

***Investigating the Information Preferences of University Researchers in the Philippines: Sketching the Collection Profile of the Future***

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***Abstract***

This study found out that compared to its neighbouring Southeast Asian countries, Philippines ranked only 5<sup>th</sup> in university research outputs with Scopus presence. Scopus data from October 2013 to September 2014 revealed that Singapore, which topped the region in the number of accepted articles, was able to come up with 9,039 articles from its faculty researchers, compared to the Philippines, which was only able to come up with 396 articles from its own university researchers. This is despite the fact that research outputs from the Philippines came from over 36 academic institutions compared to Singapore's 16 universities/colleges. Being the primary sources of information that provide framework in every academician's research output, academic libraries in the country were threatened by the said data. With the main objective of helping university researchers increase their research outputs, this study evaluated the citations and referencing behaviour of university researchers in the Philippines by extracting data from Scopus and using citation analysis in analyzing extracted data. The results came up with a profile of an ideal library collection, wherein the characteristics include (1) further developed digital collection by means of increase in quantity; (2) Higher quality of serials by means of subscribing to journals with higher impact factor; and, (3) catering to articles that are products of collaborative researches. Furthermore, this study recommended for a tighter relationship of reciprocity with other academic libraries.

Keywords: *Collection Assessment, Citation Analysis, Research evaluation, SCOPUS, Collection profile*

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## **I. Introduction**

Research plays a vital role in every academic institution. According to Niemi and Nevgi (2014), through continuous conduct of research, teachers' analytical and critical thinking skills grow, enhancing their roles as knowledge creators. Moreover, Whelan and Markless (2012) believed that research outputs greatly contribute to the faculty's professional credibility and profile. Further, it improves teaching, which further gives positive reflection on universities.

The value of research in universities has long been acknowledged. But as competition among academic institutions grow stronger, and world economy is not getting better, research has become a vital thrust of every university. Through research activities, an institution can maintain its global visibility; it serves as catalyst in attracting more financial support from public and private entities; and it allows institution to contribute significant changes to the society.

In the Philippines, the Higher Education Act of 1994 mandated Commission on Higher Education (CHED) to perform different functions including formulation and development of plans, policies, priorities and programs on research (CHED, 2009). This mandate gave birth to National Higher Education Research Agenda (NHERA) 1, which was responsible for forming CHED Zonal Research Centers and NHERA 2, which had been pushing for the improvement of research capability of Higher Education Institutions (HEIs) and enhancement of research productivity, especially in faculty research outputs in every higher education discipline.

Entering the 5<sup>th</sup> year of NHERA 2, this study tested the effect of said project. Using SCOPUS, a premier indexing and abstracting database which included authoritative peer-reviewed articles, the following data were extracted: one-year research output data from Scopus from October 2013 to September 2014 revealed that Philippines was only able to come up with 396 articles submitted by 36 academic institutions, a poor performance compared to its contemporary Southeast Asian neighbor, Singapore, which was able to submit 9,039 articles from 16 academic institutions in the said country.

Academic libraries, which main objective is to support the academic/information needs of every member of an academic community, have to rise and help NHERA 2 in fulfilling its goal of increasing research productivity by initiating ways to match and anticipate the research needs of their users. Thus, this paper examined the information preferences and referencing behaviour of today's scholars, in order to (1) assess the current capability of the academic libraries in the country in supporting their needs, and (2) project the future needs of the university researchers for continuous provision of relevant information.

## **II. Methodology**

Capitalizing on the data that were available in SCOPUS from October 2013 to September 2014, research outputs of university researchers in the Philippines that

were cited at least once were extracted. This process narrowed down the research outputs from 396 to 112 articles, equivalent to 5,098 references and citations.

Citation analysis was used in assessing the citations and referencing behaviour of Philippine university researchers, who gave a clear picture of the information preferences of these set of scholars. All citations and references used in each submitted study were tabulated using Microsoft Excel, according to (a) author, (b) co-author/s, (c) title of work, (d) year of publication, and (e) title of publication where the work was published (source).

To further analyze data, said table was appended with columns that were supplied by this researcher. The supplied columns were: (f) format of the source, and (g) number of author. 2 columns were further appended for those sources whose format is journal. These columns were: (h) impact factor, and (i) availability in electronic database.

### **III. The Results**

#### *Profile of Citations and References*

It is very clear that Philippine university researchers' preferences in information formats have changed over the years. The theory on the diffusion of innovations (Rogers, 1971) made acceptance to this change an expected phenomenon as observed on the references and citations used by Philippine university researchers nowadays. More university researchers have now deviated from using typical printed books and journals in completing their researches. Information from analytical tools, archival materials, theses & dissertations, web documents, websites and even interviews became parts of every researcher's databank. Moreover, this group of researchers knew how to make use of electronic resources as they capitalize on its availability. Thus, a large number of citations and references used by university researchers were in electronic format.

Table 1 proves earlier claims, presenting dominance of e-journals in the references and citations used by faculty researchers, composing a little more than 75% of the whole information use. The use of websites and web documents/e-books are seen to be promising in this study, for both formats posted whole-number percentages compared to the rest of the formats used. The use of print books is still very much used, though.

Moreover, it is interesting to note that a significant number of references were erroneously cited (126 references), leading to an impression that there are university researchers that still need to be guided in citing references by means of information literacy sessions.

<b>Format</b>	<b>Volume</b>	<b>Percentage</b>
<b>e-Journal</b>	<b>3831</b>	<b>75.15</b>
<b>Print Monograph/book</b>	<b>623</b>	<b>12.23</b>
<b>Website</b>	<b>242</b>	<b>4.74</b>
<b>Web Document/ebook</b>	<b>178</b>	<b>3.49</b>
<b>Erroneous citation</b>	<b>126</b>	<b>2.48</b>
<b>Software</b>	<b>21</b>	<b>0.41</b>
<b>News Item</b>	<b>19</b>	<b>0.37</b>
<b>Analytical Tool</b>	<b>16</b>	<b>0.32</b>
<b>Thesis</b>	<b>14</b>	<b>0.28</b>
<b>Print journal</b>	<b>13</b>	<b>0.25</b>
<b>Archival Material</b>	<b>12</b>	<b>0.23</b>
<b>Interview</b>	<b>3</b>	<b>0.05</b>
<b>Total</b>	<b>5098</b>	<b>100</b>

Table 1: Profile of Formats of Cited References

### *Authorship Pattern*

Internationalization paves the way in doing collaborative researches among scholars. Thus, most researchers seek for information materials created by two or more authors. Some studies relate co-authorship to potential publication to hi-impact journals (Bales, et.al., 2014), which gives the perception that collaboration increases the authoritativeness of a research output (Gazni & Didegah, 2010). Because of this, more and more researchers are inclined to use information coming from literature produced by two or more authors.

The result of this study on authorship pattern is in consonance with the current trend. 900 citations, equivalent to only 17.65% of the 5098 references cited by university researchers were written by single author, and the remaining 4198 citations, equivalent to 82.35% of the total citations were written by two or more authors. Figure 1 presents the specific breakdown of the authorship pattern for Philippine university researchers, which proves that collaborative works are more patronized by Filipino researchers than those single-authored works.

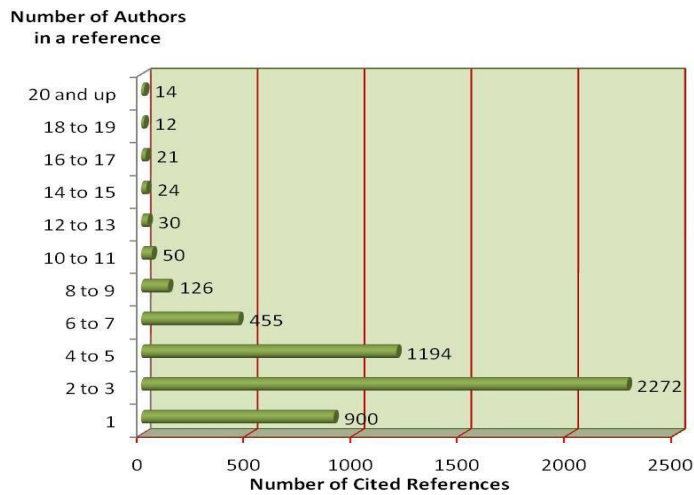


Fig.1 : University Researcher Authorship Pattern

### *Number of Citations per Source*

Articles and books that are cited by more researchers are understood to be more authoritative and responsive to the needs of the researchers (Grossman, et.al., 2005). Thus, the more citation an information product has, the potential that these materials will be cited again will be higher. Katsouyanni (2008) confirmed this claim, adding that products of collaborative works are most likely to be cited than those based on national authorship. Thus, it is the trend today, that university researchers would prefer articles written by two or more authors.

Philippine university researchers confirm these prior claims. This study counted the number of citations each cited reference have, and was able to come up with a result confirming the prior observation. Out of 5098 cited references, only 484 references, equivalent to 9.49% were cited only once or twice before the researchers in this study used them. 90.51% of the references were cited thrice or more, where the highest number of citations in one article went up to 36,066. Fig. 2 illustrates the ratio of citations of references cited in this study.

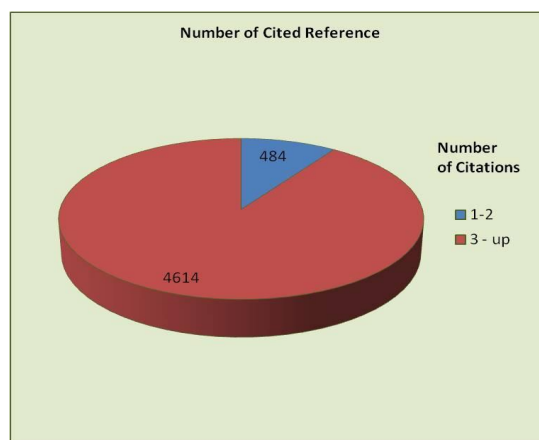


Fig. 2: Number of Citations per Cited Reference

### *The Age Pattern*

Knowing university researcher's preferred age of information is important in collection development activity in every academic library. While most University researchers would prefer current materials, there might be a significant number of this population who prefer to use materials that are published decades, or even a century-old.

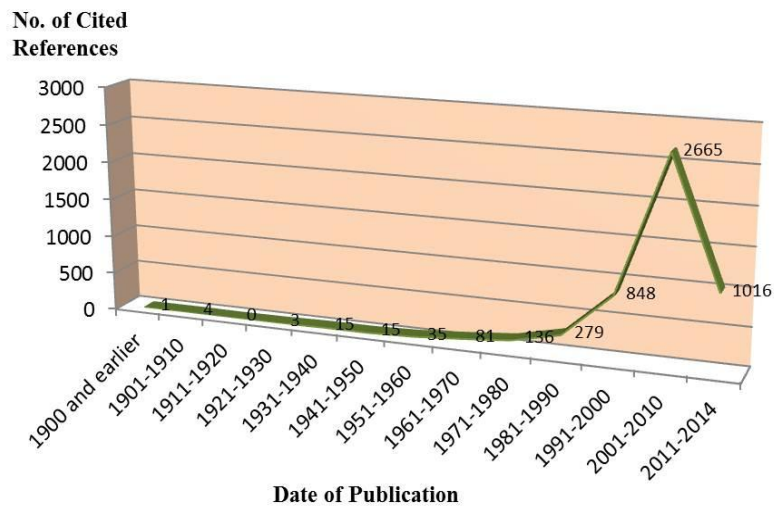


Fig. 3: Publication Dates of Cited References of Philippine University Researchers

In this study, 52.28% of the cited references by the Filipino university researchers were slightly current, or published between 2001-2010. 19.93% of cited resources were published within the last three years (very current). Moreover, although almost insignificant, it is important to emphasize that there were cited references that were published a century ago and even earlier. Further, this study found out that the average date of publication of all cited references was 2002, which brings the preferred age of information to 11 years old, which cannot be classified as current. These findings mean that most Filipino university researchers are not very concerned with the age of information in completing a research work. Figure 3 shows the referencing pattern of Philippine university researchers for age of information basing on the publication dates of cited references.

### *The Impact Factor*

Researchers agree that journal impact factor is one important consideration in looking for information that would help them in their researches (Didegah & Thelwall, 2013): the higher the impact factor of a journal, the higher the potential of its articles to be cited by other researchers. Impact factor provides more confidence to the researchers to use the articles as source of additional knowledge and basis of their own researches.

Philippine university researchers share the same views with all other active researchers around the globe. In this study, more than 93% of the total journal citations (3844) used by university researchers were sourced from journals with

impact factor. Only 6.77% of the journal citations did not have impact factor, where most of the journals that belong in this group were new titles, thus were not included in the assessment of impact factors by the concerned body.

Fig. 4 shows the breakdown of the impact factor (IF) of journal articles where cited articles were sourced by the researchers. Journals with 1.0-9.99 IF presented the highest percentage of sourced journals, posting 3022 titles, equivalent to 78.61% of the total journal citations. Said range was followed by the range below 1.0 but greater than zero IF, which posted 303 journal titles, equivalent to 7.88% of the total cited journals. It is also interesting to note that this group of researchers went out looking for really higher quality journals. Proof of this is the inclusion of journals with IF that goes from 10.0 up to more than 40.0, which composed 6.72% of the cited journal references is high as 40.0 and up.

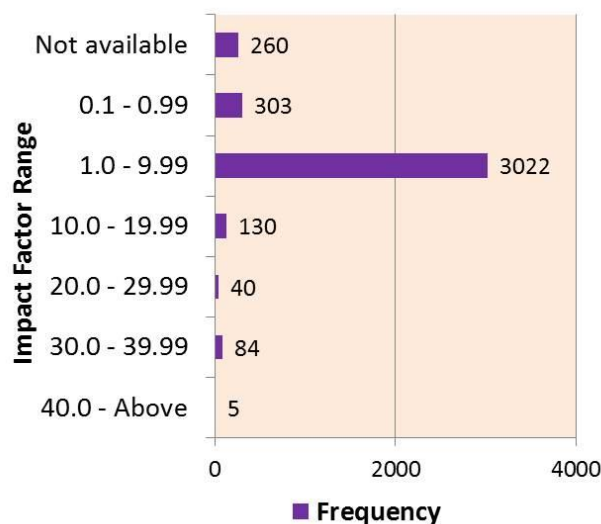


Fig. 3 Quality of Preferred Journal (Impact Factor)

### *The Information Providers*

Still focusing on citations from electronic journal references, which comprises 75.15% of the total citations, this study further investigated on the journal preferences of university researchers based on information providers.

As expected, because of its marketing capabilities, information provided by commercial publishers/vendors posted the highest frequency of references cited by Filipino researchers. 73.38% of all cited e-journal references were subscribed from the different commercial publishers/vendors. Information published by professional organizations came in 2<sup>nd</sup>, posting 22.58% of the total cited e-journal references. The fact that most researchers prefer publishing in peer-reviewed journals with high reputation, where articles are most likely to be cited (Canadian Science Publishing, 2014), this study foresees that most researchers will prefer information coming from professional organizations, to set their goal of pushing in the same type of journals in the future.

Moreover, only 3.6% of the cited e-journal references were sources by Filipino researchers from Open Access sources. This figure implies possible disinterest of Filipino researchers to open access information. Figure 4 presents this study's result on Filipino scholars' preferences for information providers.

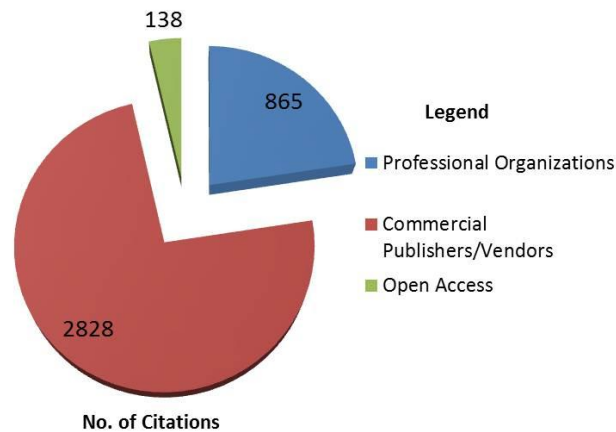


Fig.4: Preferences for Information Provider of Philippine University Researchers

#### *Availability in Philippine Libraries*

One of the main objectives of this study is to determine the availability of the cited references in different Philippine libraries to know the capability of these libraries in meeting its faculty researchers' research needs. This study checked the online public access catalogues and web pages of the libraries of the four top universities in the Philippines according to QS University Rankings 2014, namely: (1) University of the Philippines; (2) Ateneo De Manila University; (3) University of Santo Tomas; and, (4) De La Salle University (QS, 2014) to answer this particular objective.

This study revealed that the selected Philippine libraries posted 78.48% straight average of availability of cited resources, while weighted percentage of availability was only 76.95%. Only 79.46% of the total cited e-journal references are available in the said libraries, and the lowest percentage of availability in Philippine libraries was seen in cited theses. Figure 5 shows the condition of availability of the different information materials cited by Filipino researchers.



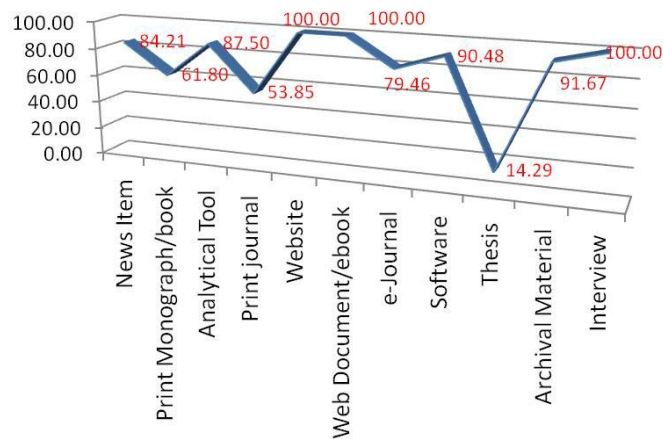


Fig.5: Availability of Preferred Information of Philippine University Researchers

Furthermore, 67.17% of cited e-journals that were provided by professional organizations are not available in Philippine libraries. 93.66% of cited references provided by commercial publishers/vendors are available in the featured libraries, and understandably, open access-sourced journals are all available. Figure 6 presents the availability picture of cited electronic journals based on information providers.

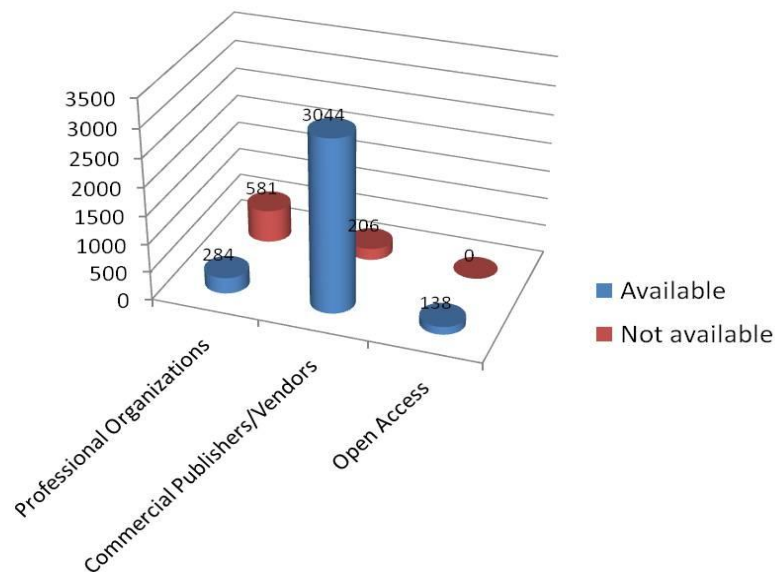


Fig. 6: Availability Status in Selected Philippine Libraries of Cited E-journals

Further investigation shows that 91.90% of the 3830 e-journal references are available in Philippine academic libraries. ScienceDirect posted the highest number of citations used by university researchers. The most number of citations from electronic databases that are not available in Philippine academic libraries are from Springer. Figure 7 displays the availability performance of commercial databases cited by Philippine university researchers.

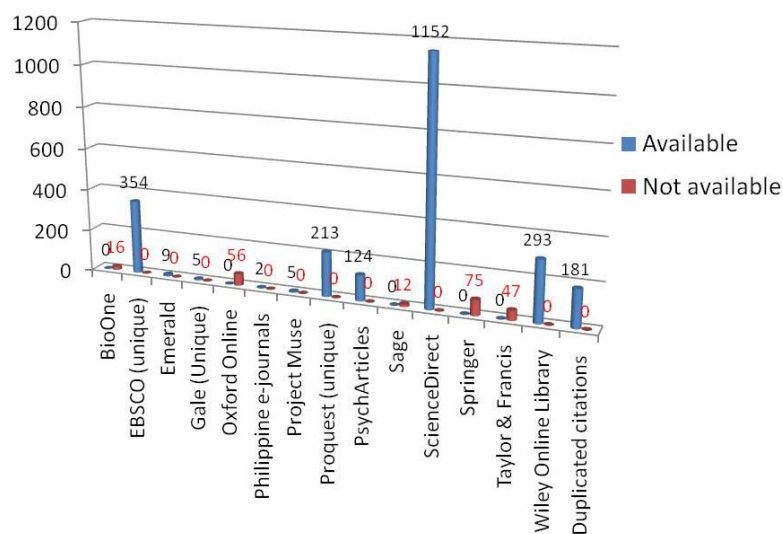


Fig. 7: Availability of Preferred Electronic Databases of Philippine University Researchers

#### IV. Summary, Conclusion and Recommendation

##### Summary

This study proved that Philippine university researchers have indeed adapted to the new way of doing research. They are now exhausting all possible sources of information in types of formats. Although the use of print books is still significantly evident, university researchers in the Philippines of today generally prefer information from electronic journals that are accessible via subscription or document delivery.

Moreover, this group of researchers are more inclined to use information from articles (1) cited by more researchers; (2) products of collaborative works; and, (3) published in high-impact journal publications. The use of old information is still not discounted by these scholars. The average publication year of all cited references was year 2002, making the average age of preferred information 11 years old. This led to the belief that these scholars value the information more than its age.

Lastly, the Philippine academic library collections are slightly adequate in providing for the information needs of university researchers in completing research outputs. Although they can adequately provide information from e-journals offered by commercial publishers and vendors, they fall short in providing for the needs of these scholars for information coming from e-journals published by professional organizations. Thus, there is a great possibility that these researchers are able to source references either by libraries' document delivery service, or through partnership with scholars from other countries.

## **Conclusions**

Information technology produced great impacts on the creation of new knowledge for Philippine university researchers. Their information preferences have evolved from using books and periodicals in print format, to include other formats, such as electronic and multimedia. The use of tools such as analytical tools, computer programs, and their inclination to use electronic resources, particularly e-journals, further proved that these researchers are now ICT-literate.

It is understandable that this group of scholars would prefer authoritative information which are products of collaborative works or are published in journals with high impact factor, but content is still their primary reason for citing references, with little considerations for age of information and type of resources.

On the other hand, it is a common knowledge that “there is no complete library.” However, libraries can work for acquiring resources that directly answer the information needs of their users in order to create a perception that they are complete. In the Philippines, academic libraries cannot adequately support for the information needs of its university researchers, but a lot of possibilities are available for these libraries. The results of this study introduce the current information needs of these scholars, and help predict their future needs. It is thus up to the academic libraries to strategize on how they can fully provide for these scholars’ information needs.

## **Recommendations**

This study recommends for the following activities for academic libraries in the Philippines to address concerns raised in the results and conclusions:

1. Acquire more e-resources, particularly (1) e-journals published by professional organizations; (2) publications with high impact factor; and, (3) with articles that are products of collaboration;
2. Introduce and market e-books to university researchers;
3. As there is still a significant number of print usage, continue to acquire information in print format to complement with electronic resources;
4. Consider building more consortia and partnerships to further strengthen collections;
5. Academic librarians must strengthen services such information literacy, to further educate university researchers in looking for information fitted to their research needs, and to teach them the proper way of citing references; and,
6. Using results of this study, formulate a standard collection development program for Philippine academic libraries

Moreover, this study recommends conducting of related researches that will further help in drawing up a collection fitted to university researchers in the Philippines. These studies include:

1. By-subject are investigation of information preferences; and,

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2. Comparative evaluation of information preferences between the Philippine university researchers and a relatively more advanced country as far as research output is concerned.

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