study aimed at examining the ICT competencies needed for excellent customer service provision by Ghanaian academic librarians.

2. STATEMENT OF THE PROBLEM

Libraries form the bedrock of any academic institution. In view of this, a library with professionally trained librarians is a prerequisite for the accreditation and establishment of tertiary institution in Ghana. Therefore, all tertiary institutions in Ghana; whether in the public or private sector, must have a library with the necessary facilities and at least one qualified professional librarian or information professional [10]. Librarians are increasingly required to possess a variety of skills and competencies that are required to enable them effectively execute their job functions [11]. Today, Information Communication Technology has become the driving force behind most of evolution taking place in the work environment and libraries are no exception. According to Santos [12], library resources and services are constantly evolving and this is spear headed by the application of information and communication technologies.

The evolution in information creation, access, organization and service delivery models have an impact on the skills and competencies of information professionals. Therefore, there is need for librarians in Ghana to adopt new skills and competencies to deal with the current demands of their profession. Even though numerous studies, by researchers such as Abankwa & Yuan, [13]; Akpebu and Van der Walt, [14]; Cobblah, [15], have examined the training needs, professional development opportunities and progression of academic librarians in Ghana, very few of these studies sought to address the issue of ICT and customer service competencies and skills sets needed by academic librarians in the country. The current study therefore seeks to examine the ICT competencies and skills sets needed by the modern academic librarian in Ghana for excellent customer service delivery. The study is to address this gap and add to the few existing literature on the subject matter.

3. PURPOSE OF THE STUDY

The purpose of the study is to examine the ICT skills and competencies required of academic librarians in Ghana for excellent customer service.

3.1 Objectives of the Study

The objectives of the study are:

1. To determine ICT skills and competencies required of academic librarians in Ghana.
2. To ascertain the prevailing ICT skills training and development programmes in Ghanaian academic libraries for improved customer service delivery.
3. To determine the types of training and development programmes in Ghanaian academic libraries for improved customer service delivery.

3.2 Research Questions

1. Are ICT skills and competencies required for academic librarians' job placement in Ghana?
2. What training and development programmes are in place for librarians to improve on ICT skills and competencies for excellent customer service?
3. what type of training and development programmes in improving ICT new skills and competencies for superior customer service in academic libraries?

4. LITERATURE REVIEW

According to Khan [16], ICT has brought extraordinary transformation to academic libraries and information services, conventional Library and Information Systems (LIS) such as OPAC, user/customer services, reference services, current awareness services, bibliographic services, document delivery, interlibrary loan, audio visual services and customer relations which are provided more effectively and efficiently using ICT. To Khan, ICT offer convenient time, place, cost effectiveness, faster and most current dissemination and end users involvement in the library and information service process. Similarly, Khan [16] and Singh and Pinki [17] are of the view that the new technology is continually changing the library and information provision landscape, thereby requiring the acquisition of new skill sets. It has therefore become necessary for information professional to act proactively in order to support the current service demands and also remain relevant to the communities they serve [4]. The advent of ICT has revolutionized the library and information services with concepts such as digital repository, web based library services, open access, user focused services, application of social networking and consortia [18,6]. Onuoha, Ukachi and Unegbu [19] on the other hand pointed out the challenging roles played by librarians in the technological environment as reflected in current job titles such as Computer Services Librarian, Access Services Librarian, Systems Librarian, Automation and Cataloguing Librarian among others. Supporting this fact, Edegbo (2011) admits that the changing and challenging roles facing librarians requires new resources, IT skills and expertise.

4.1 Competencies and Skills Requirement for the Modern Academic Librarian

The transformation brought about by ICT in libraries has revolutionized library operations and service delivery landscape. Librarians in the modern era need to adjust to the dynamic changes that ICT brought through the acquisition of new skill sets or competencies. This, according to Nonthacumjane [20], has influenced the roles, competencies, skills and knowledge of Library and Information Science professionals. In view of this, librarians or information professionals are required to possess enhanced professional, managerial and technical skills, adequate knowledge and appropriate competencies [6]. Similarly, Singh and Pinki [17] suggested the integration of generic skills, traditional and ICT related skills competencies such as metadata development, digital archiving, content development, electronic data searches, networking among others for excellent library service provision. The American Library Association (ALA, 2009) core competencies document, which is in line with the aims and objectives of the Ghana Library Association (GLA), covers generic core competencies such as professional ethics; resource building; technological knowledge; knowledge organization, knowledge dissemination; service knowledge accumulation, education and lifelong learning; knowledge inquiry; research and institution management.

Raju and Muthu [21] studied the competencies, training and their strategies to meet the structural

changes in LIS profession in the modern era. They found that the most important skills and competencies that librarians of today must have include cognitive skills, customer service skills, technological skills, management skills, marketing skills, creativity/innovative skills, social skills, search skills, teaching skills, openness to change and commitment to continuous learning. Gerilimos et al. [22] made a content analysis of job advertisements for academic librarians' position in America. They found interpersonal skills, computer skills, web knowledge and management, electronic resource management, customer service, metadata knowledge, flexibility, problem solving, professional commitment and creativity as the competencies that could meet employers' expectations. Robinson et al. [23] expounded on core competencies and skills set framework for a Caribbean academic library and noticed these core competencies: sound professional knowledge, superior service delivery, good interpersonal skills, creativity and innovation skills and problem solving skills.

Online reference services and user/customer services are predominant in today's digital environment driven by web 2.0 (eg. social networking and instant messaging) services and Artificial Intelligence (AI - Expert Systems) and the adoption of these technologies for library services require advanced ICT skills [1,24,25]. Similarly, Partridge, Lee and Munro [26] observed that web 2.0 and other advanced technology use in libraries require transferable skills and interpersonal skills together with attitudinal change and ways of thinking towards ICT and service delivery on the web. They also identified technology, user/customer focus, teamwork, communication, evidence based practice, learning and education, business knowledge and personal traits as essential skill attributes to be possessed by modern librarians.

4.2 Developing and Updating Librarians' Skills and Competencies for Excellent Service Provision in the Technological Environment

The advent of new technologies and its adoption into library operations and management warrant the blending of core librarianship and IT skill sets or competencies for better service delivery. Cherinet [27] and Ledward & Hirata [28] suggested that librarians or information professionals must possess both core professional as well as technological

competences or skills sets to be able to work in today's technology information environment. For this reason, education, development and training of academic librarians in the dynamic and complex technological environment has become a high priority. Various methods and processes of teaching, training, skill acquisition and learning are employed by librarians and their mother institutions to develop and upgrade librarians' competencies and skills. According to Ezema, Ugwuanyi and Ugwu [6], this can take the form of formal, informal and in-service training in information technology vis-à-vis information management and library services provision. In their opinion, education takes place at the library school where foundation is laid for job training to continue. This implies that pre-service training is the focus of library schools while employers are responsible for specific job training. However, the integration of specific knowledge and skills into the curriculum has blurred the distinction between formal education and training [29, 6].

According to Maphopha [29] as cited in Ezema, Ugwuanyi and Ugwu [6], training can be in two basic forms; on-the job training and off-the job training depending on where the training takes place. On-the-job training takes place at the work environment and takes the form of discussion, lectures, demonstration, simulation, mentoring, job rotation, regular staff meeting, programmed instruction, distance learning and videoconferencing, practical exercise and presentations, project management, coaching and technology assisted training. Off-the-job training on the other hand takes place outside the work environment in the form of field visit/demonstration; further education and career development; attending professional meetings, conferences, seminars and workshops; personal interaction with expert fellows and professionals and reading current professional papers [21,6].

However, Igun [30] recommends the need for restructuring LIS educational curriculum in order to produce librarians suited to deliver services with emerging technologies in the modern era. Supporting the need for upgrading librarians' skills, Colon Aguirre [31] proposed service learning (a form of experiential leaning) as a way of bridging the gap between LIS education and practice as well as enhancing service delivery in today's academic libraries. Epps, Kidd, Negro and Sayles [32] suggested delivering a blended customer service training curriculum to all library workers as a solution to this familiar problem. Shiholo and Ocholla [33] are of the view that core skills and core knowledge for information

providers must be reviewed by regularly involving various practitioners on the field and library associations in developing, updating and upgrading skills of librarians for an improved customer service experience in academic libraries.

5. METHODOLOGY

5.1 Design

The study adopted a qualitative research design comprising of content analysis and semi-structured interviews. According to Haggarty [34] "content analysis is a research method which allows the qualitative data collected in research to be analyzed systematically and reliably so that generalizations can be made from them in relation to the categories of interest to the researcher".

The content analysis approach was adopted because it enabled the researchers to determine the presence of IT skill requirements in job advertisements for academic librarians. This therefore enabled the researchers to ascertain current knowledge and skill requirements for academic librarians in Ghana, with emphasis on IT requirements. Another reason for adopting this approach is that it offered the researchers the opportunity to obtain valuable historical and cultural insights [35,36] through the systematic analysis of past job advertisements. This is because by analyzing past job advertisements, the researchers were able to ascertain how the job requirements of academic librarians have evolved over the years. The IT requirements were categorized into seven main groupings or categories (i.e library software, computer/digital literacy, online library applications, knowledge of library related IT systems, computer application & networking and IT implementation). This categorization was developed during the coding and analyses process. The researchers did not stick with any predefined set of categorization. This was to ensure that all the IT requirements stated in the job advertisements were properly categorized.

Semi-structured interviews were conducted to fill the gaps in the data obtained from the content analysis and to get the opinion of librarians on the subject. This enabled the researchers gather data on the breadth and depth of the study to answer the research questions. Just like Dejonckhere & Vaughan [37] and Edwards & Holland, 2013, the researchers explored participants' thoughts, feelings and beliefs about

the requirements of the modern day librarian for excellent customer service delivery. Questions for the semi structured interview were based on observation made during the content analysis and how the content relates to customer service provision in the academic library. To ensure that study participants were able to freely express themselves, interviews begun with general conversations about the library profession before narrowing down to the specific issue of IT requirement or competencies and how this relates to service delivery. This was done to establish commonalities, rapport and trust as well as getting the right information for the study [37].

5.2 Sampling

The study adopted the purposive sampling technique. The purposive sampling technique was adopted because the nature of the study required participants who had practiced the profession for at least ten years. This was because the researchers believed that participants with such level of experience would have been in the library and information science profession long enough to observe the changes that had occurred within the profession.

Fifty (50) job advertisements published in two Ghanaian newspapers (Daily Graphic and Ghanaian Times) and online portals (linkedin.com, ghanacurrentjob.com and jobhouse.com.gh,) from 2010-2019 were collected and studied. These newspapers were purposively sampled because, they are the newspapers that are most subscribed to by libraries and archives. Also, these newspapers have a long and consistent publication history when it comes to job advertisements in Ghana. Linkedin.com, ghanacurrentjob.com and jobhouse.com.gh were selected because they are the most popular online job portals in Ghana.

Ten (10) academic librarians from five (5) academic libraries in Ghana (Balme Library, Sam Jonah Library, UHAS Library, EPUC Library and HTU Library) were selected and interviewed to identify existing skill sets and competencies within academic libraries. This enabled the researchers to identify strategies that library managers are adopting to develop ICT skills of library staff for improved service delivery.

5.3 Data Collection

Data was collected from both primary and secondary sources. The primary sources consist

of the interviews conducted on the field while secondary sources consisted of data collected from newspapers and online portals. Job advertisements from the newspapers were photocopied whiles the ones from the online portals were printed and manually analyzed. The IT skill requirements stated in the job advertisements were categorized and input into Microsoft Excel for analysis. Each job advertisement was labelled using the name of the publication outlet and the date of publication (eg. link09-05-2015). One month was used for data collection. The extracted data were grouped according to the research questions. Tables and text were used to demonstrate some of the data collected.

For the interviews, the researchers first identified two academic librarians from each of the selected libraries who were willing to be study participants. The study participants were given the options to choose whether they preferred telephone or face to face interviews. This was necessary due to the covid-19 pandemic. For face to face interview, the researchers ensured the strict adherence with the covid-19 protocols of handwashing, sanitizing and wearing of nose mask. Study participants were informed that the findings of the study shall be presented in a journal.

6. RESULTS

This section presents the quantitative and qualitative data that sought to address the perception of academic librarians about the need for librarians to develop competencies in the use of ICT for service delivery. With regard to the findings, the need for ICT training among academic librarians, the existence of ICT related training and development progarmmes and the effectiveness of such training and development programmes for improved service delivery were emphasized. This section provides findings on the research questions.

The first research question sought to determine whether ICT skills and competencies were required skill sets for job placement. According to the findings, all the respondents (100%) viewed ICT skills and competencies as a necessary skill set for the modern day librarian. To further explore this research question, the researchers conducted quantitative content analyses of job advertisement in academic libraries (see Table 1). The results showed that computer and digital literacy skills were the most (22, 33.3%) required ICT skills in academic libraries, followed by knowledge of library related IT systems (16, 24.2%) and Library software (14, 21.2%) while knowledge in computer application and networking was the least (4, 6.1%) required ICT related skill.

The qualitative analyses sought to examine interviewees' perceptions of the importance of ICT skills to customer service delivery and the day-to-day function of a professional librarian. In this regard, UCC 1 stated:

Yes, please. I think ICT tools are a basic necessity in academic librarianship and this will help improve on service delivery.

UG 1 explained:

I use it (computer) to access my official and library e-mails for any work-related queries from clients; I use technology to conduct library instructions on search techniques and memos; I use it to write reference reports and other administrative reports for management and clients.

Table 1. Information technology skills

Skill	Frequency	Percentage (%)
Library software	14	21.2
Computer/digital literacy	22	33.3
Knowledge of Online library Applications	4	6.1
Knowledge of library related IT systems	16	24.2
Computer application & networking	4	6.1
IT implementation in Libraries	6	9.1
Total	**66**	**100**

HTU 1 added:

Sure! The current library users are more interested in electronic format of library resources and no electronic information resources can be created or accessed without the technology. So the technology helps me to obtain and disseminate information faster and according to the taste of the patrons, thereby serving them better.

EPUC1 reiterated that;

Basic ICT skills are important as the library's general housekeeping process is automated. Reference services employ existing and emerging ICT tools to support user requests.

EPUC2 emphasized;

Using ICT tools provide efficient and effective services to customers in this technological age.

The interview data further highlighted ICT skills and competencies requirements of academic librarianship. It emerged that internet searching skills, competencies in Microsoft Office application, basic computer networking and troubleshooting skills are common competencies expected of an academic librarian.

As noted by UHAS 1:

An academic librarian must be able to use effectively: Ms office Apps or open source office apps, Referencing Apps, web apps, basic troubleshooting and computer networking skills.

The second research question sought to ascertain whether there are in-house ICT training programmes for academic librarians. To this end respondents were asked whether their libraries organized periodic in-service training programmes. According to the findings, majority (90.0%) of the respondents answered in the affirmative whiles 10.0% answered in the negative (see Table 2).

Table 2. Availability of in-service training programmes

Response	Frequency	Percentage (%)
Yes	9	90.0
No	1	10.0
Total	**10**	**100**

To further explore the results in Table 2, respondents were asked if the in-service training programmes had ICT components and if this helps in providing better services to library users.

EPUC2 explained:

Training programmes normally have ICT skills and customer relations components with the aim of improving customer services.

UG1 emphasized:

Yes, please these programmes are aimed at improving customer service through the adaptation of ICT tools.

EPUC 1 Commented:

In-service training are organized to reflect information needs and demands of users is changing with changes in technology.

The third research question focused on examining the strategies used by libraries to enhance customer services through the improvement of staff ICT competencies. The results showed that most of the academic libraries offer staff scholarships in the form of study leave for staff and also offer subsides for staff to attend short courses, seminars, workshops and conferences.

UG1 stated

Provision of study leave for staff to advance their skills in a specific area of work. Also, provision of continuous professional development.

EPUC2 added;

Regular workshop/training in ICT for staff will help improve their skills.

HTU1 explained;

Regular training should be organized on basic troubleshooting, computer networking and web development. Other training areas include: How to use library management systems, e-resource database, research data management systems, and how to use various social media applications to deliver services.

UHAS1 emphasised;

Regular ICT Skills training in New Trends in ICT use in academic library.

Table 3. Types of training programmes

Response	Frequency	Percentage (%)
Workshops/ Seminars	8	42.1
Study Leave	6	31.6
Orientation	4	21.1
Exchange Programs	1	2.2
Total	**19**	**100**

Table 4. Challenges to ICT related training programmes

Theme	Response
Staff Resistance (Technophobia)	UCC1 – the advent of new technologies is making many of us anxious and stressed EPUC2- readiness of staff to undergo such programmes is sometimes overlooked UCC2 – some staff are resistant to change HTU1- The unwillingness of the library staff to avail themselves for training could also be an issue. HTU2 – Lack of interest of some library staff.
Lack of ICT Infrastructure	HTU 1 – Lack of or inadequate computers, internet services and e-resource databases which people are to be trained on can affect training programmes.
Funding	HTU 1- Of course not much can be done without money UHAS 1 – Financial setbacks is the greatest constraint HTU 2 – Funds to support training programs. UG 2 - Finance is one big challenge. i.e sponsorship to undertake external training programmes EPUC 2- one of the greatest challenges to training is funding

6.1 Types of Training Programmes Available in Academic Libraries

Workplace training is key to enhancing employee knowledge, skills and efficiency. In view of this participants were asked to state the type of training programmes carried out in their respective libraries. The finding as shown in Table 3 showed that the most common types of training used in academic libraries in Ghana are workshops and seminars (42.1%), orientation for new staff (21.1%), study leave (31.6) and exchange programs (2.2).

To further explore the results in Table 4, respondents were asked the reasons for adopting the chosen training methods.

UG1 stated:

We give study leave to staff to purse courses or trainings which advance their skills and improve the potential in a specific area of work. We also organize or sponsor staff to attend workshops to help with their continuous professional development.

HTU 2 stated:

We offer continuous internal training options (i.e. workshops, seminars and orientation) and continuous external training options (i.e. study leave and workshops).

In order to explore the above responses, respondents were asked about the challenges their libraries encounter when embarking on ICT training programmes. The themes that emerged of their responses are present in Table 4.

7. DISCUSSION

The findings of the study showed that ICT skills and competencies are an integral requirement for job placement within academic libraries. The results revealed that advertisements for positions within academic libraries required competencies in computer and digital literacy, networking and knowledge of library related IT systems and software and general computer application such as Microsoft Office suits and video conferencing applications. Generally, participants were of the

view that the demands of the modern day academic librarian require some level of ICT skills and competencies in order to ensure successful and efficient execution of generic duties such as collection development, user instruction, reference services and current awareness services and overall excellent service provision. This finding is corroborated by previous researchers like Nonyelum [1], Raju & Muthu [21], Sridevi and Shanmugam [25], Gerilimos et al. [22], Robinson et al. [23] and Arif and Mahmood [24]. This clearly shows that ICT skills and competencies are essential for the effective job function of the academic librarian and librarian themselves recognize this fact. This has become even more evident as libraries have to adopt social network and social sharing applications in their routine services in order to meet user's expectations and achieve immediate information delivery [38,18,26].

Also, the findings revealed that academic libraries in Ghana have instituted in-house training programmes for academic librarians and that these training programmes were targeted at improving customer service delivery. The results showed that most of the academic libraries offer scholarships to staff in the form of study leave and subsidies to attend short courses, seminars, workshops and conferences. This finding is corroborated in previous studies by Raju and Mathu [21], Cherinet [27], Epps et al. [32], Ezema et al. [6]. The study also identified several challenges confronting both internal and external ICT training programmes within academic libraries. Prominent among these challenges are financial constraints, unwillingness of staff to participate in training programmes and the lack of ICT infrastructure. Furthermore, the study revealed that the older generation of library staff are anxious of new technology (technophobia or technology stressed). Management of academic libraries must make conscious effort to educate and encourage staff to shake off this fear or aversion to modern technology. This task, even though sounds herculean is surmountable since the application of advanced technology like AI in the provision of library services is increasingly receiving acceptance among information professionals [39,40,41].

8. CONCLUSION

Today's library environment has transformed significantly due to ICT application. ICT has become an essential tool in providing excellent library services in the present digital environment. The operation and management of academic libraries have evolved with increased emphasis on the provision of virtual or electronic services and information resources. The main clientele of academic libraries are students and faculty members and the use of new technologies is inevitable [42,43]. Further, there is increase adoption of AI technologies across the various fields and endeavours of work, which is feared, could significantly reduce human involvement in library and information work. This requires librarians and other Library and Information Science (LIS) professionals to be abreast with the use of these new IT technologies. To be able to fit into the new technological environment, librarians are required to develop and upgrade their ICT skills and competencies for new service experience by library users. These new skills are acquired through development and training programmes. The study recommends that heads of tertiary institutions, library management and other stakeholders should make available funds for development and training of academic librarians, especially in ICT skills and competencies, so that in return the acquired skills and competencies will be transferred into excellent customer service provision in the academic libraries (traditional and online) in Ghana.

CONSENT

As per international standard or university standard, Participants' written consent has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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