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Digital Resources and Services: An Investigation of GCC Academic Libraries

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ABSTRACT

This paper seeks to examine and describe the provision of digital resources and services by academic libraries in the GCC countries. It specifically targets the top three or 18 academic institutions of six GCC countries as reported by the Ranking Web. The study uses digital access tools, digital resources, digital services, digital forms, digital communication tools, and social networks as criteria to determine the provision of digital resources and services. Data were collected using web-based survey questionnaire, structured interview, and content analysis. The study finds that the surveyed libraries have a set of strengths and weaknesses for digital resources and services. Results of the study revealed that all or majority of the surveyed libraries provide and use core elements of digital resources and services. However, more than 61% of them do not have mobile applications, and at least 77.8% of them do not use online membership, online document reservation, and online complains and comment forms. Similarly the study found that most of the surveyed libraries do not use instant messages, SMS, and online video conferencing to communicate with the users. Likewise findings showed that at least 50% of the surveyed libraries do not have an account for Twitter, Facebook, YouTube, and LinkedIn. There is a need for these libraries to place more emphases on digital forms, digital communication tools, and social networks.

INTRODUCTION

The ongoing rapid advancement of information and communication technology has created and is continuing to create new challenges for libraries and information centers. Libraries have been facing significant pressure from information revolution (Madhusudhan, 2008). Today, the traditional methods of promoting library resources and services are insufficient to satisfy the information needs of users. Therefore librarians have been acquiring the most up-to-date information technology and content to ensure that they satisfy users' information needs. This includes the provision of digital library.

Borgman (1999) defines digital library as a set of electronic resources and services for creating, searching and using information and knowledge. According to Yerkey and Jorgensin (1996) digital library is an electronic library in which large numbers of geographically distributed users can access its resources and services. The resources include digital books, digital images, graphics, textual and numeric data, digitized films, audio-video clips, etc.; while the services consist of search service, bibliographic service, instruction and user guide service, intellectual property service, selective dissemination of information service, digital reference service, news services, etc. (Choi, 2006).

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Over the last decade academic libraries have been transformed from being a conventional library into digital or electronic library (Yerkey, 1996). Librarians strongly believe in the necessity of providing digital resources and services (Joint, 2009; Becker, Bonadie-Joseph, & Cain, 2013; Falk, 2003; Ashoor, 2000). By the mid 1990s academic libraries had developed. According to Detlor and Lewis (2006): "Libraries use web sites to create virtual environment, to channel the delivery of value-added services, to engage in two way communication, [and] even to collaborate with other library users" (p. 251).

Assessment and evaluation of digital resources and services in libraries have attracted the attention of many information science professionals and scholars (Chowdhury & Margariti, 2004; Borgman, 1999; Krishnamurthy, 2005; Zhou, 2005; Tam & Robertson, 2002; Bertot, 2004). Detlor and Lewis (2006) used a codebook to assess 107 member web sites of Association of Research Libraries in the USA and Canada. The codebook included online catalog, e-books and e-journals, search engine, site map, and search box as criteria to assess the web sites.

Choi (2006) examined digital reference services of Digital Initiative Database managed by the Association of Research Libraries (ARL). The study surveyed 60 digital collections and analyzed what types of services have been offered and how they varied. In UK, Chowdhury and Margariti (2004) investigated the current practices of providing digital reference services by major libraries in Scotland. The authors found that E-mail was the major technology used in providing digital reference. They believe that digital references are effective forms of service delivery. A study by Ismond and Shiri (2007) investigated the organization of, access to, electronic, scholarly information of two digital libraries from Canada, the USA and UK. The authors used text-based collection, use, and access as criteria for selecting potential libraries. Findings showed that each digital library had a unique set of strengths and weaknesses. Each offered different digital services to help users identify materials and quickly understand and assess their contents.

Many academic libraries of the developing countries also have been investigated to assess and evaluate digital resources and services (Bagudu & Sadiq, 2013; Gbaje, 2013; Wu, He, & Luo, 2012; Zhang, 2011; Krishnamurthy, 2005). Like other libraries in the developed and developing countries, digital resources and services of libraries in the GCC countries should be periodically assessed for a better improvement. The review of literature identified a limited number of studies investigating the issues of digital libraries in the GCC countries. For instance, in 2000, M. Saleh Ashoor, a professor of Library and Information Science at King Fahd University of Petroleum and Mineral described various technological and social requirements for planning digital library in the GCC countries (Ashoor, 2000); while Sajjad ur Rehman and Hussain Al-Ansari at Kuwait University assessed the potential of six library and information education programs in preparing manpower for digital environment (Rehman & Al-Ansari, 2003). The current study attempts to examine and describe the provision of digital resources and services by academic libraries in the GCC countries. It is expected that the findings of the study would be useful for academic libraries in the Arab world to improve digital resources and services.

OBJECTIVES OF THE STUDY

The main objective of this paper is to investigate and describe digital resources and services provided by academic libraries. The study specifically targets the top three universities in each of the GCC countries. It attempts to achieve the following objectives:

1. To identify digital resources and services provided by libraries of the top three universities in each of the GCC countries.
2. To determine whether libraries of the top three universities in each of the GCC countries provide and use up-to-date digital resources and services.
3. To find out strengths and weaknesses of digital resources and services provided by libraries of the top three universities in each of the GCC countries.
4. To suggest and recommend digital resources and services for improving quality services of the academic libraries in the GCC countries.

DATA COLLECTION

Initially our main target was UAE academic libraries. We wanted to understand how UAE academic libraries are providing digital resources and services. And to do that we thought of comparing their status with other libraries of neighboring countries. GCC countries were the best choice due to similarities not only in social and cultural aspects, but also in educational and technological advancement. By studying UAE academic libraries and libraries of the other GCC countries, we are able to compare the status of UAE academic libraries against other GCC countries.

Due to the time constraints with a large number of universities in the GCC countries, the researchers decided to limit the study to the top three universities in each of GCC countries. For this purpose we visited a number of reliable universities' ranking websites such as QS Intelligent, Times Higher Education, Shanghai Ranking, Leiden Ranking, and the Ranking Web or Webometrics.

The Ranking web is an initiative of the Cybermetrics Lab, a research group belonging to the Consejo Superior de Investigaciones Científicas (CSIC), the largest public research body in Spain. The Cybermetrics Lab is devoted to quantitative analysis of the Internet and Web contents. It uses visibility and activity as indicators to evaluate and assess the performance of universities from all over the world (The Ranking Web, 2013). The researchers decided to use this source due to some similarities between its indicators and the indicators of this study.

Through the Ranking Web the researchers identified and selected the top three universities of each of the GCC countries (Table 1). We also visited the websites of Ministries of Higher Education for grouping the selected universities as public or private university. As illustrated in Table 1, of the top three universities of the GCC countries eight are public and 10 are private. With an exception of Saudi Arabia, each of the five GCC countries has one public and two private universities among the top three universities. In the case of Saudi Arabia, all the top three are public universities.

Table 1: List of top three Universities of the GCC countries

Country	Country Rank	World Rank	University	Type
Bahrain	1	3041	University of Bahrain	Public
	2	5877	Arabian Gulf University	Private
	3	10360	RCSI Medical University of Bahrain	
Kuwait	1	1871	Kuwait University	Public
	2	2807	College of Technological Studies	Private
	3	7295	Gulf University for Science & Technology	
Oman	1	1869	Sultan Qaboos University	Public
	2	8350	University of Nzwa	Private
	3	8878	Sohar University	
Qatar	1	2223	Qatar University	Public
	2	3469	Texas A&M University at Qatar	Private
	3	5627	Weill Cornell Medical College in Qatar	
Saudi Arabia	1	402	King Saudi University	Public
	2	801	King Abdulaziz University	
	3	1057	King Fahd University of Petroleum & Minerals	
United Arab Emirates	1	1217	United Arab Emirates University	Public
	2	2833	American University of Sharjah	Private
	3	3046	University of Sharjah	

The next step was to create a list of indicators to assess the provision of digital resources and services of the top three universities. Several related studies and websites were reviewed and checked. Based on the results of the literature review the researchers adapted key features used or stated by other researchers (Bagudu & Sadiq, 2013; Gbaje, 2013; Yao & Zhao, 2009; Sreenivasulu, 2000). Table 2 contains adapted indicators used in this study.

Table 2: Description of Indicators

No.	Criteria	Description
1.	Digital Access Tools	<i>These are essential tools for providing digital resources and services. They include library management systems, website, federated search system, etc.</i>
2.	Digital Resources	<i>Full text, bibliographic, and multimedia resources that can be accessed inside and outside library. It includes OPAC, WebPac, Abstract databases, eBooks, e-journals, etc.</i>
3.	Digital Services	<i>These are services that can be performed digitally, such as online user education, online documents delivery, online renewal and booking, etc.</i>
4.	Digital forms	<i>These are electronic forms that can be fill-in and submit online to the library.</i>
5.	Digital communication Tools	<i>These tools allow librarian to communicate with the users. It includes emails, SMS, instance messages, etc.</i>
6.	Digital Social Networks	<i>Requires existence of special account for library to interact with users through Twitter, Facebook, YouTube, LinkedIn, etc.</i>

Data were collected using survey questionnaire, structured interview, and content analysis in December 2013 (Table 3). The researchers used Google Form to create a web-based survey questionnaire. The questionnaire, consisted of 12 questions, was sent through emails to library managers, supervisors, and heads of units. Feedbacks were received from 5 out of 18 universities. Respondents were reminded two times to participate in the study. Still the participation was very low. Then the researchers decided to use structured interview by making telephone calls to the potential respondents and fill-in the questionnaires. This resulted in completing four more questionnaires.

With a total of nine completed questionnaires out of 18, it is still impossible to achieve the objectives of the study. In order to overcome this problem, the researchers decided to use content analysis by examining the websites of remaining nine libraries and fill-in the questionnaires. This was possible because all the questions, except of demographic questions, needed “yes” or “no” responses. With this approach we were able to fill-in the questionnaires for the nine remaining libraries. The researchers spent at least forty five minutes on reading documents, watching videos, listening to audios, testing links and accessibility of each website to get accurate data and information. The collected data were coded using Statistical Package of Social Sciences (SPSS) to generate frequency distributions and percentages.

Table 3: Method of Data Collection

Method	Number of Libraries
Survey Questionnaire	5
Structured Interview	4
Content Analysis	9
Total :	18

FINDINGS AND DISCUSSION

Digital Access Tools

Digital access tools are essential tools for providing digital resources and services in libraries. The tools ensure that users have access to digital resources and services by providing secured and easy access to library materials. This study uses (1) integrated library systems, (2) website, (3) logon and authentication system, (4) discovery or federated search system, and (5) mobile application as indicators of digital access tools. Findings of the study showed that all of the 18 public and private university libraries examined are found using an advanced integrated library systems such as Millennium, Virtua, and Symphony (Table 4).

Beside integrated library system and website, we also investigated how these libraries provide access to digital resources and services. This includes security issue, availability of discovery or federated search tools and mobile applications. Contemporary academic libraries are expected to have reliable security system for digital resources and services. The system should allow them to control digital access, prevent misuse and abuse of resources and services, and generate statistical reports. On the other hand, discovery or federated search tools facilitate searching multiple digital resources under a single platform and help users to save time and efforts.

Findings of the study revealed that 88.9% of surveyed libraries use logon and authentication systems, and 72.2% use discovery or federated search tools for finding library resources. It is interesting to note that 2 libraries of the top 18 universities in the GCC countries were found using multiple usernames and passwords to access digital resources and services. Unlike logon and authentication systems, multiple usernames and passwords is not convenient and causes a lot of frustrations for the patrons.

With the advancement of smart phones, mobile applications have become an essential access tool not only for educational institutions but also for financial, medical, social, industrial, and commercial institutions. These applications allow users to easily access library resources and services through smart phones and tablets. Surprisingly, results of the study found that only 38% of the surveyed libraries have developed their own mobile applications.

Table 4: Digital Access Tools

No.	Criteria	Public Universities = 8	Private Universities = 10	Total = 18
		Number (%)	Number (%)	Number (%)
1	Integrated library system	8 (100%)	10 (100%)	18 (100%)
2	Website	8 (100%)	10 (100%)	18 (100%)
3	Logon & authentication system	7 (87.5%)	9 (90%)	18 (88.9%)
4	Discovery & federated search tools	5 (62.5%)	8 (37.5%)	13 (72.2%)
5	Mobile Applications (Apps)	4 (50%)	4 (40%)	8 (38.9%)

Digital Resources

Digital resources are the core components of digital libraries. It includes in-house, free and commercial databases; full-texts, abstracts, bibliographic, and multimedia databases. As listed in Table 5, this study uses eight indicators to identify digital resources of top 18 university libraries in the GCC countries. Results of the study showed that all the 18 libraries have OPAC, WebPac, e-journals, e-books, and e-manuscripts databases. Most of the surveyed libraries listed scopus, Web of Knowledge, Web of Science, LISA, LISTA, Ulrich International, ERIC, Econlit, Compendex, Medline, and books in print as bibliographics and abstract databases; Emerald, EBSCO, Science Direct, ACM, IEEE, ABI ProQuest, Taylor & Francis as electronic journal databases; while ebrary, Springer, CABI, Oxford Reference Online, Cambridge Books Online, MyiLibrary, CRC EngnetBase as electronic book databases.

In addition, we found that the surveyed libraries have developed their own digital manuscripts collection, or provide access to free electronic manuscript databases like Ohio electronic theses and dissertation, or subscribe to the commercial manuscript databases such as ProQuest Dissertation and Theses. However 50% of the surveyed libraries have online multimedia or image collections such as ARTstore and AnatLine.

Table 5: Digital Resources

No.	Criteria	Public Universities = 8	Private Universities = 10	Total = 18
		Number (%)	Number (%)	Number (%)
1	OPAC	8 (100%)	10 (100%)	18 (100%)
2	WebPac	8 (100%)	10 (100%)	18 (100%)
3	Abstract Databases	8 (100%)	10 (100%)	18 (100%)
4	E-books	8 (100%)	10 (100%)	18 (100%)
5	E-journals	8 (100%)	10 (100%)	18 (100%)
6	E-Manuscripts	8 (100%)	10 (100%)	18 (100%)
7	Online Multimedia	2 (25%)	7 (70%)	9 (50%)
8	Online Images	2 (25%)	7 (70%)	9 (50%)

Digital Services

Digital services offered by academic libraries must be designed to meet a wide range of informational, instructional, and direct access to library staff, resources and services. This study uses (1) online user education and guides, (2) online document delivery, (3) wireless connection, (4) online personalized services, and (5) interactive map as indicators of digital services (Table 6). All the surveyed libraries provide online instruction courses or guides. Similarly, a large majority of them provide online document delivery (72.2%), online renewal (88.9%), wireless connection (72.2%), online personalized services (72.2%), and interactive map for library location (77.8%).

Table 6: Digital Services

No.	Criteria	Public Universities = 8	Private Universities = 10	Total = 18
		Number (%)	Number (%)	Number (%)
1	Online user education and guides	8 (100%)	10 (100%)	18 (100%)
2	Online document delivery	7 (87.5%)	6 (60%)	13 (72.2%)
3	Online renewal	8 (100%)	8 (80%)	16 (88.9%)
4	Wireless connection	4 (50%)	9 (90%)	13 (72.2%)

5	Online personalized services	5 (62.5%)	8 (80%)	13 (72.2%)
6	Interactive map for library location	7 (87.5%)	7 (70%)	14 (77.8%)

Digital Forms

This criterion is defined as electronic forms that can be fill-in and submit online to the library. This study uses eight types of forms (Table 7) to determine the use of digital forms by the top 18 university libraries of the GCC countries. Findings revealed that all the surveyed libraries have online request or recommendation forms for documents. Similarly majority of libraries have online documents delivery application form (88.9%), online survey (77.8%), online library instruction application form (66.7%), and online assessment and evaluation form (55.5%).

It is interesting to note that 77.8% of the surveyed libraries do not provide membership application form online, 72.2% do not have document reservation form online, and 62% do not have complains and comments form online.

Table 7: Digital Forms

No.	Criteria	Public Universities = 8	Private Universities = 10	Total = 18
		Number (%)	Number (%)	Number (%)
1	Online membership application form	3 (37.5%)	1 (10%)	4 (22.2%)
2	Online library instruction application form	4 (50%)	8 (80%)	12 (66.7%)
3	Online request or recommendation forms for documents	8 (100%)	10 (100%)	18 (100%)
4	Online assessment and evaluation form	5 (62.5%)	5 (50%)	10 (55.5%)
5	Online complains and comments form	4 (50%)	3 (30%)	7 (38%)
6	Online document reservation form	3 (37.5%)	2 (20%)	5 (27.8%)
7	Online documents delivery application form	8 (100%)	8 (80%)	16 (88.9%)
8	Online survey form	7 (87.5%)	7 (70%)	14 (77.8%)

Digital Communication Tools

These tools allow librarians to communicate with the users. The study considered (1) fixed telephone line, (2) mobile phone, (3) Email, (4) Instance messages, (5) Short messaging system, (6) and video conferencing as indicators of digital communication tools (Table 8). These tools facilitate communication between library staff and users. Findings showed that all of the 18 university libraries surveyed use fixed telephone line, mobile phone, and email to communicate with the users.

It is noteworthy to find that 83.3% of the survey libraries do not use online video conferencing, 77.8% do not use short messaging system (SMS), and 66.6% do not use instance messaging system to communicate with the users. Surprisingly, more private universities are found using short messaging system (SMS) and online video conferencing than public universities.

Table 8: Digital Communication Tools

No.	Criteria	Public Universities = 8	Private Universities = 10	Total = 18
		Number (%)	Number (%)	Number (%)
1	Fixed Telephone line	8 (100%)	10 (100%)	18 (100%)
2	Mobile phone	8 (100%)	10 (100%)	18 (100%)
3	E-mail	8 (100%)	10 (100%)	18 (100%)

4	Instance Messages	3 (37.5%)	5 (50%)	8 (44.4%)
5	Short Messaging System (SMS)	1 (12.5%)	3 (30%)	4 (22.2%)
6	Online Video conferencing	1 (12.5%)	2 (20%)	3 (16.7%)

Social Networks

This feature requires the existence of social network accounts for a library to interact with a global audience around the world, to promote library resources and services. With this in mind, the study uses (1) Twitter, (2) Facebook, (3) YouTube, and (4) LinkedIn as indicators of social network (Table 9). These networks have become popular among people, and many organizations are using them to market their resources and services.

Librarians use Twitter to keep users up-to-date, to guide them, and communicate with them. Facebook is an important site to promote library resources and services through picture and images. Similarly YouTube is an effective tool for instruction and guiding users through videos. While LinkedIn is useful in communication, recruitments, instruction, and guidance.

Findings of the study revealed that 50% of the surveyed libraries have Twitter and Facebook accounts. Surprisingly, 77.8% of the surveyed libraries do not use LinkedIn, and 66.6% do not use YouTube. It is noteworthy that only one private university has YouTube account, and none of them are using LinkedIn. This might be due to the limitations and policies imposed by parent institutions on library managers of private universities for using social networks.

Table 9: Social Networks

No.	Criteria	Public Universities = 8	Private Universities = 10	Total = 18
		Number (%)	Number (%)	Number (%)
1	Twitter	7 (87.5%)	2 (20%)	9 (50%)
2	Facebook	7 (87.5%)	2 (20%)	9 (50%)
3	YouTube	7 (87.5%)	1 (10%)	8 (44.4%)
4	LinkedIn	4 (50%)	0 (0.0%)	4 (22.2%)

CONCLUSION

This study investigated the extent to which the libraries of the top three universities in each of the GCC countries are providing digital resources and services to meet users' information needs. Although all the surveyed libraries or a large number of them were found using core elements of access tools such as integrated library system, website, logon and authentication system, discovery or federated search tools. However, only 38.9% of them are found using mobile applications. In the oil rich countries like GCC, where most of the people own smart phones, libraries must ensure that they have mobile applications to access digital resources and services. Mobile application would, certainly, help libraries to provide resources and services anytime and anywhere. A recent report by Becker et al. (2013) proves that students are increasingly using mobile devices for educational purposes even when other internet enabled devices such as laptops and desktops are available.

This study revealed the strength of the surveyed libraries in providing a variety of digital resources and services. However the findings indicate the weakness of these libraries in using digital forms such as membership form, document reservation form, online complains and comments form, etc. Digital forms help libraries to save time, reduce cost, and satisfy users' needs. Therefore librarians must ensure the provision of digital forms as much as needed.

Although all the surveyed libraries were found using fixed telephone, mobile phone, and emails to communicate with the users, while 50 percent of them were found using Twitter and Facebook as social networks. However most of these libraries do not use instant messages, online video conferencing, and short messaging (SMS) to communicate with the users. Similarly a large majority of them do not have an account for YouTube or LinkedIn. As residents or citizens of GCC

countries we receive daily SMS from governmental and non-governmental organizations such as ministries, banks, telecommunication companies, shopping malls, etc. Similarly educational departments like finance, admission and registration, students' affairs are also using SMS to communicate with the students. The researchers found, during the process of data collection for this study, some of the surveyed libraries using YouTube for promoting libraries resource and services, for user education and guidance. It is essential for academic libraries to take advantage of latest digital communication tools and social networks to enhance and provide quality services to the patrons.

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