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Charting the Open Access scholarly journals landscape in the UAE

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Abstract
The purpose of this study is to chart the scholarly journal landscape in the UAE in order to provide a scientific perspective on research productivity, distribution, and access in the country and lay the foundations for further research in this area. The study aims also to contribute to research endeavoring to paint a global picture of scholarly publishing. We carried out a mapping of scholarly journals published in the UAE compiled from international and local sources. The resulting journal list was studied focusing on the share of OA titles, language of publication, discipline, and type of publisher. Our results show that: (1) 534 journals are published in the UAE and that the share of OA is quite noteworthy with about 64% of all online journals; (2) the APC-based OA model is prevalent with around 75% of OA journals levying a publication fee; (3) UAE journals are predominantly in English while the number of Arabic-language journals is marginal; (4) science, technology and medicine prevail as the most prevalent subject areas of the journals; and (5) commercial publishers control most of the publications especially in the medical field. The study lays a foundation for further studies on scholarly journals in the UAE. The combination of regional indexes and international directories to measure the country's scholarly journal output can also be replicated and built upon for other countries where the major international bibliometric databases do not provide a comprehensive representation of scholarly publishing activities.

Keywords Open Access · Scientific publications · Scholarly publishing · DOAJ · ROAD · Ulrichsweb

Introduction

Research is increasingly playing a pivotal role in the economic and social development of nations, especially as more countries are seeking to shift to the knowledge-economy. In the words of Marginson (2012, p. 18), "Research is a public good that enables other public goods and private goods." Consequently, there is mounting pressure on governments to

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tap into the opportunities it provides for economic prosperity and well-being of citizens (Macilwain 2010). One way of achieving this is through boosting investments in research universities which are at the center of the global knowledge economy (Altbach 2013).

The UAE higher education system is, by all means, at a fledgling stage. The oldest university, UAE University, was established in 1977. As new entities, the universities in the UAE, along with other countries in the Middle East, have been preoccupied with absorbing the increasing numbers of students (Luescher 2016). The UAE higher education gross enrollment ratio (GER) more than doubled between 2007 and 2016 (Kamal 2018) making it one of the fastest growing in the region (Alpen Capital 2018). Massification of education shifts HEIs' focus from building research capacity to teaching and affects the country's ability to develop a flagship research university. However, Wilkins (2010) asserts that leading UAE universities have recently shown keenness to produce high quality "world-class research". In 2017, the UAE government pledged to boost funding of research as part of the "National Strategy for Higher Education 2030" (Gulf News 2017). This culminated in 2019 with the announcement of a AED 4 billion research and development fund (Sanderson and Khan 2019). *There are signs indicating that these* measures are having an effect on research output. A quick scan of Scival article counts shows that articles by authors with UAE affiliations have increased from about 1977 articles in 2013 to 3753 in 2017.

Research conducted by these university scholars is often expressed as "legitimized scientific and scholarly knowledge, which is published in key journals" (Altbach 2013, p. 8). Because of the unique quality assessment of peer-review, publications in scholarly journals are often considered first-rate scientific knowledge output (Tijssen 2015). With journals being vital instruments for enabling research and its dissemination, they are often at the heart of research assessment debates.

Research assessment relies heavily on publication metrics to measure the international competitiveness of universities and indirectly nations. Meo et al. (2013) argue that bibliometric indicators are essential tools as they quantify the quantity and quality of research output. However, journal indexes and directories that constitute the basis for a country's research productivity assessment and in-depth bibliometric analyses such as the Directory of Open Access Journals (DOAJ), the Directory of Open Access Scholarly Resources (ROAD), Ulrichsweb, Scopus, Web of Science and Scimago are far from exhaustive in capturing all peer-reviewed journals. Almost all these sources tend to be biased towards English language journals (Björk 2019; Mongeon and Paul-Hus 2015). Even in the case of effectively indexed journals, shortcomings in metadata often call for extensive manual data collection in bibliometric studies. However, these international tools have remained central to research assessments as they index many journals and even provide quantitative measures such as impact factors extensively used to assess the impact and quality of research. In a study of research universities in the US and Canada, McKiernan et al. (2019) reveal that impact factors are still widely adopted for academic evaluation.

Until recently, such journal directories and impact measures did not exist in Arab countries. However, attempts are being made regionally to highlight the role of local and non-English language journals in scientific knowledge dissemination. Three noteworthy successful initiatives focusing on Arabic journals are The Arab Impact Factor, Directory of Free Arab Journals, and The Arabic Citations and Impact Factor. Another ambitious project has been recently announced by Elsevier and Association of Arab Universities. It involves hosting an Arab Journals Platform on Elsevier's Digital Commons ("Journals published by Arab…" 2019). Unfortunately, the absence of a reliable national source of essential scholarly publishing data makes the study of OA in the UAE a hard task and justifies the conduct of this journal publishing landscape analysis.

Preliminary scan of some local journals reveals that local institutions tend to publish journals that focus on local issues and priorities. These types of journals, which usually publish and distribute articles at no cost to the author or the reader, are often popular among a close circle of experts and colleagues (Nasser and Abouchedid 2001) resulting in authors becoming visible locally but invisible globally (Hanafi (2011). These journals are also rarely listed in international directories. This may be due to an oversight by the editors of the importance of making their publications visible or failure to meet increasingly demanding inclusion criteria of these indexes and databases as demonstrated by Khalifa (2017). Therefore, these editors miss the opportunity to increase the impact of their journals and to have a wider social and economic impact beyond their proximate environment.

While research on different aspects of journal publishing has been conducted in other parts of the world such as by Björk (2019), Shen (2017), and Wang et al. (2018), no study could be identified on journal publishing in the UAE. Therefore, this study is an important expansion of research on scholarly journal publishing and OA. The more specific research questions are:

How many academic journals are published in the UAE?
In what languages are these journals published?
What is the share of OA journals in the UAE?
What are the subject areas of these journals?

First, this study reviews relevant literature pertaining to the problem being investigated. The literature review covers aspects such as DOAJ as a source of OA data, English versus other languages in scholarly publishing and inclusion of Arab journals in international bibliometric indexes.

Second, we outline the methodology for the study. This involves scanning all major international directories for information on journals published in the UAE, gathering data on existing journals directly using Web searches and browsing HEI websites, and harvesting all titles from any locally or regionally developed directories and lists. The study investigates the different aspects and characteristics of these journals such as language of publication, OA status, subject areas, publication charges, and type of publisher.

The final part of this study summarizes and discusses findings and link them to the regional and global context as well as relevant studies conducted in other countries and areas.

Literature review

Literature on journal scholarly publishing can be perceived to branch out to discuss seven aspects outlined by Wulf and Meadows (2016) namely: publishing ecosystem, publication ethics, publishing business model, peer review, metrics, tools, and licenses. In an increasingly global journal publishing ecosystem, other aspects such as local languages are also discussed. Research pertaining to scholarly publishing ecosystem often brings into play stakeholders such as libraries, publishers and scholars. Publishing business model literature, on the other hand, addresses questions of publication cost, funders, OA models and associated mechanisms. For the sake of staying within the scope of this study, we will review only research related to some of these elements such as language of publication, metrics, indexing tools, OA, and publication fees.

Scholarly journals in the Arab World

While *Journal des Sçavans,* which started publication in 1665, was the first publication to be dubbed an academic journal (Banks 2018), there is some ambivalence on what constitutes the first scholarly journal in the Arab world. Some claim that Syria spearheaded the Arab scholarly journal publishing with The Transactions of The Syrian Society of Arts and Sciences in 1852 (Salisbury 1853). Others believe it was *Ya'sub* medical journal from Egypt in 1865 (Sidqi 2009). On the other hand, *Al-Muqtataf*, published circa 1876 in Lebanon, was considered by some scholars as the "mother of all Arab scholarly journals" (Badran 2014). The situation in the Gulf countries was slightly different as the first "journals" didn't start until the beginning of the 20th century with *Majallat Al-Kuwait* which started in 1929 (Sayed 2015). In the absence of clear data, it can be assumed that the first scholarly journals in the UAE were issued in the beginning of the 80s after the establishment of the United Arab Emirates University.

Arab scholarly journals have come a long way in the last few decades with a lot of journals converting to online and some even jumping on the OA wagon. There seems also to be an upsurge of studies on the different aspects of Arab scholarly journals. In an overarching study of Arab journals indexed in Scopus and WoS, Abd Al-Mukhtar (2019) states that 484 journals are indexed in Scopus and 62 in Web of Science. In another study looking at the situation in Oman, Jabriyah et al. (2017) identified 11 scholarly journals in the country. Of their many recommendations, they stated that these journals could benefit from technical and financial support such as from the Scientific Research Council. They also noted the need for these journals to join regional and international directories such as DOAJ and DEFAJ. In a study of scholarly communication behavior of social sciences and humanities Arab scholars in Egypt and Saudi Arabia, Shehata and Elgllab (2018) discovered that these scholars tend to publish in predatory journals because it is easier and faster to publish in them. In a slightly different study with similar respondents, Shehata (2019) concludes that the researchers chose to publish in printed journals as the promotion systems seem to favor them over exclusively online publications. He also discovered that the promotion mechanisms shun co-authored research and thus researchers tend to collaborate less with other international authors. Furthermore, he states that these researchers rely on Arabic resources to back their research. However, it can be argued that the creation of the Directory of Free Arab Journals (DFAJ) in 2013, the Arab Impact Factor in 2015, and the Arabic Citations and Impact Factor (ARCIF) in 2016 are key milestones in Arab scholarly publishing as they signal a maturity of the scholarly journals landscape in the Arab World.

Share of OA journals

Even though the concept of OA journals dates back to well before the Internet with some journals being circulated through mailing lists in the 80s (Laakso et al. (2011), the advent of the last ushered in a new era where OA journals have become an integral part of the scholarly publishing landscape. The shift of funding from subscription to other models such as institutional sponsorships and article processing fees did not only motivate the creation of new OA journals but also led some toll-access journals to flip to OA.

Most previous bibliometric studies on the share of OA publications are at the article level (Björk et al. 2010; Laakso and Björk 2012; Archambault et al. 2013, 2014; Piwowar et al. 2018). Therefore, Laakso's et al. (2011) and Fukuzawa's (2017) research on OA

journals, albeit old, remain a reference on the share of these journals. Laakso et al. (2011) revealed a staggering annual progress of 18% in OA journals against an average of 3.5% for all journals between 1993 and 2003. Fukuzawa (2017) asserts that the share of OA journals more than doubled between 2004 and 2012 moving from about 7–15% of all journals. This steady progress in OA has been corroborated by a recent groundbreaking preprint of Piwowar et al. (2019). Based on their findings that about a third of all articles are OA and that these OA articles received more than half of all article views in 2019, they predict a sustained decline of the closed access model with 44% of all articles being available as OA and their share in article views rising to 70% by 2025.

In addition to journals which were started with an OA publishing model from the outset, mounting pressure from scholarly publishing stakeholders such as funders, governments and authors is leading a lot of journals to flip from a subscription-based access to OA (Solomon et al. 2016). Furthermore, this study reveals eight internal major drivers of journals converting to OA. These revolve around an increase in these eight aspects: readership, citation rates, advertising revenue, submissions, financial security, competitiveness, additional external funding, and independence. Interestingly, the number of journals flipping to OA is quite interesting as Solomon et al. (2013) estimated that 53% of OA journals in their sample had flipped to OA.

APC-based Open Access model

Libraries discontent with the toll-access model and the ensuing financially restrictive "big deals" resulted in their revolt against this model (McKenzie 2018). This dissatisfaction has manifested itself in increasing deal cancellations as demonstrated by SPARC (2019) cancellation data and in increasing cases of libraries negotiating the inclusion of OA and article processing charges (APCs) in the same deals (Morais and Borrell-Damián 2019).

The drawbacks of serials bundling into big deals as well as the advent of and success of many OA journals motivated the emergence of the APC-based publishing model. Author-side payments, which were popular among journals in the late 70 s, were reintroduced by some journals with the advent OA (King and Alvarado-Albertorio 2008). It is noteworthy, however, that most OA journals do not charge any publication fees (Crawford 2015; Johnson et al. 2018).

The APC-based OA model is apparently effective. It contributed around 49% of all OA articles in 2011 (Laakso and Björk 2012). Furthermore, the spike in the UK OA output between 2009 and 2016 was attributed to APCs and Gold OA (Larivière and Sugimoto 2018). Other European countries are apparently adopting this model. 40% of EU universities are financially supporting Gold OA (Morais and Borrell-Damián 2019). Moreover, Crawford (2019a) estimated that the global revenue from APCs was over 649 million USD in 2018.

But not everyone believes APC-based OA is a solution. Thibault et al. (2018) and Green (2018) assert that these fees did not solve the serials crisis and that Green OA remains the ultimate solution to boost OA. APC-based publishing was also criticized by Shah and Gul (2013) and Tenopir et al. (2017) as it disadvantages authors who cannot afford APCs especially from developing countries. This concern is shared by Beasley (2016) who believes that APCs constitute a significant economic barrier to stakeholders such as "authors, institutions, funding agencies and governments". Furthermore, there are currently no mechanisms in place to guarantee that APCs are offset by lower subscription costs (Björk and Solomon 2014a, b).

English predomination of scholarly publishing

Different languages, from Sumerian to Greek, Arabic, Latin, and recently French, German and English, have served as the main lingua franca of scholarly communication throughout the ages (Hamel 2007). English has, however, become the de facto language of international science in recent decades (Research Trends 2008; Cianflone 2014). Van Weijen (2012) estimates that around 80% of all journals indexed in Scopus were in English. Banks (2018) has even put the share of English publications at over 90% in 2005. As English is dominant in high ranking international journals, Hamel (2007) made an unequivocal statement that research findings must be published in English if their authors seek recognition from peers.

English hegemony in scholarly publishing is echoed beyond English-speaking countries to encompass speakers of other languages, including Arabic (Al-Aufi 2012). This domination implies that many non-native English speakers have already adopted English for preparing publications (Hamel 2007). In the case of Arab authors, Al-Aufi (2012) cites several reasons. First, adoption of English as a language of teaching science disciplines in most Arab academic institutions resulted in researchers writing in English. Second, Arabic scholarly journals are nonexistent or very limited in some disciplines. Finally, dwindling Arabic publications put pressure on Arabic journals that fail to attract quality research articles and eventually perish. Crawford (2019b) seconds this assumption when he states that dominance of English had an impact on local journals of which the majority have witnessed a shrinkage. Al-Aufi's (2012) respondents have also argued against publishing in Arabic journals because of their lower quality, limited distribution, and little positive impact on job offers or promotions. This Arab scholars' preoccupation with international impact, citations and recognition has been echoed by MoChridhe (2019) who states that due to the "snowball effect of existing impact metrics", non-English language papers will receive less citations.

Even though Arabic has been sidelined by English as the predominant language of science, one can argue along the lines of Hamel (2007) that democratization of science and promoting public debates dictates using local languages. Similarly, Curry and Lillis (2018) warn that this globally spreading trend is a threat to scholarship as it entails "loss of knowledge locally" and shackling the "development of local research cultures and societies more broadly". Van Weijen (2012) asserts that even though English continues to be the preferred language of publishing, a reasonable amount of research especially in the soft sciences is still published in native languages.

Non-native English authors such as Arab scholars are disadvantaged even further as they strive to increase impact and exposure through OA. In making the case against the dominance of English as it relates to OA, MoChridhe (2019) argues that the cost of editing articles often paid by these scholars constitutes another "hidden paywall". These researchers may be compelled to pay extra costs related to translating, proofreading and editing their publications on top of publication fees.

Journal indexes and OA data

DOAJ is often used as a source of data in different bibliometric studies analyzing the share of OA journals. Yet, numerous studies reveal that DOAJ is not a perfect resource for all studies on OA publishing growth. It does not, by design, provide an exhaustive coverage of

all OA journals (DOAJ 2019a, b), and exhibits bias against non-English journals as stated by Björk (2019). Björk (2017) estimates that there were around 20,000 OA journals in 2017 and that only 9000 of those were listed in DOAJ.

However, this limitation is not exclusive to DOAJ. Laakso et al. (2011, p. 2) state that the "lack of comprehensive indexing for both OA journals and their articles" is compelling researchers to use alternative sources and data collection methods. Similarly, a comparative study of WoS and Scopus versus Ulrich's directory by Mongeon and Paul-Hus (2015) unveiled biases in subject and language coverage. They, consequently, cautioned against using these services in comparative studies and called for the development of local and subject-specific indexes. This has been also substantiated by Somoza-Fernández et al. (2018). In their study of The Emerging Sources Citation Index (ESCI), they concluded that it has limitations in terms of geographical and language coverage. Nevertheless, having a comprehensive and inclusive tool would be very *quixotic, to say the least.* For this reason and in the absence of a more comprehensive and inclusive tool, DOAJ remains an invaluable resource. It has helped provide some idea on the global and regional OA journals landscape.

Low presence of journals from the UAE and the Middle East in international indexes and directories may be due to many reasons. Nasser and Abouchedid (2001) alluded to sub-par peer review tradition among Arab scholars as they usually publish through their own institutions' journals without "proper editorial and refereeing process." This was corroborated in a study by Khalifa (2017) which revealed that none of the 6 Arab OA journals he analyzed met the inclusion criteria in Scopus or WoS and only one met the requirements of DOAJ. In a global-scale study of DOAJ listed journals, Crawford (2019b) states that the UAE counts 15 journals in 2018. ROAD ISSN International Centere, on the other hand, lists around 85 UAE OA journals. The Directory of Free Arab Journals (DFAJ), a regional Arab OA journals directory, lists 5 journals under UAE. This huge disparity in reported numbers of UAE OA journals highlights the disparities in indexes inclusion criteria.

Arab journals and impact measures

Bibliometrics can be loosely defined as the quantitative analysis of research literature using citations to measure the scientific impact of journals, institutions and authors. The most popular and widely used bibliometric indicator is the ISI Journal Impact Factor (JIF). This measure of journal quality and prestige was designed to be used by libraries to gauge which journals to subscribe to (Garfield 2006), but gradually became widely established as a proxy for single journal and scholar research quality. Kurmis (2003) and Vanclay (2009) have criticized this limitation of JIF as well as its discipline-related bias and prejudice. These shortcomings could not be rectified by other alternative journal impact measures such as Scimago Scientific Journal Rankings (SJR), Journal Usage Factor (JUF), Source Normalized Impact per Paper (SNIP), and Google h5-index. Altmetrics, introduced later, are meant to address some of the limitations of and compliment these outlet-based bibliometrics by tracking impact and visibility of individual research items through a capture of social media and other web statistics such as likes, shares, mentions, downloads, views and discussions.

In recent years, two local impact factors targeting Arabic language journals have emerged in the Arab world. The Arab Impact Factor was established by the Association of Arab Universities. It released its first annual report in 2015 with only 29 journals. The

Arab Impact Factor uses quantitative and qualitative evaluation criteria such as number of citations, academic originality and quality, editorial board, publication regularity, peer-review, and adherence to scholarly publishing ethics (Kabil 2015).

The Arabic Citations and Impact Factor (ARCIF), however, was established by a commercial publisher, eMarifa. Its first report, released in 2016, included 362 Arabic journals. ARCIF website promises no bias against any discipline but does not disclose how differentiation between disciplines is factored in. One of the objectives it set for itself is to become a reference for improving the international rankings of Arab universities by eliminating bias against them.

The Arab scholarly publishing landscape is expecting a new citation index in 2020. In partnership with Clarivate Analytics, the Egyptian Knowledge Bank will be launching The Arabic Citation Index (ARCI) (Skelton 2018). This tool aims to highlight the research output of the Arab countries especially in the humanities and social sciences which are often neglected in international databases such as ISI and Scopus as well as boost the international rankings of Arab universities (Sawahel 2018).

Methodology

Previous bibliometric studies of scholarly publishing landscapes in national contexts have utilized two distinct approaches. Journal level analyses such as Björk's (2019), and article level studies such as Mikki et al. (2018) and Wang et al. (2018). Notwithstanding their approach, these studies reveal and corroborate the existence of a shortcoming in bibliometrics indexing services as identified by Mongeon and Paul-Hus (2015) and later by Somoza-Fernández et al. (2018). These services' biases in subject, geographical and language coverage limits their effectiveness in comparative studies. In order to overcome these indexing coverage limitations, data for this study was aggregated in line with Björk's (2019) methodology from a combination of local, regional and international sources. While Björk (2019) utilized Scopus as the main international non-OA dedicated source of journals published in the countries of interest, we have used Ulrichsweb which has proven to have more journal indexing coverage than some other indexes as stated by Mongeon and Paul-Hus (2015). This study opted to complement Ulrichsweb data with data from other sources. The following sources were used to extract data on all journals meeting criteria of being a scholarly peer-reviewed journal, active and from publishers registered in the UAE:

- Scimago journal and country Ranking
- Ulrichsweb Serials Directory
- Directory of Open Access Journals (DOAJ)
- Directory of Open Access Scholarly Resources (ROAD)
- SherpaRomeo
- Websites of UAE higher education institutions
- The Arabic Citations and Impact Factor (ARCIF)
- Directory of Free Arab Journals (DFAJ)
- Arab Impact Factor (AIF)
- A general search on Google for any scholarly journals published in the UAE

The data was extracted from all these sources between the months of February and April 2019. After extraction, a couple of non-journal records were removed from the Scimago

data (139 journals). The full data on UAE journals was exported from Ulrichsweb (560 journals). 196 titles of these have ceased publication, are duplicated records, have unclear status or on CD-ROM. The remaining 364 active print and online journals were added to the final collated list. An additional 84 titles were added from ROAD. SherpaRomeo was then browsed for publisher policies revealing a list of 9 OA journals. The list of journals manually collected from DOAJ was 18 journals. Data on another 91 titles was manually collected from HEIs and publishers' websites, ARCIF, DFAJ and AIF. Three titles in print were isolated leaving us with a total of 88 online journals. All data was then collated into one worksheet (696 journals). This list was deduplicated leaving a total of 534 unique journal titles. Metadata collected from all sources, and manually from the journals' websites, when not available, includes ISSN, title, publisher, start year, language, frequency, URL, print versus online status, OA status, APC, and subject area. Figure 1 shows the contribution of each source to the initial dataset as well as title overlaps. "Other sources" includes all the other sources used in this study but not explicitly listed in the Venn diagram.

The final collated list was then filtered to study aspects such as the share of OA journals in the UAE, language distribution, type of publisher (HEI, commercial or governmental publishers), and discipline. In the instances where explicit metadata on these aspects is absent in the source from which data was extracted, a manual verification on the journal website was performed. For discipline analysis, journals were assigned a subject based on the title, metadata from the indexing service or based on the scope of the journal.

Results

Overview of UAE journals

Data collected from the different sources used in this study identified a total of 534 unique titles published in the UAE. Nearly 71% (377) of these were available online.

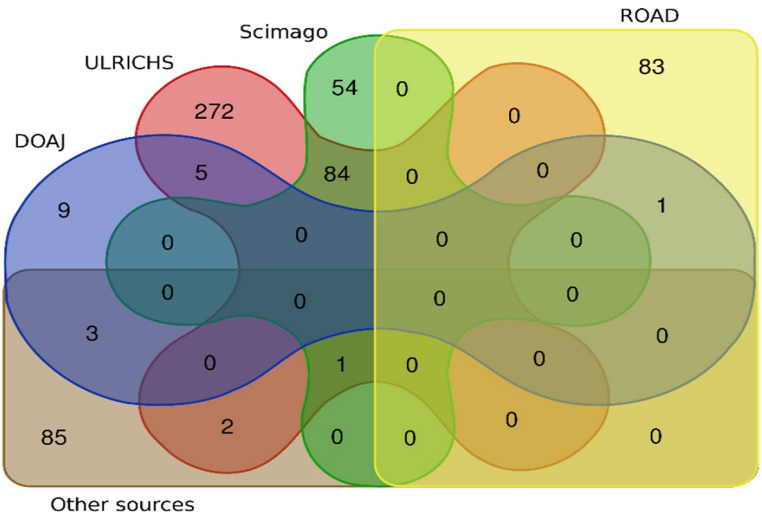

Fig. 1 Journal titles sources overlap and contribution to the dataset. Created with http://bioinformatics.psb.ugent.be/webtools/Venn/

Table 1 Overview of journals in the UAE

Source	All journals	Print	Online	OA
Ulrich's	364	154	210	111
Scimago	139	–	139	35
DOAJ	18	–	18	18
ROAD	84	–	84	84
Others	91	3	88	86
Total	696	157	539	334
Unique titles	534	157	377	240

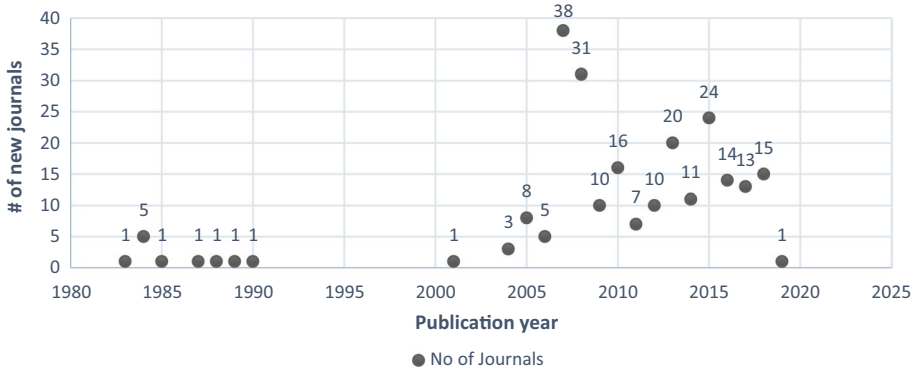

Fig. 2 UAE OA journals by year of publication

About 64% (240) of these online journals are OA. While 111 OA journals are listed in Ulrichsweb, only 18, 35 and 84 are listed in DOAJ, Scimago and ROAD, respectively. 85 OA titles identified from HEI websites and other sources such as ARCIF, DFAJ, and AIF were not indexed in any of these international indexes and directories.

Table 1 shows that print journals represent only about 30% of all journals. Almost all print titles except 3 are listed in Ulrichsweb.

OA journals publication year

The results obtained from analysis of journal publication year are shown in Fig. 2. This data covers only journals that are current and OA. These results indicate that the oldest UAE journal published its first issue in print long before being available online and OA back in 1983. The number of journals released per year picked up around 2004 to hit an all-time high of 38 in 2007, before receding to a range of 7–24 journals per year. The gap of a decade from 1990 to 2001 where no journals are recorded is due to the fact that we added the date the first print issue was published as the date the journal flipped to OA could not be identified. The data recorded after 2000 is in alignment with the important developments in the OA movement such as: the release of Eprints

Table 2 Born OA versus converted OA journal by type of publisher

Type of publisher	Started as OA	Converted to OA
Commercial publishers	189	1
HEIs	10	22
Government entities and associations	15	3
Total	214	26

Table 3 OA journals APC by type of publisher

	APC	No APC	No data
Commercial Publishers	154	22	14
HEIs	4	28	0
Government and Associations	9	8	1
All OA journals	167	58	15

software (2000); Open Journal System (2001); DSpace; and Budapest open Access Initiative (2002).

Born versus converted OA journals

Further analysis of the OA journals' segment shows that a total of 214 titles started as OA and that 26 print journals flipped to OA (Table 2). Almost all journals from commercial publishers started as OA (189 of 190). 22 of the 32 journals published by universities previously in print converted to OA. 15 journals published by government entities and associations started as OA and only 3 converted from print to OA.

Article processing charges

Analysis of APC status demonstrates that a confirmed 70% of OA journals in the UAE are charging publication fees (Table 3). About 92% of these are published by commercial publishers. In fact, 81% of all OA journals owned by these publishers collect APCs. In contrast, only around 13% of HEIs charge author fees. Nearly 50% of OA journals published by government entities and associations are not charging APCs. APC data could not be collected for 15 journals and thus were excluded from the analysis.

Further examination of APC data as shown in Fig. 3 reveals that the biggest share of journals (83) charge APCs in the 40–500 USD segment. A further 72 journals charge between 501 and 1000 USD. Only 3 journals charge more than 1001 USD. No data could be collected on 15 OA journals. The average fee charged by journals with confirmed APCs stands at around 496 USD.

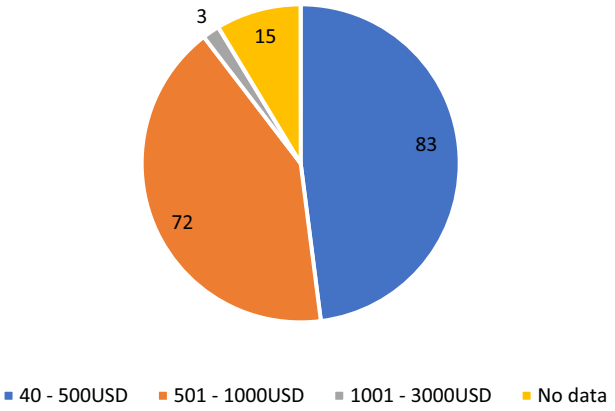

Fig. 3 OA journals APC segments

Table 4 UAE journals by language of publication

Language	Print	Online	OA
Arabic	3	2	2
English	151	353	216
Multilingual	3	22	22

Language of publication

Table 4 presents the breakdown of the UAE print, online and OA journals by language. The predominance of English as a language of publication among the UAE scholarly journals is obvious. 96% or 151 out of the 157 print journals are accepting only articles written in English. Similarly, 94% of online journals are in English. This is cascaded down to OA journals of which 90% or 216 out of 240 publish only articles in English. Surprisingly, Arabic-language journals represent only less than 1% of the, print, online, and OA Journals. The few Arabic and multilingual OA journals are predominantly in the humanities and social sciences with 20 out of 24 titles. These are mostly published by universities or government entities (21 titles).

Type of publisher

Table 5 shows that the UAE journal publishing landscape is dominated by a few commercial publishers like Bentham, Science Publications, Scholars Middle East, Tathqeef and Science Publishing Corporation. Together, they account for over 92%, 76%, and 62% of print, online, and OA journals, respectively. Journals published by educational institutions account for only about 3%, 9%, and 13% of all, print, online and OA journals, respectively. The remaining quarter of all OA journals are published by associations, government entities and small publishers. Bentham Publishers dominates the journal publishing landscape across all categories. Interestingly, the data reveals that all online journals published by government entities and associations are OA.

Table 5 Journals by type of publisher

Publisher	Print	Online	OA
Bentham	115	201	64
Science Publications	28	31	31
Universities	5	32	32
Scholars Middle East	0	22	22
Tathqeef	0	16	16
Science Publishing Corporation	1	16	16
Associations	2	12	12
Government Entities	1	6	6
Others	5	41	41

Breakdown by subject

Data in Table 6, conclusively, shows that the medical field and affiliated sub-fields dominate the UAE journals output with 78 print, 176 online, and 80 OA titles. Engineering is the second strongest discipline with 42 online and 15 print journals. Almost all online journals in business, humanities, agricultural and veterinary sciences, education, law, IT and environmental studies are OA. In contrast, only around 46% of journals in medical sciences and 61% in engineering are OA. Further analysis reveals that a little more than 50% of OA journals in the humanities and social sciences are published by universities and government entities. It can be seen from the data in Table 6 that all education journals are published online and are OA.

Discussion

Given the wide disparity in the coverage of the journal directories and indexes and in the absence of local indexing services, this study cannot unequivocally claim to have captured every single journal published in the UAE. Nevertheless, it provides the best available scan

Table 6 Journals distribution by discipline

Subject	Print	Online journals	OA
Medical sciences	78	176	80
Engineering	15	42	25
Business and management	2	28	28
General sciences	9	27	22
Humanities and social sciences	2	19	18
Agriculture and veterinary sciences	5	16	15
Chemistry	16	14	3
Biology	17	14	10
Education	0	10	10
Law	2	6	6
IT	6	8	7
Environmental sciences	4	11	10
Others	1	6	6

of the country's scholarly journal landscape. 78 journals of which 76 are OA identified by this study did not appear in any of the major indexes and directories including DOAJ. This study has also conclusively demonstrated that ROAD is more exhaustive than DOAJ and Scimago in indexing OA journals. This may be attributed to differences in inclusion criteria or lack of awareness of OA journal directories among journal editors in the UAE. Our findings are also in agreement with Björk's (2019) assertion of the limitation in DOAJ journal coverage. This may also be the result of tighter inclusion criteria (Khalifa 2017) or the delisting of journals policy introduced by DOAJ in 2014 (Marchitelli et al. 2017).

The share of OA journals published in the UAE at nearly 64% of all online journals is quite considerable and ahead of most Nordic countries studied by Björk (2019) with the exception of Iceland which achieved a rate of 67%. This could be due to factors such as dominance of commercial publishers driven by a desire to increase income from publication fees, appropriate funding of journals by government, universities and associations, and availability of disposable income enabling researchers to pay APCs. This claim is further supported by the fact that 93% of all journals that started as OA are owned by commercial publishers. Furthermore, 81% of all OA journals published by these publishers collect APCs.

Analysis of OA journals year of publication reveals that the years publishing peaked correspond to the entry of new commercial publishers such as Bentham into the UAE market. The increase in OA journal publishing after 2000 is consistent with Laakso et al. (2011) who reported an upsurge in OA journals from 2000 and 2009.

The share of born OA journals is quite considerable at nearly 89% of all OA journals and well ahead of the 79% reported by Solomon et al. (2013) among countries such as USA and Germany and 39% for Nordic countries cited by Björk (2019). This high percentage is probably fueled by the increase in internet penetration and entry of new commercial publishers. A substantial share of print journals published mainly by HEIs have also moved online and are made available OA.

The average APC of around $496 collected by publishers in the UAE is sub-par to Shamash's (2016) £1745 for 2014–2015 and Björk and Solomon's (2014) $1418–$2097. This study's conclusion that 70% of OA journals in the UAE charge APCs is in stark contradiction with Crawford's (2019b) findings which showed that about 71% of OA journals do not charge a fee.

Consistent with Banks' (2018) statement that the majority of world scholarly journals are published in English, almost all UAE journals with the exception of a few bilingual and a couple of Arabic titles are in English. It can be argued that UAE publishers are exacerbating the demise of the local language in scholarly publishing by not providing an adequate number of Arabic-language journals. This may also suggest that UAE researchers fit into Hamel's (2007) profile of authors seeking international peer recognition and higher citation rates or driven by funders incentivizing publications in journals indexed only by Scopus or WoS. Bearing in mind that these indexing services have been proven to be biased towards English-language publications (Archambault et al. 2006; Van Weijen 2012; Mongeon and Paul-Hus 2015; Somoza-Fernández et al. 2018), it comes as no surprise that the number of Arabic-language journals is quite limited. This low count can also be attributed to Al-Aufi's (2012) conclusion that the shift to teaching of scientific disciplines in most Arab universities resulted in scholars adopting English as a language of publication. This conviction is shared by Raven (2011) who states that English is the language of instruction at federal universities and the language of business in the UAE.

The UAE scholarly publishing landscape is clearly dominated by a few commercial publishers. Bentham spearheads this with a share of around 56% of all online and 27% of all

OA journals. The result of this study indicating that 76% of online and 62% of OA UAE journals are published by commercial publishers is in stark contradiction with Bjork's (2019) findings that 53% of OA journals in Nordic countries were published by universities or affiliated presses and Ilva's (2018) statement that most Finnish journals are owned by scholarly societies. The fact that UAE HEIs' share of OA journals stands at a mere 13% further supports conclusions of Austin et al. (2014) and Chapman et al. (2014) that UAE HEIs focus on teaching, to the detriment of research. Nonetheless, the conclusion that all 32 online journals published by universities are OA suggests that funding may have a direct impact on the degree of openness.

Data on distribution of journals by discipline reveals predominant interest in the sciences, technology, medicine (STM) disciplines. This may have several possible explanations such as the UAE government's expressed prioritization of science and technology in the UAE Vision 2021, and the presence of large commercial publishers interested in these disciplines. Furthermore, the observed varying degrees of openness by discipline reveals that apart from health sciences and engineering, primarily dominated by commercial publishers, the UAE has almost achieved total openness across all other disciplines.

The dominance of English-language journals and commercial publishers in the UAE may lead us to question the relevance of journal publisher countries. After all, globalization of the scholarly publishing ecosystem has led to the emergence of publishers with journals beyond geographic and linguistic boundaries of their countries of operation. A case in point is Elsevier which, even though based in the Netherlands, publishes many journals which are global in their reach and relevance.

Conclusion

This study set out to chart the scholarly journal landscape in the UAE with the objective of laying foundations for future in-depth research on scholarly publishing and OA. Our results indicate that DOAJ, ROAD and even regional indexes such as ARCIF and Arab Impact Factor are limited in their coverage of locally published journals. We found that Ulrichsweb lists more OA journals than indexed in DOAJ and ROAD directories, the first go-to services for OA bibliometric analyses. The evidence from this study suggests that the share of OA journals in the UAE is quite significant and that most charge APCs albeit well below international average.

This study's second major finding was that, in line with the rest of the world, the local language (Arabic) has been sidelined by English as the main language of publication regardless if the journal is in print, online or OA. Future studies could explore if this situation is due to publishers pushing for more international exposure, as a result of low supply of manuscripts in Arabic, or as an outcome of other factors such as promotion and appraisal policies.

One of the more significant findings to emerge from this study is that the publishing landscape is dominated by a few commercial publishers and not by universities and associated presses as expected. Further research is required to determine why this is the case and what are the incentives for commercial publishers to establish journals in the UAE. The delisting of some UAE journals by DOAJ based on publishers' suspicious editorial practices warrants also an in-depth study of commercial publishers in the UAE. A study on authors affiliation will also shed some light on whether the journals target local authors or a broader author base.

Finally, this study looked at journals' distribution by discipline. This reveals a predominance of medical sciences and highlights that humanities and social sciences occupy a marginal place. Regardless of discipline, the level of openness is lower among journals owned by the big commercial publishers.

This work is only a first step to draw a comprehensive picture of the UAE scholarly publishing in general and OA in particular. Forthcoming studies will look at UAE affiliated authors' article output, funding and support for OA, institutional attitudes to OA, and OA policies and mandates.

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References

Abd Al-Mukhtar, A. M. A. (2019). *Arab Universities' scientific periodicals in global citation databases: An analytical study* (Arabic) (Unpublished master's dissertation). Minia University, Egypt.

Al-Aufi, A. S. (2012). Domination of English and its impact on the Arabic System of Scholarly Communication. *Journal of Arts and Social Sciences [JASS], 3*(1), 5–28. https://doi.org/10.24200/jass.vol3iss1pp5-28.

Alpen Capital. (2018). *GCC education industry*. *Alpen capital report*. Retrieved from https://argaamplus.s3.amazonaws.com/9e55ad53-477f-48f0-b202-2c2f03d6a03d.pdf.

Altbach, P. G. (2013). Advancing the national and global knowledge economy: The role of research universities in developing countries. *Studies in Higher Education*. https://doi.org/10.1080/03075079.2013.773222.

Arab Impact Factor. Retrieved from http://www.arabimpactfactor.com/.

Archambault, E., Amyot, D., Deschamps, P., Nicol, A., Rebout, L., & Roberge, G. (2013). *Proportion of Open Access peer-reviewed papers at the European and world levels 2004–2011*. Montreal: Science-Metrix. Retrieved from http://www.science-metrix.com/pdf/SM_EC_OA_Availability_2004-2011.pdf.

Archambault, É., Amyot, D., Deschamps, P., Nicol, A. F., Provencher, F., Rebout, L., & Roberge, G. (2014). *Proportion of open access papers published in peer-reviewed journals at the European and world levels–1996–2013*. Montreal: Science-Metrix. Retrieved from http://science-metrix.com/sites/default/files/science-metrix/publications/d_1.8_sm_ec_dg-rtd_proportion_oa_1996-2013_v11p.pdf.

Archambault, É., Vignola-Gagne, É., Côtè, G., Larivière, V., & Gingras, Y. (2006). Benchmarking scientific output in the social sciences and humanities: The limits of existing databases. *Scientometrics, 68*(3), 329–342.

Austin, A. E., Chapman, D. W., Farah, S., Wilson, E., & Ridge, N. (2014). Expatriate academic staff in the United Arab Emirates: The nature of their work experiences in higher education institutions. *Higher Education, 68*(4), 541–557. https://doi.org/10.1007/s10734-014-9727-z.

Badran, A. H. (2014). Al Muqtataf journal: A history and scientific role (1867–1952) [Arabic]. *Dirāsāt, 36,* 131–148. https://doi.org/10.12816/0008502.

Banks, D. (2018). Thoughts on publishing the research article over the centuries. *Publications of the Astronomical Society of Australia, 6*(1), 10. https://doi.org/10.3390/publications6010010.

Beasley, G. (2016). Article processing charges: A new route to open access? *Information Services & Use, 36*(3/4), 163–170. https://doi.org/10.3233/ISU-160815.

Björk, B.-C. (2017). Journal portals—An important infrastructure for non-commercial scholarly open access publishing. *Online Information Review, 41*(5), 643–654. https://doi.org/10.1108/OIR-03-2016-0088.
Björk, B.-C. (2019). Open access journal publishing in the Nordic countries. *Learned Publishing, 27*(2), 273-10. https://doi.org/10.1002/leap.1231.
Björk, B. C., & Solomon, D. (2014). *Developing an effective market for open access article processing charges*. Retrieved from https://wellcome.ac.uk/sites/default/files/developing-effective-market-for-open-access-article-processing-charges-mar14.pdf.
Björk, B. C., & Solomon, D. (2014b). How research funders can finance APCs in full OA and hybrid journals. *Learned Publishing*. https://doi.org/10.1087/20140203.
Björk, B. C., Welling, P., Laakso, M., Majlender, P., Hedlund, T., et al. (2010). Open access to the scientific journal literature: Situation 2009. *PLoS ONE, 5*(6), e11273. https://doi.org/10.1371/journal.pone.0011273.
Chapman, D., Austin, A., Farah, S., Wilson, E., & Ridge, N. (2014). Academic staff in the UAE: Unsettled journey. *Higher Education Policy, 27*(1), 131–151. https://doi.org/10.1057/hep.2013.19.
Cianflone, E. (2014). Communicating science in international English: Scholarly journals, publication praxis, language domain loss and benefits. *Círculo de Lingüística Aplicada a La Comunicación, 57,* 45–58. https://doi.org/10.5209/rev_CLAC.2014.v57.44514.
Crawford, W. (2015). *Open-access journals: Idealism and opportunism. Library technology reports*. Chicago: ALA TechSource.
Crawford, W. (2019a). *Gold open access 2013–2018: Articles in journals (GOA4)*. Livermore, CA.: Cites & Insights Books. Retrieved from https://waltcrawford.name/goa4.pdf.
Crawford, W. (2019b). *Gold open access by country 2013–2018*. Livermore, CA.: Cites & Insights Books. Retrieved from https://waltcrawford.name/goacntry4.pdf.
Curry, M. J., & Lillis, T. (2018). The dangers of English as lingua franca of journals. Retrieved from https://www.insidehighered.com/views/2018/03/13/domination-english-language-journal-publishing-hurting-scholarship-many-countries.
DOAJ. (2019b). *Myth-busting: All open access journals can be listed in DOAJ*. Retrieved from https://blog.doaj.org/2019/09/17/myth-busting-all-open-access-journals-can-be-listed-in-doaj/.
DOAJ. (2019b). *Myth busting: DOAJ is not inclusive*. Retrieved from https://blog.doaj.org/2019/07/31/myth-busting-doaj-is-not-inclusive/.
Fukuzawa, N. (2017). Characteristics of papers published in journals: An analysis of open access journals, country of publication, and languages used. *Scientometrics, 112*(2), 1007–1023. https://doi.org/10.1007/s11192-017-2414-y.
Garfield, E. (2006). The history and meaning of the journal impact factor. *Journal of the American Medical Association, 295*(1), 90–93.
Green, T. (2018). *We're still failing to deliver open access and solve the serials crisis: To succeed we need a digital transformation of scholarly communication using internet-era principles.* https://doi.org/10.5281/zenodo.1410000.
Gulf News. (2017). *UAE launches National Strategy for Higher Education 2030*. Retrieved from https://gulfnews.com/uae/education/uae-launches-national-strategy-for-higher-education-2030-1.2097191.
Hamel, R. E. (2007). The dominance of English in the international scientific periodical literature and the future of language use in science. *AILA Review, 20*(1), 53–71. https://doi.org/10.1075/aila.20.06ham.
Hanafi, S. (2011). University systems in the Arab east: Publish globally and perish locally vs publish locally and perish globally. *Current Sociology, 59*(3), 291–309. https://doi.org/10.1177/0011392111400782.
Ilva, J. (2018). Looking for commitment: Finnish open access journals, infrastructure and funding. *Insights—The UKSG Journal, 31*(25), 1–9. https://doi.org/10.1629/uksg.414.
Jabriyah, H., Harasi, N., & Kelou, S. M. (2017). Peer-reviewed scholarly journals in Oman: Their reality and received support [Arabic]. *Iraqi Journal of Information Science, 18*(1–2), 1–27.
Johnson, R., Watkinson, A. & Mabe, M. (2018). *The STM Report: An overview of scientific and scholarly publishing, 5th Edition*. https://www.stm-assoc.org/2018_10_04_STM_Report_2018.pdf.
Journals published by Arab research community set to benefit from greater global visibility. (2019, March 14). Retrieved from https://www.elsevier.com/about/press-releases/science-and-technology/journals-published-by-arab-research-community-set-to-benefit-from-greater-global-visibility.
Kabil, T. (2015). Arab Impact Factor [Arabic]. Retrieved from http://arsco.org/article-detail-596-8-0.
Kamal, K. (2018). *Education in the United Arab Emirates*. Retrieved from https://wenr.wes.org/2018/08/education-in-the-united-arab-emirates.
Khalifa, M. (2017). Evaluation of Arab scientific journals according the international criteria of citations databases and journals directories: Library and information science journals as a model [Arabic]. *Cybrarians Journal,* (48). Retrieved from http://www.journal.cybrarians.org/images/048/Cybrarians_Journal_048_Papers_05.pdf.

King, D. W., & Alvarado-Albertorio, F. M. (2008). Pricing and other means of charging for scholarly journals: A literature review and commentary. *Learned Publishing, 21*(4), 248–272. https://doi.org/10.1087/095315108X356680.

Kurmis, A. P. (2003). Understanding the limitations of the journal impact factor. *The Journal of Bone and Joint Surgery. American Volume, 85*(12), 2449–2454. https://doi.org/10.2106/00004623-200312000-00028.

Laakso, M., & Björk, B. C. (2012). Anatomy of open access publishing: A study of longitudinal development and internal structure. *BMC Medicine*. https://doi.org/10.1186/1741-7015-10-124.

Laakso, M., Welling, P., Bukvova, H., Nyman, L., Björk, Bo-Christer, & Hedlund, T. (2011). The development of open access journal publishing from 1993 to 2009. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0020961.

Larivière, V., & Sugimoto, C. R. (2018). Do authors comply when funders enforce open access to research? *Nature News, 562,* 483–486. https://doi.org/10.1038/d41586-018-07101-w.

Luescher, T. M. (2016). Higher education expansion in Africa and Middle East. In *Encyclopedia of international higher education systems and institutions* (Vol. 64, pp. 1–3). Dordrecht: Springer. http://doi.org/10.1007/978-94-017-9553-1_54-1.

Macilwain, C. (2010). What science is really worth. *Nature News, 465,* 682–684.

Marchitelli, A., Galimberti, P., Bollini, A., & Mitchell, D. (2017). Improvement of editorial quality of journals indexed in DOAJ: A data analysis. *JLIS. it, 8*(1), 1–21. https://doi.org/10.4403/jlis.it-12052.

Marginson, S. (2012). The "Public" contribution of universities in an increasingly global world. In *Universities and the public sphere: Knowledge creation and state building in the era of globalization*. https://doi.org/10.4324/9780203847848.

McKenzie, L. (2018). *"Big Deal" Cancellations Gain Momentum.* Retrieved from https://www.insidehighered.com/news/2018/05/08/more-institutions-consider-ending-their-big-deals-publishers.

McKiernan, E. C., Schimanski, L. A., Muñoz Nieves, C., Matthias, L., Niles, M. T., & Alperin, J. P. (2019). Use of the journal impact factor in academic review, promotion, and tenure evaluations. *ELife*. https://doi.org/10.7554/elife.47338.

Meo, S. A., Al Masri, A. A., Usmani, A. M., Memon, A. N., & Zaidi, S. Z. (2013). Impact of GDP, spending on R&D, number of universities and scientific journals on research publications among Asian countries. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0066449.

Mikki, S., Gjesdal, Ø., & Strømme, T. (2018). Grades of openness: Open and closed articles in Norway. *Publications, 6*(4), 46-12. https://doi.org/10.3390/publications6040046.

MoChridhe, R. (2019). Linguistic equity as open access: Internationalizing the language of scholarly communication. *Journal of Academic Librarianship, 45*(4), 423–427. https://doi.org/10.1016/j.acalib.2019.02.006.

Mongeon, P., & Paul-Hus, A. (2015). The journal coverage of Web of Science and Scopus: A comparative analysis. *Scientometrics, 106*(1), 213–228. https://doi.org/10.1007/s11192-015-1765-5.

Morais, R. & Borrell-Damián, L. (2019). *Open access: 2017–2018 EUA survey results*. Retrieved from https://www.eua.eu/downloads/publications/2017-2018%20open%20access%20survey%20results.pdf.

Nasser, R., & Abouchedid, K. (2001). Problems and the epistemology of electronic publishing in the Arab world: The case of Lebanon. *First Monday*. https://doi.org/10.5210/fm.v6i9.886.

Piwowar, H., Priem, J., Larivière, V., Alperin, J. P., Matthias, L., Norlander, B., et al. (2018). The state of OA: A large-scale analysis of the prevalence and impact of open access articles. *PeerJ, 6,* e4375. https://doi.org/10.7717/peerj.4375.

Piwowar, H., Priem, J., & Orr, R. (2019). The Future of OA: A large-scale analysis projecting Open Access publication and readership. *BioRxiv*, 795310. https://doi.org/10.1101/795310.

Raven, J. (2011). *Word emiratizing the education sector in the UAE: Contextualization and challenges*. Retrieved from https://pdfs.semanticscholar.org/51da/24bf7cea5c7568652471f0b1f1a6ec91a1ef.pdf?_ga=2.103563784.92852872.1568286845-906255112.1568286845.

Research Trends. (2008). English as the international language of Science. *Research Trends, 6,* 1–9.

Salisbury, E. (1853). II. Syrian society of arts and sciences. *Journal of the American Oriental Society, 3,* 477–486. https://doi.org/10.2307/3217830.

Sanderson, D., & Khan, S. (2019). Ghadan 21: Abu Dhabi to boost business and ecotourism with major new reforms. *The National*. Retrieved from https://www.thenational.ae/uae/government/ghadan-21-abu-dhabi-to-boost-business-and-ecotourism-with-major-new-reforms-1.878805#14.

Sawahel, M. (2018). *New research index to enhance Arabic academic footprint*. Retrieved from https://www.universityworldnews.com/post.php?story=20180607144307817.

Sayed, F. S. (2015). *The most prominent modern events (1900–2014) [Arabic]*. Beirut: Maktabat Hassan Al-Asriyah.

Shah, T. A., & Gul, S. (2013). Philosophy of escapism in the open access world: Studying author pay model. *Library Review*. https://doi.org/10.1108/lr-09-2012-0104.

Shamash, K. (2016). *Article processing charges (APCs) and subscriptions—Monitoring open access costs*. London: JISC. Retrieved from https://www.jisc.ac.uk/sites/default/files/apc-and-subscriptionsreport.pdf.

Shehata, A. M. K. (2019). Exploring the scholarly communication styles of Arab social science and humanities scholars. *Learned Publishing, 32*(4), 304–311. https://doi.org/10.1002/leap.1253.

Shehata, A. M. K., & Elgllab, M. F. M. (2018). Where Arab social science and humanities scholars choose to publish: Falling in the predatory journals trap. *Learned Publishing, 31*(3), 222–229. https://doi.org/10.1002/leap.1167.

Shen, C. (2017). Open access scholarly journal publishing in Chinese. *Publications*. https://doi.org/10.3390/publications5040022.

Sidqi, H. (2009). *Scientific journalism: Between theory and practice [Arabic]*. Cairo: Al-Maktaba Al-Akadimiyah.

Skelton, V. (2018). *Arabic citation index announced*. Retrieved from https://www.infotoday.eu/Articles/News/Featured-News/Arabic-Citation-Index-announced-125303.aspx.

Solomon, D., Laakso, M., & Björk, B.-C. (2013). A longitudinal comparison of citation rates and growth among open access journals. *Journal of Informetrics, 7*(3), 642–650. https://doi.org/10.1016/j.joi.2013.03.008.

Solomon, D., Laakso, M., & Björk, B.-C. (2016). *Converting scholarly journals to open access: A review of approaches and experiences*. Cambridge, MA: Harvard Library Office for Scholarly Communication. Retrieved from https://dash.harvard.edu/bitstream/handle/1/27803834/DASH%20Version-Journal-flipping-final-Aug4-2016-print-2.pdf?sequence=3.

Somoza-Fernández, M., Rodríguez-Gairín, J.-M., & Urbano, C. (2018). Journal coverage of the emerging sources citation index. *Learned Publishing, 31*(3), 199–204. https://doi.org/10.1002/leap.1160.

SPARC. (2019). *Big deal cancellation tracking*. Retrieved from https://sparcopen.org/our-work/big-deal-cancellation-tracking/.

Tenopir, C., Dalton, E., Christian, L., Jones, M., McCabe, M., Smith, M., & Fish, A. (2017). Imagining a gold open access future: attitudes, behaviors, and funding scenarios among authors of academic scholarship. *College & Research Libraries, 78*(6). https://doi.org/10.5860/crl.78.6.824.

Thibault, R. T., Macpherson, A., Harnad, S., & Raz, A. (2018). *The Rent's too high: Self-archive for fair online publication costs*. http://doi.org/10.1109/VTSA.2009.5159273.

Tijssen, R. (2015). Research output and international research cooperation in African flagship universities. In N. Cloete, P. Maassen & T. Bailey (Eds.), *Knowledge production and contradictory functions in african higher education*. Cape Town: African Minds.

Van Weijen, D. (2012). The language of (future) scientific communication. *Research Trends, 31,* 7–8.

Vanclay, J. K. (2009). Bias in the journal impact factor. *Scientometrics, 78*(1), 3–12. https://doi.org/10.1007/s11192-008-1778-4.

Wang, X., Cui, Y., Xu, S., & Hu, Z. (2018). The state and evolution of Gold open access: A country and discipline level analysis. *Aslib Journal of Information Management, 70*(5), 573–584. https://doi.org/10.1108/AJIM-02-2018-0023.

Wilkins, S. (2010). Higher education in the United Arab Emirates: An analysis of the outcomes of significant increases in supply and competition. *Journal of Higher Education Policy and Management, 32*(4), 389–400.

Wulf, K., & Meadows, A. (2016). Seven things every researcher should know about scholarly publishing. *Scholarly Kitchen*. Retrieved from https://scholarlykitchen.sspnet.org/2016/03/21/seven-things-every-researcher-should-know-about-scholarly-publishing.