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Transitioning from a Teaching to a Research-Focused Collection in a Middle Eastern University: A Road Map for Future Directions

Lilly Hoi Sze Ho

Title: Transitioning from a Teaching to a Research-Focused Collection in a Middle Eastern University: A Road Map for Future Directions

Abstract: Library collections at Middle Eastern universities have usually prioritized teaching over research resources. Zayed University is now transitioning toward research. This chapter addresses the methodology of electronic resources assessment and systematic data analysis. The central point is to provide an overview of how electronic resources adequacy is measured and thereby determine the correlation between the level of utilization of resources and growth of research activities in the university to ensure the best use of funding on the resources. The chapter concludes with a summary, a balanced assessment of electronic resources collection, and a road map for future directions of the library.

Keywords: collection development, collection assessment methodology, Intota Assessment, Scopus

Project focus: assessment methodologies, techniques, or practices; collections

Results made or will make case for: more funding, improvements in collections, proof of library impact and value, a strategic plan or process, how money or resources may be directed

Data needed: FTE, student enrollment

Methodology: mixed method

Project duration: greater than 1 year

Tool(s) utilized: Excel, Scopus, Intota Assessment

Cost estimate: < $100

Type of institution: university—public

Institution enrollment: < 5,000

Highest level of education: master's/professional Degree

Chapter 28

Transitioning from a Teaching to a Research-Focused Collection in a Middle Eastern University

A Road Map for Future Directions

Lilly Hoi Sze Ho

Introduction

Library collections in Middle Eastern universities have usually prioritized teaching over research. Zayed University is transitioning toward research, but research-centric collection assessments are rarely applied in the region. The assessment described here is intended to assess the relevance of the Zayed University library collection to its shifted focus. In recent years, the library has allocated more than 40 percent of its operational budget to maintain existing and acquire new library resources in all formats to support

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student learning, faculty teaching, and research across campuses in Dubai and Abu Dhabi. Of this, 80 percent is spent on electronic resources. Hence, electronic collections were given priority within the assessment process.

Assessment topologies have previously been described as being either collection- or use-based.[1] Collection-based techniques, including citation analysis and content overlap studies, are used to examine the size, growth, range, and balance of library materials. Librarians use this information to determine preservation and conservation treatments, trimming of the physical collection, assessment of electronic subscriptions, identification of duplication, and storage. Use-based techniques include qualitative and quantitative approaches (such as vendor-supplied data, transaction logs, and usability testing) to assess degree of utilization and user satisfaction.

In this chapter, a model is described in detail with an explanation of each metric used, the sources of data for each metric, and the weight each metric carries in the overall decision-making process. Determining the level at which a decision is triggered by the model will also be addressed. Assessment methodologies and techniques in both qualitative and quantitative analysis will be covered. The chapter begins by addressing the methodology of electronic resources assessment in the library. The central point is an outline for measuring the adequacy of electronic resources and determining the correlation between resource utilization and growth of research activities in the university to ensure the best use of library funding. The chapter concludes with a summary, a balanced assessment of electronic resources collection, and a road map for future directions of Zayed University Library. The assessment outcomes will be communicated to library administrators for collection improvements and strategic planning, to demonstrate the library's value and impact in the university, and to provide a systematic approach for similarly placed academic libraries to begin electronic resources assessment.

The terms *assessment* and *evaluation* are distinguishable by the intent of analysis,[2] but for this chapter they have the same meaning; hence, the term *assessment* is used. The objective of this year-long project was to provide a better understanding of the collection and explore how well the collection supports the library users and research activities in the university. This is the first comprehensive assessment in the relatively short lifetime of Zayed University Library.
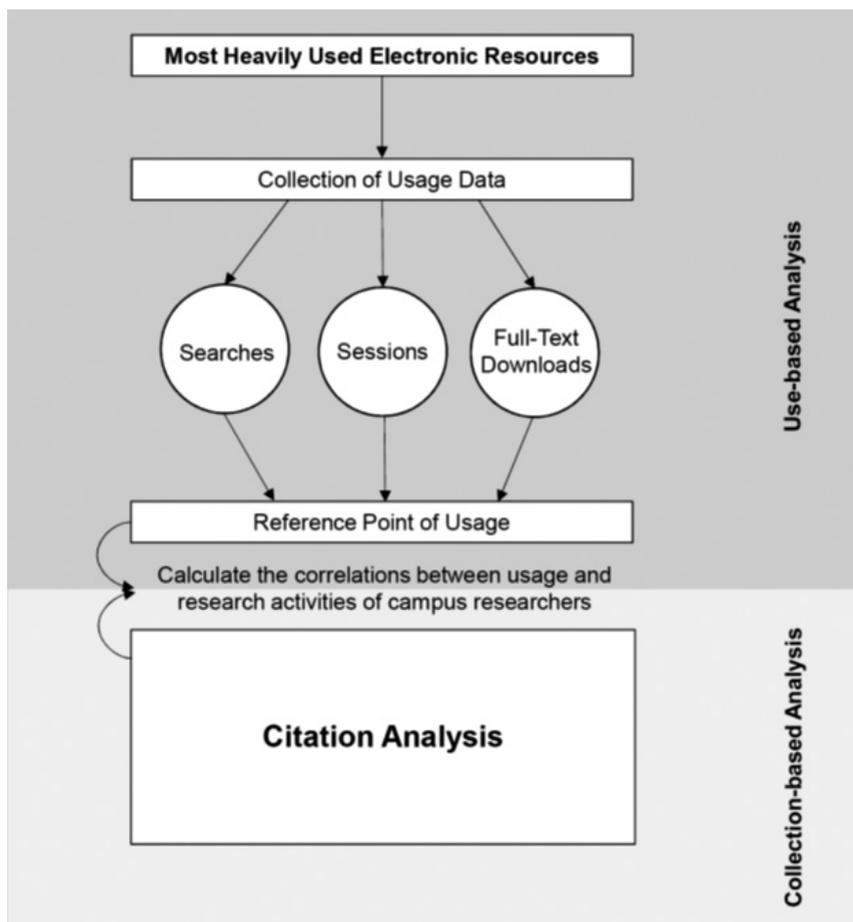
Electronic Resources and Collection Analysis

Assessment is a long-term process involving collation of a comprehensive data set of internal and external resources, review of collection size with respect to the university size, and collection analysis using existing applications. This multiyear process is hampered by high staff turnover. Collections can be divided into electronic resources and monographs, and the evaluation of electronic resources alone may take a year, from building the assessment model, to collecting and analyzing data; and preparing and designing and then implementing a work plan.

In 2016, Zayed University Library held 646,461 titles in the collection and 438,237 in electronic format, of which 139,415 (31.81%) were journals, 298,728 (68.17%)

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were books, and the rest were other electronic resources. Both collection-based and use-based analysis are applied to the assessment model (figure 28.1). In this bivariate analysis model, each analysis includes metrics relying on several sources of data.[3] All metrics carry the same weight in the overall decision-making process on determining the correlation for in-depth analysis.

The model described here is based on the Electronic Resources Value Assessment Model developed at the Mary and Jeff Bell Library at Texas A&M University-Corpus Christi.[4] The focus of the original design was to identify resources for cancellation and to establish criteria for renewal and purchasing. The current model also does this, but its focus is more exploratory, to visualize the relationship between resource usage and research activities of campus researchers.
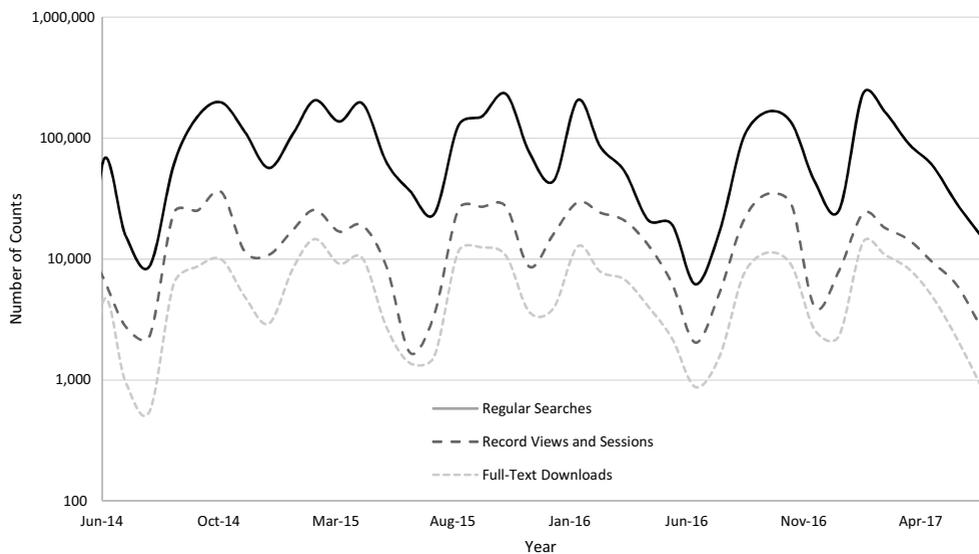

Figure 28.1
Electronic resources assessment model used at Zayed University Library.

The use-based analysis is applied to the most heavily used electronic resources in the library. The analysis is based on the data that the library routinely collects in monthly and annual reports from searches, sessions, and full-text downloads of resources. In the first experimental analysis, data from June 2014 to April 2017 was used. These three

data sets directly reflect the actual usage of resources and act as the reference point of resources usage (figure 28.2) for the research activities in the university. The most active research activities happened during the academic year, and activity slowed considerably during summer. This data is provided primarily by resource vendors and defined by Project Counting Online Usage of Networked Electronic Resources, COUNTER.[5] In view of the collection size, the use-based analysis of the electronic collection included resources such as e-book packages of ProQuest eBook Central (148,735 titles) and Safari (43,167 titles) and e-journals and databases from ProQuest and EBSCO.
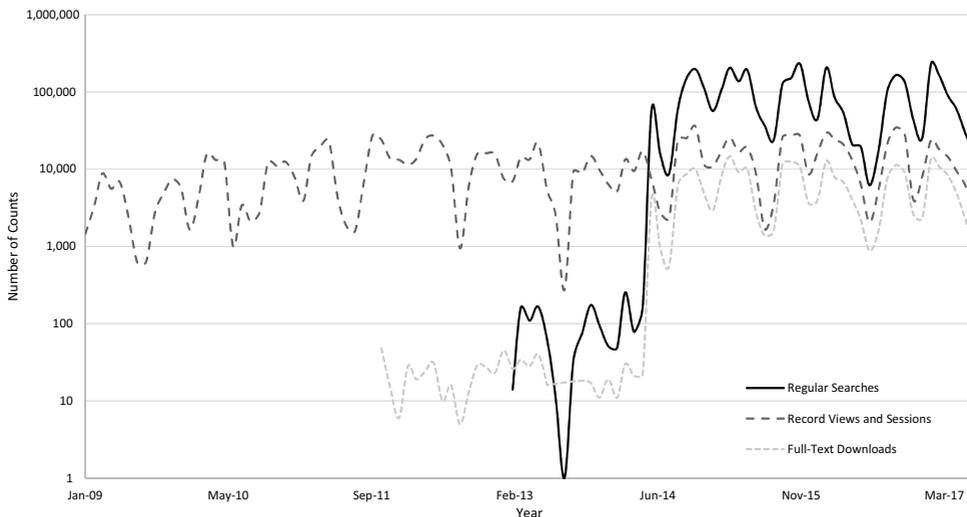

Figure 28.2

Resources usage from three data sets: searches, sessions and full-text downloads, June 2014–April 2017.

In the second experimental analysis, sessions data from 2009 was used, but other resources data was complete only from 2014 onwards (figure 28.3). All resources data exhibited a seasonal dip in research activity over the summer periods, during the analysis period.

Project COUNTER defined *search* as a "user-driven intellectual query, typically equated to submitting the search form of the online services to the server." *Session* is defined as "a successful request of an online service. It is one cycle of user activities that typically starts when a user connects to the service or database and ends by terminating activity that is either explicit (by leaving the service through exit or logout) or implicit (timeout due to user inactivity)." *Full-text download (FTD)* is the successful request of downloading an item which is defined by Project COUNTER as "a uniquely identifiable piece of published work that may be a full-text article (original or a review of other published work); an abstract or digest of a full-text article; a book chapter; an encyclopedia entry; a sectional HTML page; supplementary material associated with a full-text article (e.g., a supplementary dataset), or non-textual resources, such as an image, a video, or audio."[6] Searches, sessions, and full-text downloads are three of several key performance

indicators for measuring the usage of resources.[7] Link-out web-scale discovery systems and OpenURL are excluded in the model at this stage of electronic resources assessment.

Figure 28.3
Resources usage from three data sets: searches, sessions and full-text downloads, January 2009–July 2017.

Citation analysis is a long-established and well-studied method for assessing the relevance of a collection.[8] An analysis of 1,148 source articles in Scopus published between 2000 and 2016 and having at least one author affiliated with Zayed University was conducted to see how effectively the electronic journals collection satisfied users' needs (table 28.1).[9] Findings of the analysis also provided data on the level of research activity among colleges. Source articles were classified to college via the affiliated author, and authors classified to campus of employment, being Dubai or Abu Dhabi. Sample size was limited to journal and/or book formats that displayed clearly identifiable citation analysis variables.[10] From 1,148 source articles, 34,556 citations were extracted. A sample of 18,312 cited articles were selected as a sample for analysis, of which 5,485 were cited journals. The analysis of cited books was still in progress at the time of writing.

Table 28.1
Percentage of cited journal articles that were available in the library, (2000–2016 fulfillment rate)

	Cited Journal Articles		
	All	**In Library Collection**	**Fulfillment Rate (%)**
College			
Art and Design	61	42	68.9
Business	4,462	3,863	86.6
Communication & Media	385	301	78.2
Education	1,229	965	78.5

Humanities & Social Sciences	1,059	692	65.3
Information Technology	3,610	2,223	61.6
Natural Science & Public Health	4,562	2,648	58
University College	763	487	63.8
Unit			
Arabic and Islamic Studies	16	10	62.5
Library	42	33	78.6
Provost's Office	45	24	53.3
Campus			
Abu Dhabi	8,243	5,918	71.8
Dubai	9,159	6,343	69.3

The method of accessing journal articles, whether by journal packages or aggregator databases, was not considered for this part of the analysis. We define *source articles* as articles written by Zayed University faculty, and *cited articles* as articles included in the bibliographies of source articles. The journals of cited articles are *cited journals,* and the books of cited articles are *cited books*.

The increasing use of electronic resources of all categories and the growing need of research activities presents different challenges for analysis. The biggest difficulty encountered in citation analysis was in extracting the journal names from cited articles, including deciphering abbreviations and identifying changed academic journal titles. Time constraints were a factor when checking and deciphering abbreviations. It may affect the mapping results of cited journal availability in the library, particularly in the disciplines of engineering, computer science, and information technology, which have greater deviation of abbreviated titles. Similar challenges were faced when mapping cited books with library availability due to the absence of ISBN or any other unique book identifier in the citations. The assessment was restricted to major resources and samples, due to time and personnel limitations.

The citation analysis is based on past publications in a university that is restructuring and developing rapidly. Hence there is a danger that the analysis does not reflect current research patterns of faculty. Data was collected from Scopus in early January 2017, but faculty publications continued to appear on Scopus during the time of study. The covering period of user activities statistics is from 2014 to April 2017, the earlier date reflecting the university's shift to a research focus, and therefore the commencement of metric data. Publication number was growing at this time (figure 28.4), indicating an increase of research activity in perhaps the year before publication. The list of subscribed journals and books was obtained from Serials Solutions, and usage data is provided by Project COUNTER. The substantial difference in sample sizes of the two analyses was a methodological limitation. Despite this, the general overview of institutional research activities could be useful for collection building and development.
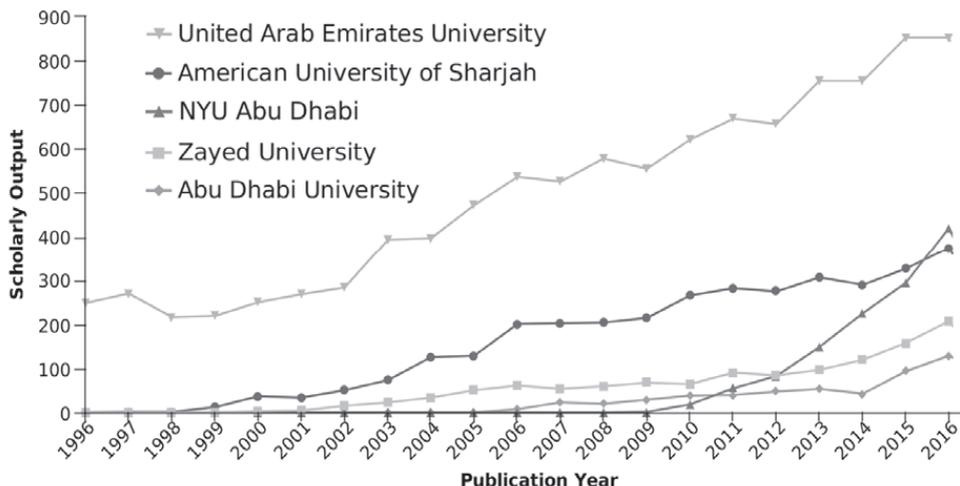
Figure 28.4
Scholarly output of selected universities in United Arab Emirates, 1996–2017 (Source: Elsevier SciVal).

The model addresses the adequacy of electronic resources, and thus the correlation between the level of utilization of resources and growth of research activities in the university with collection- and use-based analysis.[11] Although data was limited, a positive correlation was obtained (figure 28.5). The model excludes the cost of electronic resources and the percentage of library budgets for their acquisition. It also excludes whether faculty members genuinely use or even need the resources, and the relative importance of different resources within a field. Additionally, a correlation is not evidence that research activities cause or change the level of utilization of resources.[12] The assessment result will be used to investigate the trend of researchers' activities and resources usage throughout previous years.
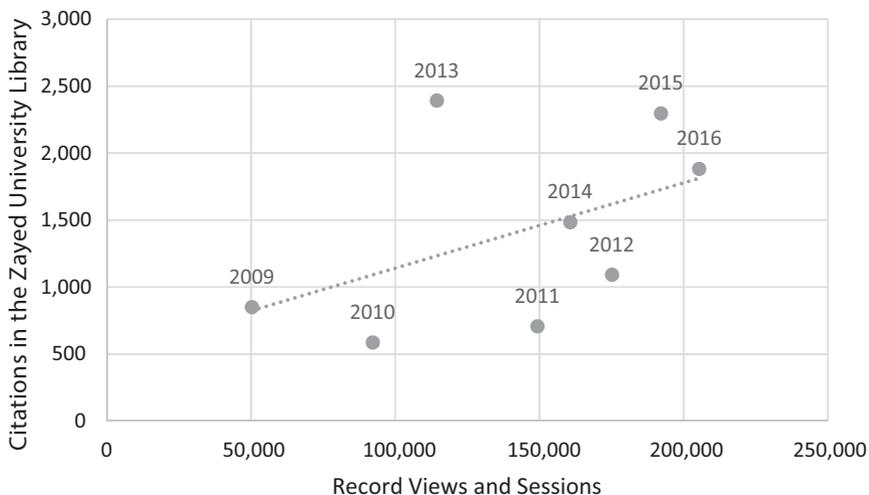
Figure 28.5
Relationship between the research activities and session of resources for the citations of publications at Zayed University, 2009–2016 ($r = 0.473$).

Our assumption that library utilization will be highly correlated with the growth of research productivity cannot yet be verified, since figure 28.5 shows the positive correlation on only part of the resources' usage. A full picture of resources utilization and research activities requires historical data for searches and full-text downloads to be included. Nevertheless, the data indicates a steady growth of research needs during the period studied.

Conclusions

Collection assessment is an ongoing exercise that employs a range of activities. Library technical services play an essential role because their qualitative and quantitative work tasks provide the data for evidence-based decisions. Outcomes of this assessment enable the library to develop collection strategies for continuous improvement of users' learning and services, to budget across disciplines, and to efficiently provide access to library resources. The sample data set, strategies, and approaches presented in this chapter provide practical grounding for the assessment of electronic resources for similarly placed academic libraries.

Communicating Results and Impact

Studies on collection development and assessment in Middle Eastern countries are very limited, particularly in the United Arab Emirates. A 2003 collection development project at the American University of Sharjah evaluated printed collections and established collection development policies.[13] Another study from 1995 to 2000 tracked the growth of electronic journal usage in six Saudi Arabian academic libraries, when electronic resources were less common.[14] These two somewhat dated studies are among very few examples in the Arabian Gulf. Hence, the story of Zayed University Library not only gives a fresh idea on the approach of research-centric collection assessment, but also demonstrates a guidance for library practitioners in the country. The data presented from the result of assessment will be used as reference for future collection development and changes in acquisition policies to satisfy the needs of campus researchers.

Findings from this citation analysis provide statistical evidence of the library collection's strengths and weaknesses to guide future improvement of the collection. The low fulfillment rate, such as by the College of Natural Science and Public Health (see table 28.1), could be a focus for improving library support. Knowing the age distribution of cited journal articles (figure 28.6) helps to guide the purchase of online archives. For Zayed University, the long-term hosting fees are justified for psychology journals because researchers using these journals more often cited older articles (median age ten years). University-wide, citation numbers declined by approximately 50 percent for each decade of article age.
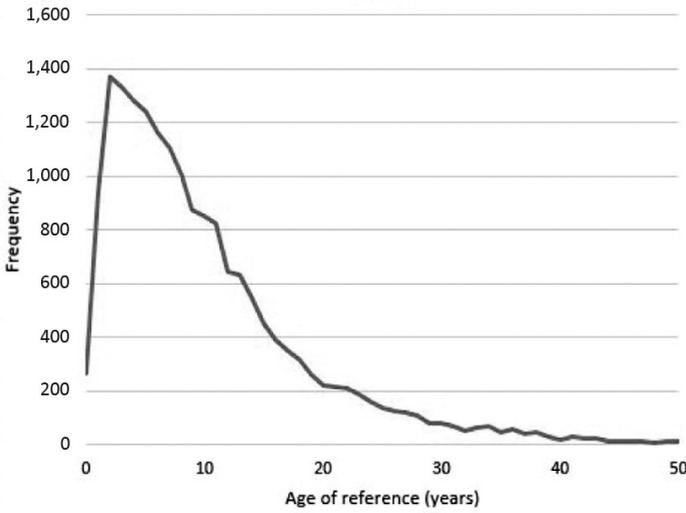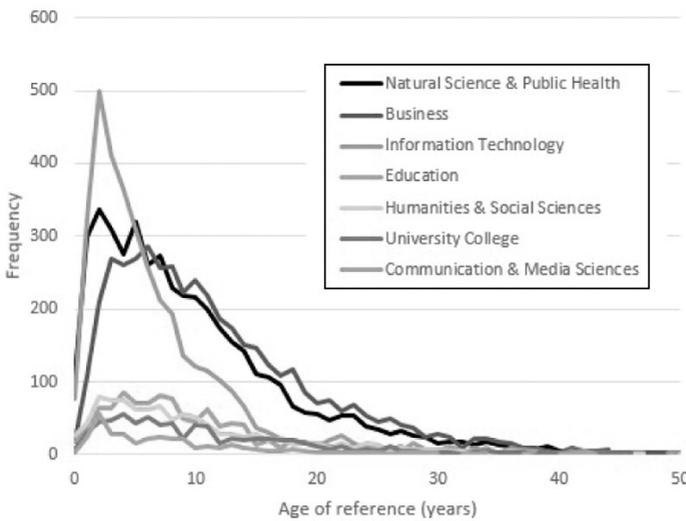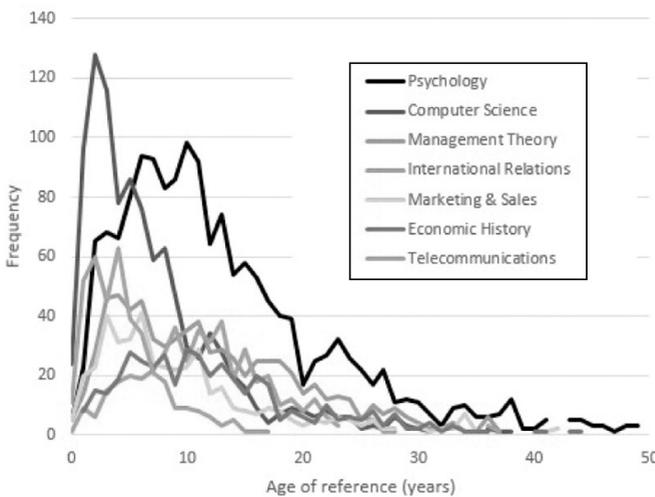
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Figure 28.6
Age of citations for all cited articles **(a)**, and categorized by college **(b)** and subject **(c).**

The subject distribution of the cited journals showed that Colleges of Natural Science and Public Health, Business, and Information Technology had a broad range of cited subject areas (130, 102 and 85 subject areas respectively; figure 28.7). This finding helped the library to decide whether to subscribe to journals outside the specific subject areas of these colleges.
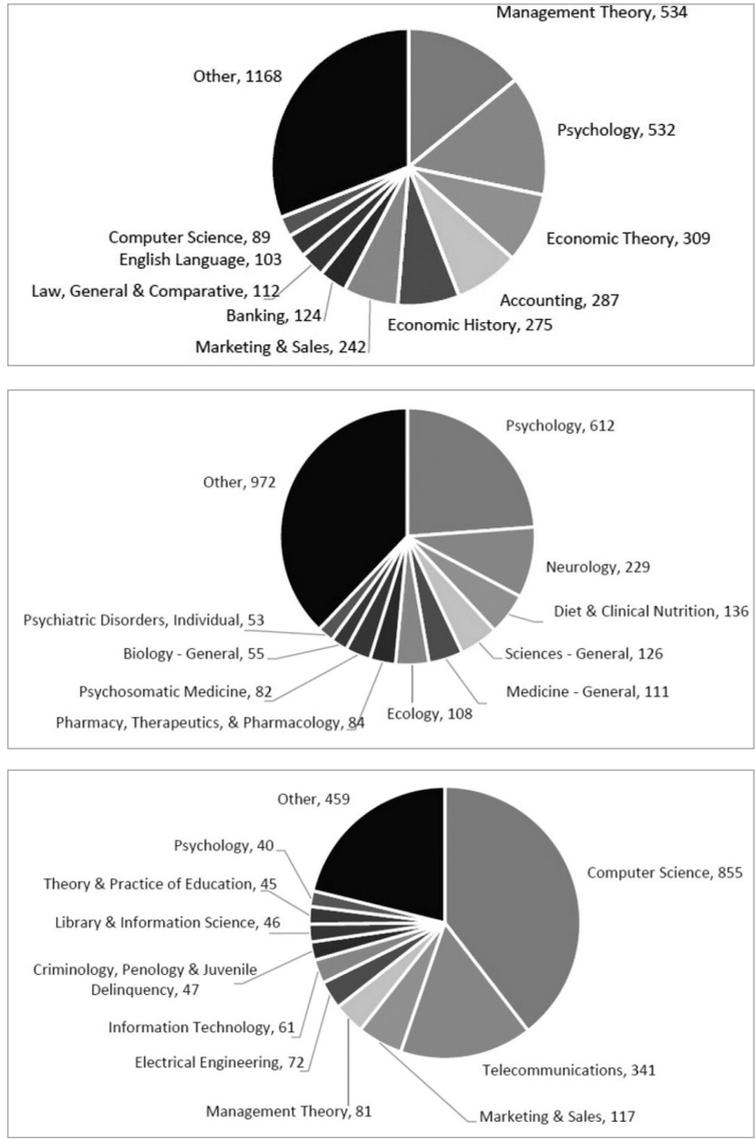
Figure 28.7
Cited articles by subject, for the Colleges of Business **(a)**, Natural Science and Public Health **(b)**, and Information Technology **(c)**.

The current model in Zayed University Library will continually be adapted to the fast-changing world of digital libraries and internal policies of the university. Nevertheless, as with the "Sutton" model, it is welcome for libraries to adapt it to their own use and future evolution.

Leveraging the Findings

Collection assessment is a library-wide project with the participation of professionals and paraprofessionals from all library departments. The electronic resources assessment is only part of the whole assessment project. Balanced assessment (figure 28.8) should cover monographs and other library collection–related services such as interlibrary loan and document delivery services so that a full picture of research-centric collection and supports is obtained. For the comprehensive electronic resources assessment, statistics from link-out, Web-scale discovery systems, and OpenURL should be included in the data collection. Combining with circulation of monographs and transaction logs from library services, the new reference point of usage will be used to redefine the correlation of usage and research activities of campus researchers. When additional analysis is deemed necessary based on the initial analysis, a second level of analysis will be applied. This level of in-depth analysis was based on the data that is not routinely collected by the library, such as overlap studies, collection mapping, and ratio measurement, making the second level of analysis slightly more time-consuming than the first level. The library will then use this information to find out "the collection approach for shaping the Library into the optimal size to serve the current constituents."[15]
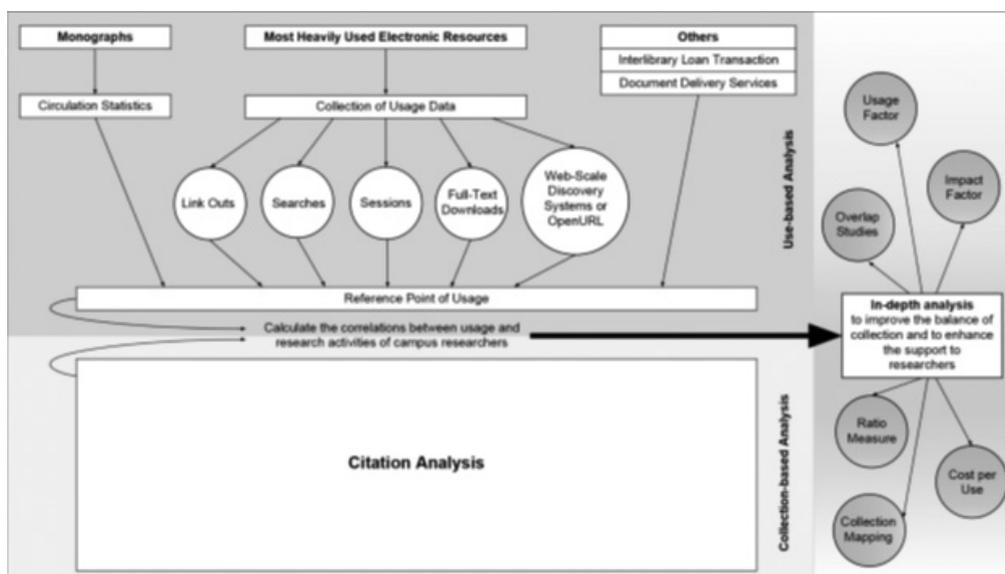
Figure 28.8
Balanced assessment of library collection.

There are different definitions of strategy in libraries, but the common characteristics include forward-looking, long-term orientation including plan and actions by phases to ensure success. A road map for Zayed University Library (figure 28.9) has the same purpose of closing the gap between current and future states, aiming to meet the expectation of library stakeholders.
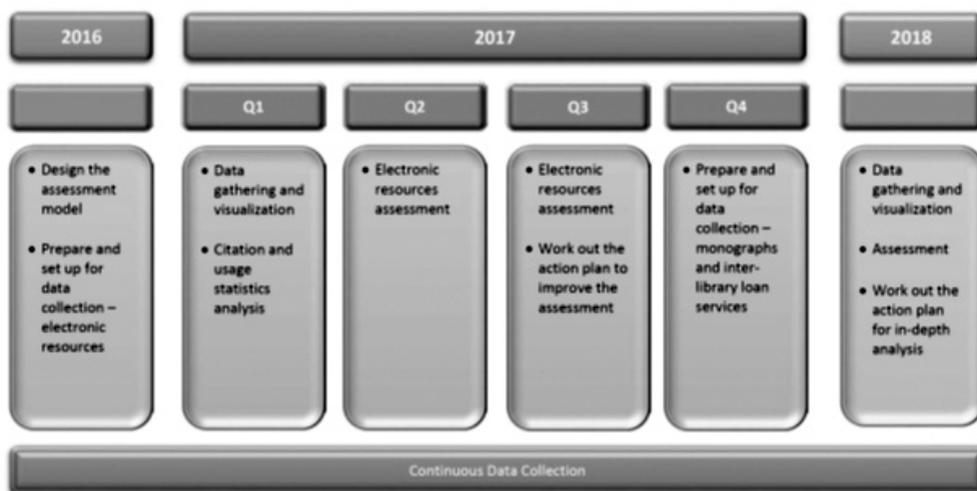
Figure 28.9
Zayed University Library road map for transitioning from teaching- to research-based collection.

Reflection

One of the difficulties of implementing collection assessment and creating the work plan of this project was the high turnover of library staff and intensive work involved in the analysis. The most difficult steps are in building a model that is suitable for the library. Data collection and analysis with limited resources and technical support are other obstacles. The process of several attempts to find the best fit of data size for analysis acts as environment scanning to stretch the factual situation of research activities in the university and the general idea on how the university functions. It is part of a systematic process for collecting and analyzing information for the assessment process. At the time of writing this chapter, the sample data size for citation analysis has been confirmed and the assessment has already been completed while the size of data set for determining the correlation is still at the exploration stage because of unsatisfactory correlation results and incomplete data of searches and full-text downloads. The ideal correlation coefficient will be a baseline for in-depth analysis.

In theory, evidence-based assessment is essential for developing collection strategies, but how effective it is for Zayed University Library is still unknown as we are at the middle of assessment and the model is subject to change. Even so, at the time of writing, the assessment outcomes, particularly the findings from citation analysis, the positive relationship of library utilization and the growth of research productivity, as described earlier, have already demonstrated the library's great support on current research activities. The outcome is very valuable to the library and university because it is the first comprehensive assessment since the library was established.

The enhancement of the acquisition policy will optimize the collection budget: a long-term and positive impact on the university. The results are useful for informing

library decisions on cooperative agreements, ownership and access, accreditation preparation, and institutional planning. It is valuable for understanding the electronic journal requirements of Zayed University researchers and helps the library to improve the existing collection for researcher support. It will be easier for the library to justify cancellations of low-use titles based on the findings. It is apparent that long-term online archives are an important feature of the collection for some disciplines. Hence permanent ownership with longer hosting fee packages will be considered for these disciplines. Information technology researchers rely more on recent literature. The library may use this information to decide the subscription period of journal articles in this subject area. For improvement, the library should focus on improving collections serving Arabic and Islamic studies, the College of Information Technology, the College of Natural Science and Public Health, and the Provost's Office. The predominance of commercial publishers is a hindrance to collection expansion, and hence the consideration of pursuing consortium deals with other federal institutions' libraries may be the best way to increase journal access for disciplines that rely heavily on literature from for-profit publishers. This may also be an alternative for journals with low or no citation counts.

The university library lacks a system to track citations for ranking journals that are published in Arabic or by faculty members in the College of Arabic and Islamic Studies. This is a common situation in the MENA region,[16] arising because Scopus and western citation tracking tools are not suitable. In-depth analysis of research patterns for the College of Arabic and Islamic Studies is necessary for building a collection specific in the subject area in all formats, and not limited to electronic journals. Future improvement of the collection and library services is needed to better analyze the research trends and needs in the university. For those cited articles that are not available in the library, further investigation on the cause of non-cited journals is needed. These findings of citation analysis are useful to improve the collection development strategies in line with research activities in the university.

Research-centric collection assessment is not a new topic in the library sector elsewhere in the world, but it is not well studied in the Middle Eastern countries. Hence, it is pleasure to share this story with other institutions in the region, which have similar purposes or collection size.

Notes

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