

Measuring Research Productivity of LIS Departments in the Middle East

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Abstract

The present study measures the research productivity of library and Information science departments in the Middle East. Data were collected from 16 countries whose LIS departments had at least one article indexed in Clarivate Analytics Web of Science between 2014 and 2018. Journals' Citation Report was also used to collect further data. In measuring research productivity, the number of departments' articles indexed in the Web of Science database and the size of each department (number of faculties) is considered as output and input, respectively. Findings indicated that Bar Ilan University had the highest research productivity (3.7), followed by Shiraz University (1.17) and Hacettepe University (1.04). Regarding LIS Department Research productivity, Israel, Turkey, Jordan, Kuwait, and Iran ranked first to fifth. The results of this research can contribute to identifying highly productive and influential departments and lay the groundwork for a well-oriented scientific policy and cooperation.

Keywords: Scientometrics, Research Productivity, Library and Information Science Departments, Middle East.

Introduction

On a global scale, evaluating the quality of higher education institutions is a core component of most countries. However, evaluating the quality is hard to define, especially in higher education. This requires an agreement on the evaluation's levels, standards, effectiveness, and efficiency (Frazer, 1994). Universities' quality assurance has four important axes: tuition, research, curriculum, and other services-features (e.g., facilities, employability, and internationalization) (Kazakis, 2015). It is necessary to have access to specific data to evaluate universities' quality in terms of the axes mentioned above, which in most cases needs the collaboration of target institutions. Thanks to the advent of citation databases such as Web of Science, Scopus, and Google Scholar, the quantification and assessment of research performance through bibliometric indicators are much more feasible among these axes. These databases and bibliometric indicators facilitate the comparison of departments of the same

discipline in a country, region, or even global level. Abramo, Cicero & D'angelo (2011) and bibliometric techniques mention another methodology for evaluating research performance: "peer review". However, they claim that bibliometric techniques have received a boost thanks and will completely replace peer review, especially in hard science.

"Research productivity" is a primary method for evaluating the research performance of individuals and institutions, which mainly takes advantage of bibliometric indicators. Science policymakers often use this method to assess the research performance of higher education systems. Research productivity is quite different from research production. It typically has an efficiency measurement approach and thus compares the system inputs and outputs (Abramo, D'angelo & Pugini, 2008; Sugimoto & Larivière, 2018). For example, the research productivity of a university department could be measured by dividing the publications by the amount of human and financial resources in the department. Research productivity of universities, institutions, departments, and faculties has been conducted at regional, national and international levels. Our studies indicated that despite a significant number of LIS departments in the Middle East, no investigations had been undertaken on their research productivity. Thus, the present study aims to measure the research productivity of Middle East LIS departments based on input factors (number of faculty members) and output factors (department papers published), as demonstrated by the WoS database for the 2014-2018 period.

LIS has been an emerging discipline and being recognized globally as the libraries or learning resource centers become one of the important components of any higher education institutions like universities & research institutions (Sinha & Kumar, 2016). Modern LIS education backed to 1887 when Melvil Dewey founded the first school for training professional librarians at Columbia University (Mortezaie & Naghshineh, 2002). Since then, many library schools have been founded worldwide despite the 1980s crisis in LIS education and the closing of many prestigious schools such as Columbia University (Bronstein, 2007). The IFLA World Guide to Library, Archive and Information Science Education, although incomplete and inconsistent, listed 1033 LIS programs in the world, of which 20 programs are listed under Middle East countries (IFLA, 2007). Although not documented, we know that the current number of LIS departments worldwide and in the Middle East is far greater than the above figures. Johnson (2007) mentions several works devoted to LIS education in Middle East countries, but our searches showed no evidence of the Research performance of LIS departments in this region. Thus, there is a lack of a clear-cut overview concerning the research profile and productivity of LIS departments in the Middle East. By measuring the research productivity of these departments within this region, apart from offering a complete picture of their research performance, it could contribute towards scientific communication and exchange between these entities and identify leading departments and countries in the Middle East LIS landscape.

Literature Review

Many studies adopting various approaches and features have been conducted to measure research productivity. Some studies have measured the research productivity of countries (El Rassi, Meho, Nahlawi, Salameh, Bazarbachi & Akl, 2018; Gul, Nisa, Shah, Gupta, Jan & Ahmad, 2015; Sweileh, Al-Jabi, Abuzanat, Sawalha, AbuTaha, Ghanim & Zyoud, 2015), universities (Abramo, Cicero & D'angelo, 2011; Abramo et al., 2008; Chan, Chen & Cheng, 2005; Dabbagh, 2011; Matthews, 2013), institutions (Abramo, D'angelo & Rosati, 2013; Fabel,

Hein & Hofmeister, 2008; Saric, Utzinger & Bonfoh, 2018), departments (Chatzimichael, Kalaitzidakis & Tzouvelekas, 2017; Kazakis, 2015; Khajehvand Salehi and Afshin, 2016; Khan et al., 2014; Peress, 2018), and faculties (Duffy, Jadidian, Webster & Sandell, 2011; Hesli & Lee, 2011; Hu & Gill, 2000; Littman, Sonne & Smith, 2017; Lowe and Gonzalez-Brambila, 2007; Nafukho, Wekullo & Muyia, 2019; Nandini & Vinay, 2019; Sonne, Dawson & Smith, 2019). Several other studies investigated the factors contributing to research productivity. Through these studies, it has been established that research productivity mainly depends on individual and institutional factors. Individual factors embrace gender (Abramo, D'angelo & Caprasecca, 2009; Bentley, 2011; Goel, 2002; Loan & Hussain, 2017; Mayer, Lenherr, Hanson, Jessop & Lowrance, 2017; Prpić, Šuljok & Petrović (2009), academic rank (Abramo, D'angelo & Dicosta, 2011; Diamond et al., 2016; Holliday, Jagsi, Wilson, Choi, Thomas Jr & Fuller, 2014; Paik et al., 2014; van Arensbergen, van der Weijden & van den Besselaar, 2012), academic origin and academic affiliation (Long Crawford, White & Davis, 2008; Smith, Fox & Lee, 2008) discipline of the faculty (Jung, 2012; Kaya & Weber, 2003), years of experience and career duration (Holliday et al., 2014), familial status (Aiston & Jung, 2015; Fox, 2005; Joecks, Pull & Backes-Gellner, 2013; Rothausen-Vange, Marler & Wright, 2005; Sax, Hagedorn, Arredondo & DiCrisi, 2002; Toutkoushian & Bellas, 1999), incentives (Levin & Stephan, 1991), motivation (Taylor, Locke, Lee & Gist, 1984), collaboration (Abramo, D'angelo & Dicosta, 2009; Jung, 2012; Lee & Bozeman, 2005); on the other side, institutional factors include institutional context (McGill & Settle, 2012; Musiige & Maassen, 2015), number of undergraduate students enrolled (Porter & Umbach, 2001), percentage of PhD students enrolled (Barner, Holosko, Thyer & King, 2015; Mayrath, 2008), funding allocated for research activities (Barnett, Graves, Clarke & Blakely, 2015; Holliday et al., 2014), and size of departments and research groups (Dundar & Lewis, 1998).

Several studies have measured Middle East countries' research productivity in general or any given field. Among them we can refer to Gul et al. (2015), Sweileh et al. (2015), El Rassi et al. (2018). On the other hand, some studies have dealt with the research productivity of LIS departments and faculties worldwide. Hayes (1983) published the first ranking of American Library Association– (ALA-) accredited LIS schools based on publication and citation counts. Following this, several similar rankings have been published. Some of them, such as Budd (2000) was based on publication and citation counts, one was based on citation counts only (Brace, 1992), and a number of them, such as Boyce and Hendren (1996) was based on publications counts only. Meho and Spurgin (2005) studied data sources, tools, and research methods employed in the evaluation of research productivity in order to identify those tools and methods that generate more accurate ranking as well as databases that should be considered when carrying out a comprehensive full-text search to meet academic and research needs. Mine, Ueda & Miwa (2006) studied LIS educators in Japan based on their degrees and research productivity. Fennewald (2008) interviewed librarians in the State of Pennsylvania to identify factors affecting their research productivity. Zakaria (2015) has studied the scientific productivity of Arab librarians based on the number of papers published between 1981 and 2010 in select LIS journals within the Arab World. He then used the findings to rank Arab countries. In another investigation, based on papers published in LIS indexed journals in WoS, countries, institutions, and journals with the highest number of publications were identified and ranked (Erfanmanesh, Didegah & Omidvar, 2017). Hoffmann, Berg & Koufogiannakis (2017) investigated factors impacting on research productivity of academic librarians in Canada. For

this purpose, links between research outputs (number of research outputs and their weighted output number) and three categories of factors consisting of individual characteristics, community, and colleagues, and institutional structure and support were studied. Another study investigated the research productivity of LIS specialists in Punjab State based on their gender and academic grade (Sulehri, Najmi & Chaudhry, 2017). Maurya, Shukla & Ngurtinkhuma (2018) assessed OPEC member countries' research performance in LIS based on a total number of documents, citations, cited and uncited documents, and H index. A similar study was carried out on Southeast Asia Association for Regional Cooperation (SAARC) member countries (Shukla & Maurya, 2018), Mirzaee and Noroozi Chakoli (2018) evaluated the research productivity of faculty members of LIS departments in universities in Tehran using multiple scientometric indicators. Using a questionnaire tool, Sharma (2018) reviewed the research productivity of faculty members of LIS departments in select universities in Punjab and Chandigarh and thereby specified the number of publications, relative growth, and authorship patterns for each department.

Materials and Methods

The LIS departments in sixteen Middle East countries, which had at least one publication indexed in WoS Database under the LIS category between 2014 and 2018, were included in this research. The following string was entered within the advanced search section of the WoS database to identify them:

WC= (information science library science) AND CU= (country name)

The settings were confined only to journal articles published between 2014 and 2018. This selection used the Science Citations Index, Social Sciences Citation Index, Arts & Humanities Index, and Emerging Source Citation Index. Results retrieved for each country were then stored in plain (ASCII) text and entered into ISI.exe. The data for every individual paper retrieved for each country were thoroughly reviewed. Papers with at least one author affiliated with the LIS department were selected. The process resulted in 465 articles belonging to 58 departments from nine countries. Of these departments, 28 were in Iran, 9 were in Turkey, 8 in Egypt, 6 in Saudi Arabia, 2 in Israel, and 2 in Kuwait. Jordan, Oman, and Qatar each had one department. Since none of the articles retrieved for Lebanon, UAE, Bahrain, Palestine, Syria, Yemen, and Iraq are affiliated with the LIS department, these were struck from the study.

It should be noted that by confining the search to the LIS category within WoS, those papers by LIS faculty members that had appeared in non-LIS journals would be ignored. At any rate, since authors are more inclined to publish in journals within their area of specialization, such omission does not seem to impact the outcomes significantly. The number of faculty members making up each department was collected by directly searching LIS departments' websites. One must be wary of the limitation since these websites may not offer information on all their faculty members or may not have been updated for a long time. Furthermore, department size may vary in course of time, whereas our measurements take place at a fixed point in time. In spite of these limitations, we believe that considering the department size as input could still furnish valuable results with respect to department productivity.

Departments' research productivity was obtained using the output to input ratio. In order to calculate the output for each department, we first identified the articles ascribed to each LIS department. Then the score for each author affiliated with the LIS department in any given

article was calculated by the following formula based on a method first offered by Chatzimichael et al. (2017). The output for each department is the sum of scores assigned to authors affiliated with the department.

$$\text{Author score} = \left(\frac{1}{n} * \frac{1}{m} * \text{article impact} \right)$$

In the above formula, n is the number of authors in the article that the author affiliated with the department had taken part in. m denotes the number of corporate affiliations of the author, the article impact has been calculated based on Thelwall and Wilson (2016) work whereby the impact of one article is determined relevant to the rest of articles appearing in the same issue, volume or year. Such article impact is obtained using $(\text{rank}-1)/(\text{articles}-1)$, where rank refers to article ranking for citations received compared to citations received by the rest of the articles in the same issue, volume, or year. Articles refer to the total number of articles published in that issue, volume, or year. The value falls between naught and one. One means that the article has the highest number of citations among all articles published in the same issue, volume, or year. Naught or zero value means that it had the least number of citations among the articles that had appeared in the same issue. By employing the citation ranking instead of the raw number of citations, citations distribution skewness will not affect the outcome (Leydesdorff, Bornmann & Opthof, 2011). This method was precisely used for the calculation of country Publication Output. Research input measurement was solely based on the size of academic departments. The size of the department is the sum total of all full-time faculty members. The number was obtained from online searching of academic departments 'official websites.

Furthermore, the Journal Citation Report (JCR) database was searched to collect data regarding the Q ranking of journals where each of the 465 articles in question has appeared. The Q score was taken into account for the year when the article had appeared in the given journal.

Results

Departments Ranking Based on Research Productivity Indicator

According to table 1, the LIS department at Bar Ilan University in Israel came on top with a productivity score of 3.7. Shiraz University (score 1.17) came second, followed by Hacettepe University (score 1.04). With a score of 0.001, the LIS department at Cairo University ranked last among LIS departments in the Middle East.

Table 1

LIS departments Ranked according to their research Productivity

| Rank | University | Country | Output | Input | Publishing Productivity |
|------|-----------------|---------|--------|-------|-------------------------|
| 1 | Bar-Ilan | Israel | 37.06 | 10 | 3.7 |
| 2 | Shiraz | Iran | 5.86 | 5 | 1.17 |
| 3 | Hacettepe | Turkey | 20.91 | 20 | 1.04 |
| 4 | Kastamonu | Turkey | 6.37 | 7 | 0.91 |
| 5 | Ankara Yildirim | Turkey | 3.78 | 5 | 0.75 |
| 6 | Esfahan | Iran | 4.06 | 6 | 0.67 |
| 7 | kharazmi | Iran | 3.3 | 5 | 0.66 |
| 8 | Irando | Iran | 6.88 | 11 | 0.62 |

| Rank | University | Country | Output | Input | Publishing Productivity |
|------|------------------------------------|--------------|--------|-------|-------------------------|
| 8 | Kuwait | Kuwait | 13.74 | 22 | 0.62 |
| 10 | Shahid Beheshti | Iran | 2.46 | 4 | 0.61 |
| 11 | Ankara | Turkey | 7.64 | 14 | 0.54 |
| 12 | Chamran Ahvaz | Iran | 2.63 | 5 | 0.53 |
| 12 | Payam Noor | Iran | 3.18 | 6 | 0.53 |
| 14 | Tehran | Iran | 3.87 | 8 | 0.48 |
| 15 | Islamic Azad | Iran | 6.48 | 14 | 0.46 |
| 16 | Jordan | Jordan | 2.49 | 6 | 0.41 |
| 17 | Istanbul | Turkey | 6.81 | 17 | 0.4 |
| 18 | Ardahan | Turkey | 0.98 | 3 | 0.32 |
| 18 | Ferdowsi Mashhad | Iran | 1.92 | 6 | 0.32 |
| 20 | Tarbiat Modares | Iran | 0.94 | 3 | 0.31 |
| 20 | South valley | Egypt | 5.08 | 16 | 0.31 |
| 22 | Iran Medical Sciences | Iran | 1.65 | 6 | 0.27 |
| 23 | Allameh Tabatabai | Iran | 1.83 | 7 | 0.26 |
| 24 | Semnan | Iran | 0.91 | 4 | 0.22 |
| 25 | Tabriz Medical Sciences | Iran | 0.64 | 3 | 0.21 |
| 26 | Shahed | Iran | 0.77 | 4 | 0.19 |
| 26 | Sultan Qaboos | Oman | 2.48 | 13 | 0.19 |
| 28 | Alzahra | Iran | 0.84 | 5 | 0.17 |
| 28 | PAAET | Kuwait | 5.13 | 29 | 0.17 |
| 30 | Tehran Medical Sciences | Iran | 0.48 | 3 | 0.16 |
| 31 | Cankiri Karatekin | Turkey | 1.57 | 10 | 0.15 |
| 32 | Shahid Madani Azerbaijan | Iran | 0.64 | 5 | 0.13 |
| 33 | Hifa | Israel | 1.1 | 10 | 0.11 |
| 34 | King Abdulaziz | Saudi Arabia | 1.57 | 15 | 0.1 |
| 35 | Marmara | Turkey | 1.32 | 14 | 0.09 |
| 36 | Ataturk | Turkey | 0.6 | 7 | 0.08 |
| 36 | Bahonar Kerman | Iran | 0.16 | 2 | 0.08 |
| 38 | Taibah | Saudi Arabia | 1.71 | 24 | 0.07 |
| 38 | Ain Shams | Egypt | 1.38 | 20 | 0.07 |
| 38 | Menia | Egypt | 1.47 | 20 | 0.07 |
| 41 | Kerman Medical Sciences | Iran | 0.31 | 5 | 0.06 |
| 41 | University College London | Qatar | 0.75 | 11 | 0.06 |
| 43 | Bushehr Medical Sciences | Iran | 0.2 | 4 | 0.05 |
| 43 | Ahvaz Jundishapur Medical Sciences | Iran | 0.21 | 4 | 0.05 |
| 43 | Helwan | Egypt | 1.31 | 28 | 0.05 |
| 46 | Alexandria | Egypt | 0.56 | 13 | 0.04 |
| 46 | Esfahan Medical Sciences | Iran | 0.35 | 8 | 0.04 |
| 48 | Tabriz | Iran | 0.25 | 7 | 0.03 |
| 48 | Yazd | Iran | 0.18 | 6 | 0.03 |
| 48 | Fayoum | Egypt | 0.27 | 10 | 0.03 |

| Rank | University | Country | Output | Input | Publishing Productivity |
|------|----------------------------------|--------------|--------|-------|-------------------------|
| 48 | Imam Abdulrahman Bin Faisal | Saudi Arabia | 1.41 | 47 | 0.03 |
| 52 | Qom | Iran | 0.23 | 9 | 0.02 |
| 52 | Umm Al Qura | Saudi Arabia | 0.33 | 19 | 0.02 |
| 54 | Razi Kermanshah | Iran | 0.04 | 4 | 0.01 |
| 55 | Princess Nourah Bint Abdulrahman | Saudi Arabia | 0.18 | 26 | 0.006 |
| 56 | King Saud | Saudi Arabia | 0.14 | 27 | 0.005 |
| 57 | Tanta | Egypt | 0.08 | 21 | 0.003 |
| 58 | Cairo | Egypt | 0.04 | 28 | 0.001 |

Country Ranking Based on LIS Departments Research Productivity

Among 16 Middle East countries, LIS departments in nine countries had articles indexed in WoS for the 2014-2018 interval. Thus only these nine countries were ranked according to the research productivity of their respective LIS departments. Table 2 reveals that when countries are ranked according to the research productivity, Israel ranks first with a score of 1.92 while Turkey ranks second with 0.52. Jordan, Kuwait, Iran, Oman, Qatar, Egypt, and Saudi Arabia follow.

Table 2

Country Rankings based on LIS Departments Research Productivity

| Rank | Country | Output | Input | Research Productivity |
|------|--------------|--------|-------|-----------------------|
| 1 | Israel | 38.52 | 20 | 1.92 |
| 2 | Turkey | 50.48 | 97 | 0.52 |
| 3 | Jordan | 2.49 | 6 | 0.41 |
| 4 | Kuwait | 18.87 | 55 | 0.34 |
| 5 | Iran | 51.82 | 158 | 0.33 |
| 6 | Oman | 2.48 | 13 | 0.19 |
| 7 | Qatar | 0.75 | 11 | 0.07 |
| 8 | Egypt | 10.19 | 153 | 0.07 |
| 9 | Saudi Arabia | 6.05 | 158 | 0.04 |

Publications to Faculty Members Ratio

Table 3 illustrates the number of papers published, the number of faculty members, and the ratio of publications of each LIS department to its faculty. According to this table, the LIS department at Bar Ilan University, with 72 papers and a ratio of 7.2 has the highest publication rate for faculty members. The LIS departments at Shiraz with 18 papers and a ratio of 3.6 and Kharazmi with 13 papers and a ratio of 2.6 come next. The Turkish LIS departments in Ankara Yildirim with 11 papers and a ratio of 2.2, Kastamonu with 15 papers and 2.14 ratio, and Hacettepe with 42 papers and a ratio of 2.1 come next. The departments of library and information sciences at King Saud, Princess Nourah Bint Abdulrahman in Saudi Arabia, and Cairo University in Egypt having only a single paper each and a ratio of 0.03 are at the bottom of this table.

Table 3
The ratio of Publications to Faculty members

| Rank | Department | Country | No. of Publication | No. of faculty members | Publications to Faculty members |
|------|------------------------------------|--------------|--------------------|------------------------|---------------------------------|
| 1 | Bar-Ilan | Israel | 72 | 10 | 7.2 |
| 2 | Shiraz | Iran | 18 | 5 | 3.6 |
| 3 | Kharazmi | Iran | 13 | 5 | 2.6 |
| 4 | Tarbiat Modares | Iran | 7 | 3 | 2.33 |
| 5 | Ankara Yildirim | Turkey | 11 | 5 | 2.2 |
| 6 | Kastamonu | Turkey | 15 | 7 | 2.14 |
| 7 | Hacettepe | Turkey | 42 | 20 | 2.1 |
| 8 | Irandoct | Iran | 22 | 11 | 2 |
| 9 | Tehran | Iran | 14 | 8 | 1.75 |
| 10 | Shahid Beheshti | Iran | 7 | 4 | 1.75 |
| 11 | Chamran Ahvaz | Iran | 8 | 5 | 1.6 |
| 12 | Esfahan | Iran | 9 | 6 | 1.5 |
| 13 | Payam Noor | Iran | 8 | 6 | 1.33 |
| 14 | Ferdowsi Mashhad | Iran | 8 | 6 | 1.33 |
| 15 | Shahed | Iran | 5 | 4 | 1.25 |
| 16 | Kuwait | Kuwait | 26 | 22 | 1.18 |
| 17 | Ankara | Turkey | 16 | 14 | 1.14 |
| 18 | Tehran Medical Sciences | Iran | 3 | 3 | 1 |
| 19 | Iran Medical Sciences | Iran | 6 | 6 | 1 |
| 20 | Islamic Azad | Iran | 14 | 14 | 1 |
| 21 | Jordan | Jourdan | 6 | 6 | 1 |
| 22 | Istanbul | Turkey | 14 | 17 | 0.82 |
| 23 | Alzahra | Iran | 4 | 5 | 0.8 |
| 24 | Hifa | Israel | 8 | 10 | 0.8 |
| 25 | Semnan | Iran | 3 | 4 | 0.75 |
| 26 | Allameh Tabatabaei | Iran | 5 | 7 | 0.71 |
| 27 | Tabriz Medical Sciences | Iran | 2 | 3 | 0.67 |
| 28 | Ardahan | Turkey | 2 | 3 | 0.67 |
| 29 | South Valley | Egypt | 10 | 16 | 0.62 |
| 30 | King Abdulaziz | Saudi Arabia | 8 | 15 | 0.53 |
| 31 | Bahonar Kerman | Iran | 1 | 2 | 0.5 |
| 32 | Ahvaz Jundishapur Medical Sciences | Iran | 2 | 4 | 0.5 |
| 33 | Yazd | Iran | 3 | 6 | 0.5 |
| 34 | Sultan Qaboos | Oman | 6 | 13 | 0.46 |
| 35 | Kerman Medical Science | Iran | 2 | 5 | 0.4 |
| 36 | Cankiri | Turkey | 4 | 10 | 0.4 |
| 37 | PAAET | Kuwait | 11 | 29 | 0.37 |
| 38 | Ataturk | Turkey | 2 | 7 | 0.28 |
| 39 | Razi Kermanshah | Iran | 1 | 4 | 0.25 |

| Rank | Department | Country | No. of Publication | No. of faculty members | Publications to Faculty members |
|------|----------------------------------|--------------|--------------------|------------------------|---------------------------------|
| 40 | Esfahan Medical Science | Iran | 2 | 8 | 0.25 |
| 41 | Bushehr Medical Sciences | Iran | 1 | 4 | 0.25 |
| 42 | Marmara | Turkey | 3 | 14 | 0.21 |
| 43 | Shahid Madani Azerbaijan | Iran | 1 | 5 | 0.2 |
| 44 | Menia | Egypt | 4 | 20 | 0.2 |
| 45 | Helwan | Egypt | 5 | 28 | 0.17 |
| 46 | Alexandria | Egypt | 2 | 13 | 0.15 |
| 47 | Tabriz | Iran | 1 | 7 | 0.14 |
| 48 | Taibah | Saudi Arabia | 3 | 24 | 0.12 |
| 49 | Qom | Iran | 1 | 9 | 0.11 |
| 50 | Ain Shams | Egypt | 2 | 20 | 0.1 |
| 51 | Fayoum | Egypt | 1 | 10 | 0.1 |
| 52 | Imam Abdulrahman Bin Faisal | Saudi Arabia | 5 | 47 | 0.1 |
| 53 | University college Lindon | Qatar | 1 | 11 | 0.09 |
| 54 | Umm Al Qura | Saudi Arabia | 1 | 19 | 0.05 |
| 54 | Tanta | Egypt | 1 | 21 | 0.04 |
| 56 | Princess Nourah Bint Abdulrahman | Saudi Arabia | 1 | 26 | 0.03 |
| 57 | King Saud | Saudi Arabia | 1 | 27 | 0.03 |
| 58 | Cairo | Egypt | 1 | 28 | 0.03 |

The H-Index of Departments

As shown in diagram 1, the Bar-Ilan University LIS department having a score of 10, has the highest h index among Middle East Departments. The Hirsch index for LIS departments in Kharazmi, Irandoc, Hacettepe, and Kuwait is 4. The Hirsch index for Shiraz, Ankara, and Malik Abdulaziz is 3. The h index for Payam Nour, Islamic Azad University, Shahid Chamran, Shahid Beheshti, Ankara, University of Tehran, Ankara Yildirim, Helwan, Jonoubalwadi, Soltan Qaboos, and PAAET was 2. In this diagram, the h index for 15 LIS departments has been zero since none of their papers have received any citations during the interval studied. It should be noted that the H index depends on the number of citations to articles and changes over time as citations change.

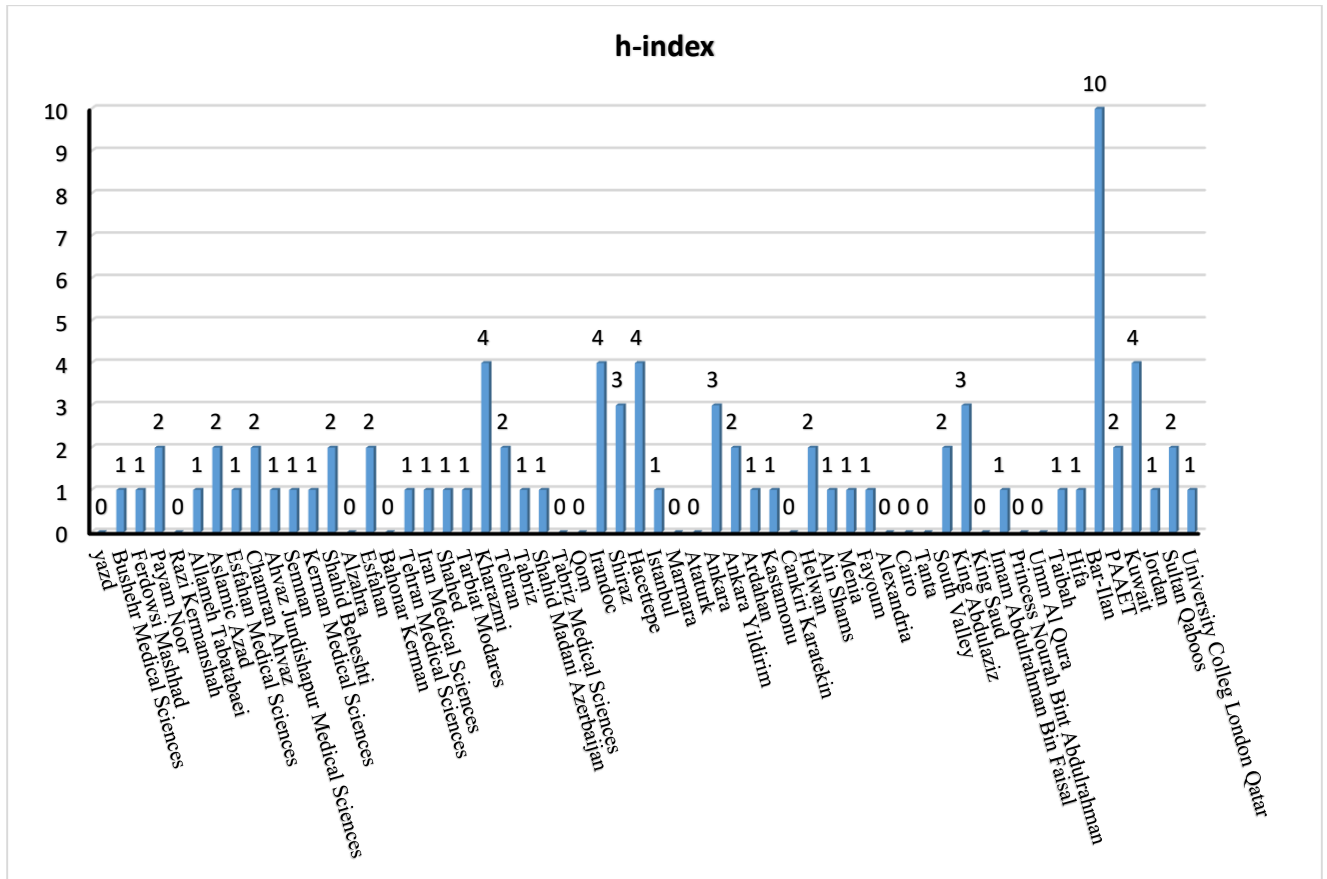


Diagram 1: H-index for LIS Departments

Determining Quartiles for Papers Published By LIS Departments

Table 4 presents the quartiles for the papers published by the LIS departments studied. As you can see, many of the articles have been published in journals that have no quartiles. According to this table, the LIS department at Shiraz University has the highest number of publications in Q1 journals (4), while Bar Ilan has the highest published paper in Q2 journals (27). The LIS Department at Bar Ilan has also published 24 papers in Q3 journals and 9 published in Q4 journals. Thus Bar Ilan has the highest number of papers published in Q2, Q3, and Q4 journals. The LIS department at Hacettepe University in Turkey has published 37 papers in journals with no quartiles. An overview of this table discloses that the LIS departments that have the higher number of papers published in Q1 to Q4 journals also enjoy a better standing for research productivity. This very fact demonstrates the importance of publishing one’s paper in such journals

Table 4

LIS Departments and Quartile Spread

| Department | Country | Total Articles | Q1 | Q2 | Q3 | Q4 | Without Q |
|-----------------------------|--------------|----------------|----|----|----|----|-----------|
| Bar-Ilan | Israel | 72 | 3 | 27 | 24 | 9 | 9 |
| Hacettepe | Turkey | 42 | 1 | 2 | 2 | - | 37 |
| Kuwait | Kuwait | 26 | - | 1 | 6 | 7 | 12 |
| Islamic Azad | Iran | 24 | - | 3 | 9 | 6 | 6 |
| Irandoct | Iran | 22 | - | 3 | 7 | 6 | 5 |
| Shiraz | Iran | 18 | 4 | 8 | 6 | - | - |
| Ankara | Turkey | 16 | 1 | - | - | - | 15 |
| Kastamonu | Turkey | 15 | - | 2 | - | 1 | 12 |
| Istanbul | Turkey | 14 | - | 1 | - | 1 | 12 |
| Tehran | Iran | 14 | - | 1 | 7 | 2 | 4 |
| Kharazmi | Iran | 13 | 1 | 3 | 5 | 2 | 2 |
| PAAET | Kuwait | 11 | - | 2 | 4 | 2 | 3 |
| Ankara Yildirim | Turkey | 11 | - | - | - | - | 10 |
| South valley | Egypt | 10 | - | - | 5 | - | 5 |
| Esfahan | Iran | 9 | - | - | 1 | 1 | 7 |
| Hifa | Israel | 8 | 1 | 5 | - | 1 | 1 |
| King Abdulaziz | Saudi Arabia | 8 | 1 | 1 | 3 | 1 | 2 |
| Ferdowsi Mashhad | Iran | 8 | - | 1 | 4 | 1 | 2 |
| Payam Noor | Iran | 8 | - | 2 | 3 | 1 | 2 |
| Chamran Ahvaz | Iran | 8 | 1 | 2 | 1 | 3 | 1 |
| Tarbiat Modares | Iran | 7 | - | 1 | 2 | - | 4 |
| Shahid Beheshti | Iran | 7 | 1 | - | 1 | 2 | 3 |
| Sultan Qaboos | Oman | 6 | - | - | 1 | 2 | 3 |
| Jordan | Jordan | 6 | - | - | 1 | - | 5 |
| Iran Medical Sciences | Iran | 6 | - | 3 | 1 | - | 2 |
| Imam Abdulrahman Bin Faisal | Saudi Arabia | 5 | - | - | - | 1 | 4 |
| Shahed | Iran | 5 | 1 | 2 | - | 1 | 1 |
| Allameh Tabatabai | Iran | 5 | - | 1 | 2 | 1 | 1 |
| Helwan | Egypt | 5 | 1 | - | 2 | 1 | 1 |
| Menia | Egypt | 4 | - | 1 | 3 | - | - |
| Cankiri Karatekin | Turkey | 4 | - | - | - | - | 4 |
| Alzahra | Iran | 4 | - | - | 2 | 1 | 1 |
| Marmara | Turkey | 3 | - | - | - | - | 3 |
| Semnan | Iran | 3 | - | - | 1 | - | 2 |
| Yazd | Iran | 3 | 1 | - | - | - | 2 |
| Tehran Medical Sciences | Iran | 3 | - | - | 1 | - | 2 |
| Taibah | Saudi Arabia | 3 | - | - | 1 | - | 2 |
| Ardahan | Turkey | 2 | - | - | - | - | 2 |
| Kerman Medical Sciences | Iran | 2 | - | - | 2 | - | - |
| Tabriz Medical Sciences | Iran | 2 | - | - | - | - | 2 |

| Department | Country | Total Articles | Q1 | Q2 | Q3 | Q4 | Without Q |
|----------------------------------|--------------|----------------|----|----|----|----|-----------|
| Ain shams | Egypt | 2 | - | 1 | - | - | 1 |
| Ataturk | Turkey | 2 | - | - | - | - | 2 |
| Esfahan Medical Sciences | Iran | 2 | - | - | - | 1 | 1 |
| Alexandria | Egypt | 2 | - | - | - | - | 2 |
| Ahvaz Medical Sciences | Iran | 2 | - | 1 | 1 | - | - |
| Cairo | Egypt | 1 | - | - | - | 1 | - |
| Tanta | Egypt | 1 | - | - | - | 1 | - |
| Tabriz | Iran | 1 | - | - | 1 | - | - |
| Princess Nourah Bint Abdulrahman | Saudi Arabia | 1 | - | - | - | - | 1 |
| Umm Al Qura | Saudi Arabia | 1 | - | - | 1 | - | - |
| Bushehr Medical Sciences | Iran | 1 | - | - | 1 | - | - |
| King Abdulaziz | Saudi Arabia | 1 | - | - | - | - | 1 |
| Razi Kermanshah | Iran | 1 | - | - | - | - | 1 |
| Qom | Iran | 1 | - | - | 1 | - | - |
| Shahid Madani Azerbaijan | Iran | 1 | - | 1 | - | - | - |
| Bahonar Kerman | Iran | 1 | - | - | - | - | 1 |
| Fayoum | Egypt | 1 | - | - | - | 1 | - |
| University college London | Qatar | 1 | - | - | - | - | 1 |

Discussion

According to findings, the Bar Ilan Lis department (72 papers and 10 faculty members) has the highest number of publications, while departments in Cairo (1 paper and 28 faculty members) and King Saud (1 paper and 27 faculty members), and Princess Nourah Bint Abdulrahman (1 paper and 26 faculty member) have the lowest number. This confirms Seglen and Aksnes's (2000) report that there seems to be no relevance between the size and research productivity of the academic department. LIS department's number of publications and research productivity may be linked to factors such as faculty academic ranking, command of English and extent of cooperation with foreign researchers, and research and promotional budgets and academic facilities.

While Bar Ilan LIS department came on top concerning the number of publications, citations, and productivity, this may not come as a surprise given that according to Gul et al. (2015), Israel ranks first in the Middle East from the standpoint of research performance and productivity. It could also be reasoned that this is due to the highly advanced level of scientific communication and publishing in English.

With nine LIS departments, Turkey holds the second rank. With 28 LIS departments, Iran comes fifth while Egypt holds the sixth (with 8 LIS departments), and Saudi Arabia, with 6 LIS departments holds the ninth position. This may indicate that while these countries have focused on LIS and improved it quantitatively, they failed to achieve a suitable level with respect to research productivity. One should take note that Iran has the highest LIS research performance among OPEC Middle East members (Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and UAE) (Maurya et al., 2018). Iran has the highest number of academic departments in the Middle East: yet, the research productivity of LIS departments seems not to be quite well and there seems to

be a need for planning to mitigate and improve it.

Middle East LIS departments' differences in terms of research productivity can be attributed to many reasons. The Middle East had always been the scene of widespread political turmoil and confrontations (Williams, 2011; Lu & Thies, 2013). Political instability and regional conflicts may account for low research output in Yemen, Lebanon, Palestine, Syria, and Iraq. Saric et al. (2018) mention these factors as the geopolitics of a given country. Furthermore, such low productivity could also be ascribed to research and educational infrastructures weakness. Finally, research evidence shows a positive correlation between R&D expenditure and the number of universities with the number of papers, citations, and h-index (Meo, Usmani, Vohra & Bukhari, 2013). However, a minuscule portion of financial resources in poor countries is earmarked for R&D and infrastructures such as universities and research centers. In the same vein, Gul et al. (2015) claim that unfavorable economic conditions could be responsible for a country's low research productivity.

Conclusion

It can be concluded that countries that rank high in science production in the region also occupy the top ranks in the LIS departments ranking in terms of research productivity. However, the rank of countries is not the same in the two rankings that is a country such as Iran, which ranks first in science production in the region, ranks fifth in LIS department research productivity.

This study considers the number of departments' articles indexed in the Web of Science database and their citations as output. Inclusion of other research outputs such as books, patents, and articles indexed in other databases such as Scopus could be considered in future studies. It is also recommended that other inputs, such as funding and the number of postgraduate students, be included in measuring departments' research productivity.

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