

## **Metadata Practices of Academic Libraries in Kuwait, Oman, and Qatar: Current State, Risks, and Perspectives for Knowledge Management**

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Developing, implementing, and managing metadata is crucial to successful knowledge management, and academic libraries have traditionally played a central role in these activities. The Arabian Gulf countries are underrepresented in the existing research into library metadata practices. This exploratory study used semi-structured interviews of metadata managers at 8 universities with the goal of developing understanding of the current state of metadata practices, including descriptive cataloging, identity management, and knowledge organization in academic libraries of three Arabian Gulf countries (Kuwait, Oman, and Qatar), as well as potential future developments to facilitate discovery of resources. Findings provide insights into this previously under-researched area and contribute to understanding of knowledge management and risks on a global scale.

### **1. Introduction**

There is a need for providing adequate metadata to enable access to Arabic-language materials as Arabic is one of the top 5 languages of the Internet users (Internet World Stats, 2020). Currently, the number of records representing Arabic-language materials in the largest database of metadata records, WorldCat union catalog, is over 3.3 million (Inside WorldCat, 2021). Most of WorldCat metadata contributors are libraries, in particular academic libraries. According to Zehery (1997), academic libraries play the most important role in providing access to information in the Arabian Gulf region. Thus, exploration of academic libraries' metadata practices is needed in the Arabian Gulf countries. This study examined the status of the organization of knowledge in the online catalogs (also known as integrated library systems) in academic libraries in Kuwait, Oman, and Qatar, analyzed similarities and differences in how information is organized and presented to the users in databases. In the following sections, brief review of relevant literature is followed by study methods description, findings, their discussion, conclusions, and ideas for future research.

### **2. Literature Review**

In the second half of the 20th century, publications by Holloway (1959), Lemos (1981) and others reviewed the state of library services in the Middle East. According to them, many libraries in the region were business-owned, and their catalogs were often unavailable; for the state-operated public and academic libraries, participation in union catalogs that aggregate library metadata into a centralized environment for easier access and resource discovery was rare. As evidenced by Khurshid (1997) study, in late 1990s, libraries of the Arabian Gulf region did not yet actively participate in the cooperative cataloging efforts and databases such as global WorldCat that functions since 1971 or regional union catalogs.

By the turn of the century, the integration of Middle Eastern library metadata practices with the ones used in other parts of the world was well in progress. Libraries were found to rely on commonly used tools and standards such as the Dewey Decimal Classification scheme and Library of Congress subject headings (LCSH) to provide subject access to materials in their collections (El-Sherbini, 2001). To minimize the Western-focused bias and improve discoverability of Arabic-language and other materials of interest to the users in the region, modified versions of these standards had to be developed: for example, Dewey Decimal Classification went through multiple regional revisions that were coordinated by the Jordan Library and Information Association since 1970s (Eid, 2019). Regional standards for organizing information and knowledge were also developed. One example is Maknaz expanded thesaurus consisting of subject and genre terms, personal, corporate, and geographic names (El-Sherbini, 2015). Arab Union Catalog was launched in 2006. Translations of international metadata standards were completed to provide region's librarians with tools for creation of metadata that meets the latest requirements (Eid, 2019).

The available research literature on knowledge organization, including metadata practices in the Arabian Gulf countries in the 21st century, is currently very limited. Osman and El-Masry (2016) reviewed experiences of catalogers of Arabic-script materials (including those working in Qatar, United Arab Emirates, and Saudi Arabia) with application of the international metadata standards. Their study revealed challenges such as lack of support by integrated library systems for the links between Romanized text metadata fields and their vernacular text counterparts in MARC 21 metadata records, synchronization issues between Arab Union Catalog and WorldCat databases, bibliographic records duplication in Arab Union Catalog, as well as lack of the way to import records into the library's online catalog directly from Arab Union Catalog. As part of the study that examined application of information communication technologies, Al-Ansari (2011) found that 72% of the 25 Kuwaiti libraries were automated and used online public access catalogs. While 10 out of 18 libraries relied on Horizon Library Automation System, Al-Ansari also observed the trend for use of in-house systems for online catalogs, and their limited functionality, including incompatibility with international standards such as MARC, which complicated online sharing of resources. Similar to findings of Al-Ansari's study, Verizon was the system used by most (5 out of 6) libraries in the Ur Rehman and Al-Huraiti's (2010) study of six academic libraries in Kuwait. They found that cataloging module implementations of the integrated library systems were almost complete in the surveyed libraries. A recent exploratory case study (Aljalalmah and Zavalina, 2021) examined metadata records and compared application of metadata schemes, controlled vocabularies for name and subject representation, classification systems etc. in a museum, an archive, and a library in the Arabian Gulf region for physical and digital collections. In addition to content analysis of a sample of metadata records, that study also used interview data. One of the observations made as part of that study was that the academic library metadata manager who participated in the interview did not separate in their answers information about metadata in the institution's digital collections and online public access catalog (OPAC) otherwise known as Integrated Library System (ILS) that provided access through MARC 21 metadata to institution's entire collection, that mostly includes physical analog items and digital resources obtained through subscription rather than digitization. Together with the fact that digital library development is an emerging trend, and most libraries in the Arabian Gulf region have not yet developed their digital libraries or repositories, this pointed out the need to separately investigate information organization and knowledge representation practices in online catalogs and compare the patterns across. The study presented in this paper begins to address this need.

Education provided to catalogers and creators of metadata for digital repositories affects the metadata practices. Several studies have been published that looked at cataloging education in the Middle East: Egypt, Iran, Israel, and some Arabian Gulf countries. Khurshid's (1998; 2006) reports focused on metadata education state in Saudi Arabia. One study focused on Oman (Al Hijji and Fadlallah, 2013). However, no studies

have been published in the recent years about cataloging education of metadata creators in Kuwait and Qatar, and the study presented in this paper collected and analyzed some relevant data on this under-researched topic.

### 3. Method

This study focused on three Arabian Gulf countries -- Kuwait, Oman, and Qatar -- and was guided by the following research questions:

- What are the current metadata (and broader information organization) practices used and what are the future perspectives?
- What are the training and practical experience levels of metadata managers, and what guidance is provided to catalogers and users?
- What risks and challenges to knowledge management are academic libraries facing now or expect to face in future projects?

Interviews were used as the data collection method. Researchers selected academic libraries that have digital project(s) or collection(s). Given the standing of academic libraries in the region, these institutions have the strong potential to become major contributors to regional digital repositories, and some have already developed digital collections of their own. To obtain accurate data on local practices, only institutions with headquarters located in Kuwait, Oman, or Qatar were selected. The research sample was stratified by country: between 5 and 6 participating institutions from each of the three countries were selected. Then, potential respondents – metadata managers responsible for information organization (including metadata) decisions -- were selected from the lists of employees on their institution's websites. The interview recruitment email was sent to 17 potential respondents, and eight took part in the study, a response rate of 41%.

Ongoing COVID-19 pandemic poses significant physical health risks and related uptake in mental health issues caused by prolonged social isolation. Other global risks brought on by the pandemic include labor shortages and difficulty in recruiting employees. Importantly, it continues to present risk to knowledge management by negatively affecting the processes of knowledge acquisition through education at all levels, as well as through research. For example, the ability of researchers worldwide to arrange with potential study participants for in-person or audiovisual (e.g., Zoom) interviews is significantly limited which requires adoption of alternative ways to collect rich qualitative data from human study participants. One solution is relying on email interviews which allow participants to find time in their schedule to provide more thoughtful, reflective responses to the interview questions (Meho, 2006). Previous studies found email interviews effective and resulting in relatively high response rate (e.g., Park and Tosaka, 2015).

In this study, interviews were conducted by email, which allowed participants to respond whenever they can, considering the quarantine and work-from-home situations. The interview was semi-structured, with a set of main questions prepared in advance and follow-up questions as needed. The main interview questions were sent to the participants in both English and Arabic as a parallel text to help reduce participation barriers, and participants had the freedom to choose the language of their answers. Interviews included questions about integrated library systems, metadata schemes, controlled vocabularies for representing names and subjects, search options, search language interfaces enabled. Questions about whether and how the metadata creators and users are trained, what guidelines are available, how the academic libraries reach out to the users for feedback were also asked. Finally, interview instrument was designed to collect the data about educational background, length of experience, and sources of professional training received by metadata managers.

#### 4. Results

Horizon integrated library system by Sirsi Dynix that had been reported by earlier studies as the most chosen ILS was only used by one institution participating institution in the study. Three other institutions used Sierra ILS by Innovative Interfaces. Two participants reported using EBSCO Discovery, and one of them customized the tool with EBSCO Admin and combined it with OCLC-hosted EZ-Proxy. One respondent's academic library used open-source Koha library management system. Libero library management system and the older popular application VTLS (Virginia Tech Library Systems) were used by one respondent each.

All 8 participants reported providing both simple and advanced search options for the ILS users. Only one participant reported providing a search interface with English as the single search language. One institution provides search capability in 4 languages (Arabic, English, French, and German), and remaining six academic libraries provide bilingual search interfaces in which users can search in Arabic and English.

Six libraries reported using MARC 21, and one reported using Dublin Core metadata scheme. Five participants reported using controlled vocabularies to represent names: the Library of Congress Name Authority File (LCNAF) was used in all these cases. Two participants reported not using any controlled vocabularies for names. For topical terms in metadata records 6 participants reported using the Library of Congress Subject Headings (LCSH) alone or in combination with other controlled vocabularies that are customized for needs of local users. Those regional controlled lists of topical headings included List of Standard Arabic Headings and Alkhazindar Subject Headings List. They were used by respondents for representing Arabic-language materials only (with the LCSH used for English-language materials). One participant reported their academic library did not utilize LCSH at all but only used the regional Big Subject Headings List. Five participants reported using Library of Congress Classification (LCC) for classifying all materials. Two 2 respondents use LCC for English-language materials and Dewey Decimal Classification (the version adjusted for Arab and Muslim world) for Arabic-language materials.

When asked about which sets of metadata guidelines are used by catalogers in metadata creation, one participant each reported relying on MARC 21 standard documentation and EBSCO Discovery system guidelines and utilizing locally developed metadata creation guidelines. The remaining 4 respondents claimed their library catalogers use no metadata creation guidelines.

Most (7 out of 8 participants) reported one or more kinds of training on utilizing library databases provided to the library users. Tutorials were provided by 2 participating institutions (one of which also relied on information literacy presentations). Online training was offered by 2 academic libraries, and one of them also offered face-to-face trainings. Online guidelines documents are utilized at two academic libraries. One institution relied on workshops for users.

Six metadata managers reported that their institution also reaches out to the users to collect feedback. Most contact users in person (n=4) and/or via email (n=3). One institution each replied that they use the website, social media tools, surveys, and phone calls as one of the user contact methods. Three institutions reported using workshops as ways to connect with users. The units within the academic library that maintain contact with users varied and included cataloging (n=1), collection development (n=1), public relations (n=1), reference desk and social media department (n=1).

Responses to questions regarding educational background revealed that metadata managers held academic degrees in areas relevant to the nature of the work. This included one participant majoring in computer science, three majoring in library science, and four majoring in library and information science. As to the level of degree, three respondents held a master's degree, other three a bachelor's degree, while one participant had an associate degree, and one did not specify the highest academic degree level. Among participants of this study, the total experience managing metadata and bibliographic databases ranged from 6 to 37 years, with the average of 19.88. All but one participant reported receiving additional training: colleagues provided training to 4 respondents, one other reported "personal training", two participated in training workshops, and one reported online training.

## 5. Discussion and Conclusions

This study observed substantial similarities in the tools used for information organization and knowledge representation by academic libraries in Arabian Gulf countries. The findings of this study confirm the trend of reliance on international standards reported in recent years (e.g., Eid, 2019), despite the regional challenges with implementing international standards pointed out by earlier studies (e.g., Khurshid, 1997; Osman and El-Masri, 2016). All institutions whose representatives participated in this study use international metadata standards such as the classification system and the subject headings by the US Library of Congress. Seven metadata managers who participated in this study also reported using the MARC 21 metadata scheme.

However, differences in the use of controlled vocabularies used would create metadata interoperability issues. Some institutions reported using different sets of subject headings for materials in Arabic language and those in English language. To meet the local needs, these academic libraries rely on subject headings lists developed in the Arabian Gulf countries, such as The Big Subject Heading List, Alkhazindar Subject Heading List, and Qa'imat Ru'us al-Mawdu'at al-Arabiyah al-Qiyasiyah lil-Maktabat wa-Marakiz al-Ma'lumat wa-Qawa'id al-Bayanat (also called List of Standard Arabic Subject Headings for Libraries, Information Centers and Databases). Also, no integrated library system is used by more than three libraries, which contradicted the assumption that many institutions might be using Horizon system which is known to be very popular in Kuwait (e.g., Al-Ansari, 2011, etc.). This might mean that in choosing digital content management systems for digital collections, institution select systems that meet their local needs but might not be supporting interoperability in aggregated environment.

Following metadata creation guidelines ensures higher quality of metadata through positively affecting its consistency, yet this study found that metadata creation guidelines are not being used in the Arabian Gulf countries academic libraries. A possible explanation for this finding is that most of these guidelines currently exist only in English and some other Western languages, which creates a language barrier to using them for majority of Arabian Gulf cultural heritage institutions employees who are not fluent in English.

Our findings also reveal the knowledge management risks of potential metadata quality issues caused by reliance on older, no-longer-updated vocabularies: e.g., one participating institution used a seriously outdated version of Dewey Decimal Classification system, another relied on Alkhazindar Subject Heading List, a legacy list that has not been updated since the 1990s when its developer died. The main reason for this trend, as well as for reliance on older legacy ILSes or content management systems is the different levels and sources of funding and financial standing of the institutions that participated in this study, budgets of some of which are very limited.

The trend among libraries in the Arabian Gulf countries to require and/or offer onsite training for their employees to prepare them to do their job according to that institution's standards and needs was reported by earlier studies of Library and Information Science education in the region (e.g., Khurshid, 2006; Al Hijji, 2012). Our study's findings show that this trend continues, which might indicate the lack of practical project-based learning in metadata education and the resulting lack of consistency in preparation of knowledge professionals.

The study found that while users are consulted for general feedback on collections and services, institutions do not examine and consider the users' needs when choosing information systems for content management, selecting existing or developing local metadata schemes and information organization standards, creating metadata records, etc.

Overall, the main risks to successful knowledge management through information organization in physical and digital libraries in the Arabian Gulf region, as revealed by this study, are the lack of sufficient long-term dedicated budgets and the lack of practical training in the library and information science programs. Another risk is over-reliance on foreign workforce that is unsustainable, as demonstrated by the exodus of foreign workforce due to COVID-19 resulting in many Arabian Gulf cultural heritage institutions being closed for a long period of time.

This study is exploratory in nature and has several limitations. One of the known limitations of the interview data collection method is that participants might provide inaccurate answers (e.g., Alshenqeeti, 2014). This phenomenon was observed in this study as well: one of the participants blended their experiences from their entire career with the experiences they had solely at their current position in their institution. While the overall benefit is getting useful contextual information, this raises some concerns regarding the accuracy of given answers. Another limitation was related to completeness of collected interview data as some participants left some questions unanswered.

Future research is needed to closely examine the current status, risks, and perspectives of the organization of knowledge in other Arabian Gulf countries that were beyond the scope of this study: Saudi Arabia, Bahrain, and United Emirates. Also needed are studies that comparatively evaluate metadata records in the databases of academic libraries and other institutions and will provide more robust understanding of metadata quality in Arabian Gulf bibliographic databases. The patterns observed in metadata and metadata-related practices across the region will be useful for planning and implementation of effective knowledge management through metadata management in large-scale portals that include metadata records from academic libraries and other cultural heritage institutions in various countries of the Arabian Gulf region.

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