Do We Need Indices for Quantifying Arabic Journals Ranking and Researchers?

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Abstract— Based on a series of eleven workshops, we discuss the urgent need for a new index to classify Arabic journals and researchers. The participants were 216 members, who have been trained on how to create and manage a specialized scientific electronic journal that fulfills the international standards. A structured questionnaire was used to study the number of published articles, h-index and impact factor. It is shown that 73.6% of the participants have zero h-index of whom 42.6% have at least one published article mostly in Arabic Journals. Finally, we suggest that creating indices for quantifying the rank of Arabic journals and researchers is crucial.

Keywords— Quantifying scientific journals, electronic publishing, University of Bahrain, ranking Arabic journals, ranking Arabic researchers.

I. INTRODUCTION

It is evident that the world is witnessing a dramatic move towards electronic publishing (Ahmad & Al-Khalili, 2013; Al-Khalili, 2012a, 2012b; Mahmoud, 2011; Shapiro, 2005; Aretimi, 2012; Heider, Laverick, & Bennett, 2009; Nelson, 2008; Byrne, 2000). Nelson (2008) indicated to this move by saying that "Each year one of the biggest debates in higher education seems to be: Is this the year that electronic textbooks take off? E-reader devices are getting better. The inventory of digital content is expanding. Business models are emerging to support the needs of students, faculty members, and publishers. People are getting comfortable with new modes of information delivery and pervasiveness of technology in their lives." (P A29).

Recent electronic books afford interactive facilities between the readers and the text, being loaded as hypertext not as PDF. Such a form of electronic books facility is termed as open access, in which readers can get access to related sources or subjects through highlighted links. College instructors have begun to abandon traditional approaches to instruction, shifting towards digital textbooks (Heider, Laverick, & Bennett, 2009; Nelson, 2008; Byrne, 2000).

Moreover, most hard copy journals began to produce an electronic version of them; whilst keeping on producing the paper text version. This means that the electronic version did not replace the paper version. However, still so many online journals are emerging drastically.

Along with this shift towards electronic publishing, a new concern emerged regarding quality of research and of journals in which this research is published. Journals are not equal in importance or in the potential to influence practitioners, teachers, or other researchers. Thus a critical aspect is choosing where to publish. In the absence of clear criteria, funding agencies and promotion committees, which are often comprised of scholars from disciplines unfamiliar with the publications of other scholars’ fields, are forced to guess at how to evaluate a scholar’s portfolio. This can lead to inaccurate evaluations about what matters and what is important, causing them to overvalue or undervalue a scholar’s contribution.

West & Rich (2012) indicated that one key factor in this decision process is the relevance of the journal to the topic of the manuscript and its timeliness in completing the review and publication cycle. Once a pool of relevant and appropriate journals has been selected, a second important factor in choosing where to publish is the quality of the journals. In fact, and perhaps to the detriment of scientific inquiry, funding agencies and promotion committees often emphasize the importance of “quality” publications in “top-tier” journals. The question of which journals are top tier is extremely challenging and precarious.

The impact factor is found through Journal Citation Report JCR which is a product of Institute for Scientific Information ISI. It is the average number of times a journal published papers are cited up to two years after publication. JCR provides quantitative tools for evaluating journals.
The impact factor (IF) is one of these and can be considered to be the average number of times published papers are cited up to two years after publication. It is calculated automatically and electronically according to the following formula:

\[ IF = \frac{A}{B} \]

A is the number of times articles published by the journal in the past two years were cited in indexed journals.

B is the number of articles, reviews, proceedings and notes published by the journal during the same period.

In short, Impact Factor was defined (Amin & Mabe, 2000) as being an index that shows how much the published articles in a journal are significant and affecting others to cite in their following research. It is based on a three year basis. Thus it couldn’t be found to any journal before three years of lunching. Moreover, the journal must be indexed in a universal data bases like Ulrich which produces 300,000 periodicals or Elsevier which produces 18,000 periodicals.

The Institute for Scientific Information (ISI) impact factor (IF) has become an important standard for assessing journal quality (Harter & Nisonger, 1997; Cameron, 2005; Neff & Olden, 2010; West & Rich, 2011; Hodge & Lacasse, 2011a, 2011b; Timothy, 2011; Haddow, 2008). However, many researchers criticized relying on IF in academic settings (Cameron, 2005) as being misnamed and misused (Harter & Nisonger, 1997), limited in covering field’s journals comprehensively and objectively (Timothy, 2011), do not index large portions of educational journals, leaving many faculty members in many fields misrepresented and at a disadvantage including education the social sciences, the humanities, technological sciences, and law (West & Rich, 2012), subject to inflation as a result of the observation that papers published today tend to cite more papers than those published a decade ago (Neff & Olden, 2010), low valid approach to evaluating journal quality in the social work profession (Hodge & Lacasse, 2011a), and misleading (Abdel-Aty, 2011).

West and Rich (2012) raised to what they called the what the perils of evaluating journals based on a single quantitative measure (e.g., the Impact Factor rating of the Institute for Science Information). They suggested three main key criteria for evaluating journals, which were: rigor, impact, and prestige. Hodge and Lacasse (2011a, 2011b) suggested Google Scholar h-index to be used for the same purpose which they found to be highly correlated with ISI h-index. Haddow (2008) suggested what he called as the journal diffusion factor JDF as an alternative to journal impact factor.

This JDF was with the total number of citations the Journal attracts in ISI indexed journals, the proportion of articles published that attracted citations, and publishing characteristics.

Regarding quality of researchers, Hirsch (2005) proposed an index to quantify an individual’s scientific research output which he called the h-index in an attempt for measuring both the productivity and impact of the published work of a scientist or a scholar. Hirsch defined his index as the number of papers with citation number higher or equal to h, i.e., a scientist has index h if h of his/her Np papers have at least h citations each. This index is used to characterize the scientific output of a researcher in a very good way (Abdel-Aty, 2011). It is obtained automatically and electronically through a very simple counting procedure based on finding the number of times the published papers of a scholar has been cited by others. It is perceived that if a scholar has an index of h it means that he has published h papers each of which has been cited in other papers at least h times. As an example of that if Professor Mahmoud has an h index of 15, it means that 15 of his published papers each of which has been cited in other papers at least 15 times. Some (Haslam, 2012) believes that "h-index" should be the default index for assessing the citation impact of individual scientists. Establishing a single index as the lingua franca of impact assessment would have practical benefits; Now Scopus uses the h-index to characterize the scientific output of a researcher.

As with impact factor, the h-index has been subjected to criticism, and alternative methods have been suggested. Cacioppo and Cacioppo (2012) indicated that "h" index has limitations, among them are that the "h" index tends to increase with years as a scientist; gratuitous authorship can contribute to inflated scores; the "h" index does not take into consideration the number or the role of the authors; different citation databases provide different "h" indexes as a result of differences in coverage; the "h" index is bounded by total number of publications; the "h" index does not consider the context of the citations (e.g., negative findings or retracted work); and individuals with the same "h" index may nevertheless differ dramatically in total citations or in number of publications.

Waltman, Costas, and van Eck (2012) highlighted some important limitations of the "h" index, and also of the various variants of this index, which remained unmentioned in the paper by Ruscio and colleagues. They focused on the following three limitations: (1) The "h" index behaves counter intuitively in certain situations;
(2) The "h" index does not necessarily make the trade-off between "quantity" and "quality" in the way one desires; and (3) The "h" index represents a single-dimensional approach to bibliometric research evaluation, while in many cases a multidimensional approach would be preferable.

Cho & Neely (2012) indicated that although "h" should be considered the single best measure for predicting the status of an individual researcher or research group, it is not necessarily the best measure for predicting an individual researcher's ability to produce articles that are extremely well cited.

Borkenau (2012) indicated that “h” index assigns the same credit to each author in the byline, independent of the number and order of the coauthors. Thus he says that ignoring the number of coauthors per article in measures of scholarly impact is not only conducive to biased estimates of scholarly impact, it will also result in an inflation of the number of coauthors per article. Another issue is "how" the publication merit should be partitioned between authors. However, he argues that different methods yield similar results, as it shows that partitioning publication credit between authors should not give rise to endless debates on the details of the partitioning procedure. Bar-Ilan (2000) compared the h-indices of a list of highly-cited Israeli researchers based on citations counts retrieved from the Web of Science, Scopus and Google Scholar respectively. They found that in several case the results obtained through Google Scholar are considerably different from the results based on the Web of Science and Scopus.

Ruscio, Seaman, D’Oriano, Stremlo, and Mahalchik (2012) evaluate 22 metrics, including conventional measures, the "h" index, and many variations on the "h" theme. Their criteria encompass conceptual, empirical, and practical issues including: ease of understanding, accuracy of calculation, effects on incentives, influence of extreme scores, and validity. They found that although the number of publications fares well on several criteria, the most attractive measures include "h", several variations that credit citations outside the "h" square, and two variations that control for career stage. Additional data suggest that adjustments for self-citations or shared authorship probably would not improve these measures much, if at all. They close by considering which measures are most suitable for research and practical applications.

It is evident that both impact factor and h-index require that the evaluated research should be published in English or at least the title of the articles and of the journals in which they are published must be in English. This raises another issue regarding research in other languages and how could it be evaluated?

II. RESEARCH QUESTIONS

This study aimed at getting answers to the following questions:
1. Are Arab researchers appear according to h-index?
2. Is h-index of Arab researchers independent of their field of specialization?
3. How could Arab scientific journals and researchers be evaluated?

III. METHODOLOGY

A structured questionnaire was used for quantitative data collection and analysis. A series of workshops on how to establish and run electronic scientific journals were organized by the Scientific Publishing Center SPC to welling faculty members in each of the ten colleges associated with UoB alone. This center is an official one established 2011 at the University of Bahrain UoB for the purpose of publishing scientific production through all available tools. The center chose electronic publishing as a starting step for assisting scholars on publishing their production. Each workshop took about two hours. Focus was on distinguishing aspects of respectable scientific journals, especially on adherence to scientific standards of quality, regularity, variation of scholars in the editorial board, having Impact Factor IF, recentness of topics tackled and type of scholars whom work has been published in the journal like those who have high h-index. Impact factor and h-index were clarified at each of the workshops with many examples.

Participants were practically trained on how to find out their own h-index and write down on An already validated questionnaire which was distributed at the end of the workshop.

IV. INSTRUMENT

The instrument used in this study was a questionnaire consisting of two parts. Part one asks about demographic information including name, affiliated college and department. The second part asks the participant to write down his h-index which was found by him/her self and the total numbers of articles s/he has already published in all journals no matter of the type of these journals. The validity of this instrument was assured though the process of construction. This instrument was originally a modified version of an official one used by the Continuing Learning and Community Services Center at UoB. Moreover, a panel of judges consisting of four faculty members at UoB were asked for confirmation of valid covering of the instrument.
The reliability of the instrument was assured through applying it on a subsample of this study consisting of 27 faculty members. Chronbach alpha as a measure of reliability was found to be 0.86 which is a very good indicator of trust in the results of this instrument.

V. POPULATION AND SAMPLE

Faculty members from ten colleges associated with the university were invited to participate in a scheduled time assigned to their colleges. Two hundred thirty eight showed up who make the sample of this study. Two hundred sixteen of them filled up the questionnaire. Table 1 shows the distribution of both the sample and population of this study. This sample is almost one third of the population, which is good enough as a representative sample.

VI. STATISTICAL ANALYSIS

The Statistical Package for Social Sciences SPSS was used for data analysis. Descriptive as well as analytical tests were used. The second section presents the obtained results.

Table 1. Distribution of Population And Sample of The Study

<table>
<thead>
<tr>
<th>College Name</th>
<th>Population</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Science</td>
<td>100</td>
<td>32</td>
</tr>
<tr>
<td>Bahrain Teachers College</td>
<td>50</td>
<td>17</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>35</td>
<td>21</td>
</tr>
<tr>
<td>College of Health Sciences</td>
<td>77</td>
<td>24</td>
</tr>
<tr>
<td>Information Technology College</td>
<td>78</td>
<td>29</td>
</tr>
<tr>
<td>College of Law</td>
<td>32</td>
<td>15</td>
</tr>
<tr>
<td>College of Arts</td>
<td>150</td>
<td>49</td>
</tr>
<tr>
<td>College of Business Administration</td>
<td>85</td>
<td>10</td>
</tr>
<tr>
<td>College of Phys. Ed. &amp; Physiotherapy</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>College of Applied Sciences</td>
<td>48</td>
<td>7</td>
</tr>
<tr>
<td>Overall</td>
<td>675</td>
<td>216</td>
</tr>
</tbody>
</table>

VII. FINDINGS

Data analysis revealed (see Table 2) that about one third (31.0%) of the whole sample did not get any article published in any journal. The majority (70.8%) were affiliated to College of Health Sciences followed by Bahrain Teachers College (35.3%), and College of Arts (32.7%). The high percentage of the College of Health resulted from the fact that most of them do not have the PhD degree, consequently they do not pay much attention to carrying out research.

Regarding the results pertaining to h-index data analysis revealed (see Table 3 and Figure 1) that almost three fourths (73.6 %) of the whole sample of faculty members at UoB has zero h-index. If we subtract the percentage of those who didn’t have any published article (31.0%) from those who have zero h-index (73.6%) we end up with 42.6% of whom who have published at least one article are with zero h-index. Which means that h-index did not consider them. The majority of those who got zero h-index were those who are affiliated to humanities colleges (College of Law, College of Arts, College of Physical Education and Physiotherapy). The maximum h-index recorded was 11 and was that for only one faculty member (0.5% of the total sample) from College of Science. The second highest value was 8 achieved by only one faculty member (0.5% of the total sample) from the College of Applied Sciences; followed by a value of 7 which was achieved by only one faculty member (0.5% of the total sample) from College of Science. After that a value of 5 was achieved by two faculty members (1%) one from College of Science and the other was from College of Engineering.
It is evident in Table 3 that h-index values is dependent on college affiliation as indicated by the statistically significant value of chi square test for independence ($\chi^2 = 128.056$, df = 72, sig. at $p < 0.0001$). The differences among colleges came mainly as a result of those who got zero h-index.

We found that whilst almost all of those who got zero h-index (95.9%) of faculty members were working at College of Arts, (93.3%) at College of Law, (87.5%) at College Health Sciences, (83.3%) at College of Physical Education and Physiotherapy; we found that the analogous percentages were (28.6%) at College of Applied Sciences, (40.6%) at College of Science, and (42.9%) at College of Engineering.
Table 3. Chi Square Results for Independence of H-index and College Type

<table>
<thead>
<tr>
<th>College</th>
<th>H - index</th>
<th>.00</th>
<th>1.00</th>
<th>2.00</th>
<th>3.00</th>
<th>4.00</th>
<th>5.00</th>
<th>7.00</th>
<th>8.00</th>
<th>11.00</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Science</td>
<td>40.6%</td>
<td>13</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>32</td>
</tr>
<tr>
<td>Bahrain Teachers College</td>
<td>76.5%</td>
<td>13</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>College of Engineering</td>
<td>42.9%</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>College of Health Sciences</td>
<td>87.5%</td>
<td>21</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>24</td>
</tr>
<tr>
<td>Information Technology College</td>
<td>79.3%</td>
<td>23</td>
<td>1</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>29</td>
</tr>
<tr>
<td>College of Law</td>
<td>93.3%</td>
<td>14</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>College of Arts</td>
<td>95.9%</td>
<td>47</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>49</td>
</tr>
<tr>
<td>College of Business</td>
<td>70.0%</td>
<td>7</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>College of Phys. Ed. &amp; Physiotherapy</td>
<td>83.3%</td>
<td>10</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>College of Applied Sciences</td>
<td>28.6%</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>73.6%</td>
<td>159</td>
<td>20</td>
<td>16</td>
<td>10</td>
<td>6</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>216</td>
</tr>
</tbody>
</table>

- Chi-square =128.056, df=72, sig. at p < 0.0001
- *Note: Number on top is count, Number on bottom is % within college
It was also found that h-index has a significantly positive correlation (0.479) with the number of articles being published by the faculty member. This result is expected since most published research do not count in their h-index because of the language in which their research is published (Arabic) or because the journals in which they get it published is not included in ISI records.

VIII. DISCUSSION AND IMPLICATIONS

The study revealed that 42.6% of researchers who have published at least one article are with zero h-index. Which means that their names are not included in the h-index. The majority of them are affiliated to humanities colleges (College of Law, College of Arts, College of Physical Education and Physiotherapy). These findings support other researchers who criticized h-index (Waltman, Costas, and van Eck 2012) as being of many limitations, and as being of limited in covering field’s journals comprehensively and objectively (Timothy, 2011). A large portions of fields, as West, Rich (2012) indicated, including education, the social sciences, the humanities, technological sciences, and law educational journals. Thus leaving many faculty members in many fields misrepresented and at a disadvantage. Consequently, the h-index seems to be a low valid approach to evaluating journal quality in the social work profession (Hodge, Lacasse, 2011a), and misleading (Abdel-Aty, 2011).

This study highlighted the issue regarding the language in which the article has been published is a strong limitation to comprehensibility of H-index and call for creating a suitable alternative to h-index for evaluation the quality of journals which publish research in languages other than English and the researchers whose articles are published in such journals.

IX. RECOMMENDATIONS

Based on the results of this study, we could draw the following recommendations:

1. Creating a new index to be used for Arab journals evaluation.
2. Introducing new index to classify the quality of Arab researcher’s outcome.
3. Starting new discussion with the international organization such as ISI and Scopus to agree on special criteria for including the Arab publications in their databases.

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REFERENCES

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