

Depiction of Connection between Library and Information Science in Articles Published by Universitas Airlangga's Academics

Prasetyo Adi Nugroho^a, I Made Narsa^b, ^aLibrarian of Universitas Airlangga (60286), Indonesia, ^bDepartment of accounting, Head of Library of Universitas Airlangga (60286), Indonesia, Email: [a](mailto:prasetyo.adi@staf.unair.ac.id)prasetyo.adi@staf.unair.ac.id, [b](mailto:i-made-n@feb.unair.ac.id)i-made-n@feb.unair.ac.id

Background: Public university libraries are funded by the government. Those libraries are demanded to adjust with the digital era. Information science has to be implemented for the library to adjust to the development. **Objective:** To observe whether articles, indexed by Scopus which are published by academics in Universitas Airlangga, always correlate between library and information science or not. **Method:** This study uses qualitative method using descriptive analysis to approach the issue inside the research results. The data is collected based on three criteria: citations, keywords, targeted journal, and topic that are used in the articles published by this university's academics. The data is extracted from Scopus by extracting the information in CSV file format. The data analysis is conducted using Vosviewer software. **Result:** Based on the criteria of citation, articles written by Universitas Airlangga's academics are dominated with information science used in the library. Only few articles are on pure library subjects. Based on the criteria of keywords used, information science is not really related with library. Based on the targeted journal criteria, general library topic is the most favoured journal topic by academics of this university. Based on the topic criteria, both library and information science are also related to each other. **Conclusion:** It can be concluded that information science is closely related with library, although those two have major differences.

Key words: *Library, information science, Scopus, string.*

Introduction

Public universities in Indonesia are governed to increase their quality of education through research. By doing research, the university will gain more insight and innovation that can solve problems in society. Public universities are targeted by the government to publish more research each year (Srirahayu, 2018). It is because public universities are fully sponsored by the government, including payment of lecturers, professors, and employees. Different from private universities that have none or little sponsorship from the government, public universities must take responsibility for how people's tax money is used (Maesaroh and Genoni, 2013).

The government through the Indonesia Ministry of Research and Technology is strongly encouraging the improvement of research and publications, through various policies and regulations. Promising policies can create open spaces for the development of scientific research and publications (Rahimah and Satrya, 2019). Besides, various laws and regulations are considered to be sufficient, both for the improvement of research and publication, as well as for the realisation of a scientific climate conducive to sustain the development of research and publications. The Government of the Republic of Indonesia strongly emphasises the strengthening of resources that have the readiness to accept changes in the context of global competition. This mandate was revealed in 2015 to 2019 in the ministry of higher education and research strategic plan, namely the quality, relevance and competitiveness of Higher Education (Ahmar et al., 2018).

The publication itself is an absolute prerequisite for academicians. Legislation has confirmed that lecturers must conduct research and must be published in reputable national and international journals. It is recognised that scientific publications are a symbol of the higher education of the civilisation of a nation. A country that is considered developed is characterised by the productivity of scientific publications. It cannot be denied that Indonesian publications are still lagging behind Singapore and Malaysia. Therefore, the Government of the Republic of Indonesia through the Ministry of Research, Technology and Higher Education is very active in encouraging the creation of a scientific climate that is conducive to the productivity of research and scientific publications in international journals (Rahimah and Satrya, 2019).

Department or other similar institutions have a collection of supporting resources, which organise and manage academic, vocational, or professional education in one or several branches of science and technology. The name of the department shows what branch of science that is focused on inside the faculty, either be learned, taught, or researched for society's benefit. In Indonesia, it is often be found that a department has two fields depicted on the name (Sofyawati, 2020). For example, the department of library and information

science in Universitas Airlangga, Indonesia, is assumed as two major education streams combined in one department. Pannen et.al., state on their research that even when multiple majors exist in the same department, students are not required to learn all of the lessons taught by certain experts. Students are free to choose the branch of science offered by the department that can nurture them based on their interests. Students can choose whether they want to focus more on library management or on information science. Although those two major subjects seem distinct enough, the curriculum can correlate between basic subjects related to library subjects (Pannen et al., 2019).

Universitas Airlangga, as one of the public universities in Indonesia, has obligation to increase its publication numbers, especially in international reputable journals. The ministry of higher education, research, and technology commanded public universities to publish their scientific articles into reputable journals indexed by Scopus. By doing so, the ranking of the public universities will be boosted enough in international level (ARTHA, 2017). Based on the background above, this study has a purpose to analyse if articles related to library and information science are connected to each other or stand by themselves.. The theoretical implication of this study is hoped to be an insight on what issue should be focused more on by the department to continue the trends of the research environment.

Literature Review

Library and Information Science

The study of the library in the past only consist of resources management and bibliography to record the collection. Students of library majors tend to learn more about the code that distinguishes each category of collection. Because librarians secluded only in book collection, recording, and treatment, the students of a library major also focused on that aspect. The students also focus on how to treat the visitors that want to borrow and return the books, as well as on explaining the information about a certain book (Abeyrathne and Ekanayake, 2019).

In the digital era, the role of the librarian is expanded greatly because libraries do not only serve the customer nowadays, but also participate in maintaining the literacy level of the society. For the public university library, the target is academics, and especially students. The presence of the internet has raised very high expectations about ease and speed of access to information. On the other hand, euphoria against the power of the internet gave rise to pessimism which was also high regarding the continuing existence of the library (Halim et al., 2018). Thus, with raising doubts from society, do we still need a library if can we get all the information through the internet without going to the library? This is a challenge for

librarians, because the digital age requires special qualifications from librarians in order to adapt with the era and digital generation (Hargittai, 2010).

This question raises the issue of how important information literacy as one of the qualifications of librarians in the digital age is as part of the personal abilities. Professional abilities of librarians are related with the job responsibilities set by the institution and how the librarians can do the job well. The personal capabilities of librarian includes digital literacy, knowledge in processing data from social media into useful information that can enhance a library's service, never ending learning, as well as open mindedness to many new things (Drummond, 2016). Sadly, most of the librarians in public universities have low digital literacy and incompetence in processing data into useful information, known as data science (Faltings and Radanovic, 2017).

In this new era where Big Data plays important role in society's life, the librarians of public universities play an important role as provider of information for the academics. To increase their digital literacy, librarians should have skill related to data science. Data science is a new applied science whose development is demanded by a significant increase in the use of technology (Flyverbom et al., 2019). Kross et al. in their research states that data science is used by certain companies or institutions to analyse data that cannot be done by using simple methods. For example, librarians can analyse the best interest of visitors through the platform of social media. Through data science, librarians can synchronise with what students really need, so that the library authorities can arrange the best policy for students requirements (Kross et al., 2020).

Scopus as the Benchmark for a Publication

The universities in Indonesia have responsibility in pursuing the achievement to become one of the top ranking universities in the world. One of the ways to realise such an achievement is through increasing the number of high quality publications in scientific journals. Indonesia has various levels of publications based on the level of difficulties and quality, and local and international level. Indonesia established its own local level known as Science and technology Index/ SINTA. The local level starts from lowest Sinta 6 to highest Sinta 1 (Ahmar et al., 2018). Each local journal in a university rated by the ministry of research is based on the quality of articles, affiliation of editors, regular publishing, and numbers of cited articles. If a journal infringes one of those standardisation policies, the ministry of research will give a bad impression and mark to that journal. The chief editors have to maintain the journals to follow the standard rules set by the ministry (Nasution et al., 2018).

For the international level, Indonesian Ministry of Research distinguishes between direct open access journal/DOAJ and Scopus. Journals that are included in DOAJ database classified as plain international level, while Scopus level is the next indexing level after



getting categorised into DOAJ. Scopus is the journal indexing website owned by the Elsevier company. All of the Scopus indexed journals maintain a high level of quality and regular period of publications. Scopus itself also classifies journals based on their quality, starting from quartile 4 up to 1, with each of the levels also having huge differences in the difficulty of getting accepted by the journals. Government supports the publication program through Act Number 12 of 2012 that regulates allocation of additional funds, approximately 30% of Operational Assistance funds in higher education (Ahmar et al., 2018).

Scopus is one of the largest journals in the world that is widely used as a reference in creating a study. To publish research results in journals indexed by Scopus is not an easy task. It needs to go through several stages of review by experts. If successfully passed the review stage, the authors are asked to revise their paper based on the reviewer's guidance. This was done so that the quality of the research produced has high quality, such as the originality of the idea, the complexity of the content, high level of English grammar, novelty of research, and implication of the research to the society (Gaitán-Angulo et al., 2018).

Method

This study is a qualitative one, using descriptive analysis for approaching the issue. The samples of this study are articles of Universitas Airlangga that are included in Scopus database. The number of population of this study is 4486 articles of Universitas Airlangga listed on Scopus website. The sample that was taken had approximately 338 articles, sorted by major category in the database (Thaliba et al., n.d.).

The inclusion criteria of this study are; the article is written by lecturers or students of library and information science, the article is affiliated with Universitas Airlangga, the article is research paper, the article contains the keyword "library" and the article is categorised as social science major. The reason why articles are only selected from social science is because library and information science is categorised as social science major as a part of the faculty of social and political science in Universitas Airlangga, Indonesia (Saifudin and Fatmawati, n.d.).

The data are collected based on three criteria: citations, keywords, targeted journal, and topic that are used on the articles published by this university's academics. The data is extracted from Scopus by extracting the information in csv file format (Tsai et al., 2019). The information criteria that are exported are author, document title, affiliation, publisher, correspondence address, and abstract. The data is then analysed using the software Vosviewer that is commonly used for data mining procedures (Gaitán-Angulo et al., 2018).

Result and Discussion

Majority of Subject Based on Citations

Figure 1. Network visualisation of library studies based on linkage of citation

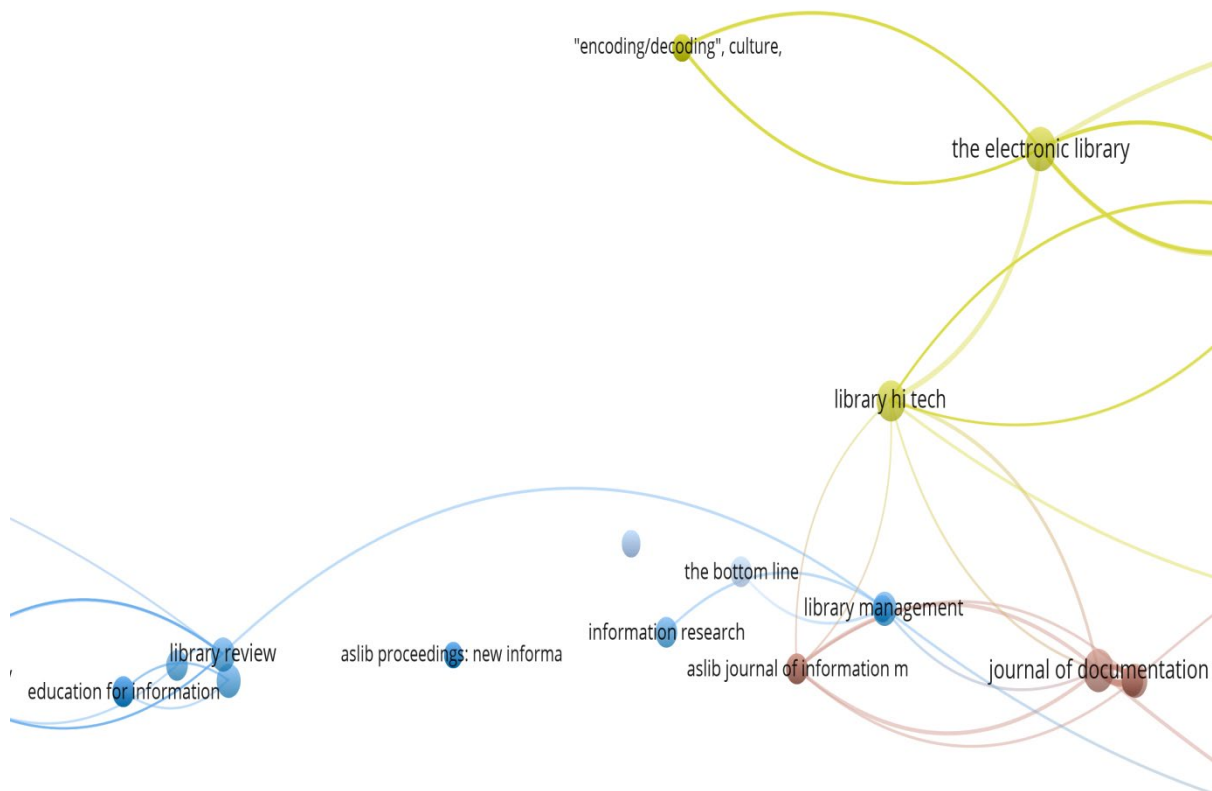


Figure above shows the network visualization of the studies related with library. It shows that the majority of studies is related to digital and information science topics, rather than facility/service management. Content related to “the electronic library” has strong strings connected to “encoding/decoding culture” and “library hi-tech”. The electronic library is always related to hi-tech technology, because electronic facilities and devices in the library are now always equipped with advanced digital technology. Moreover, library devices are also connected to digital network to keep up with what the academics need. Academics are not only using the library as a repository of books and articles, but also as a place to conduct research that needs advanced technology to support the process.

The figure above also shows faint string connection between library hi-tech as a major topic, with sub topics such as journal documentation, library management, information research, and aslib journal of information. Library management is the only one topic that related with management of facility and system of library, while the rest are related with information technology. The reason is documentation of journals in the library needs a hi-tech facility

along with management of library, because libraries now have to be adapted to the digital era. Hi-tech facilities also help academics to do information research.

Unexpectedly, the library management as sub topic also has faint string related to library review and education for information. It is because to manage the library, authorities have to conduct weekly review about the daily performance of librarians, problems that are encountered during service time, as well as perception of visitors about library facilities and service. By doing so, libraries will strive for perfection and create better quality of service for visitors. The management of libraries is also related with education for information, because the purpose of a public university library is to give information that visitors need, especially since it's related to higher education's knowledge.

Figure 2. Strings of connection between journals based on linkage of citation

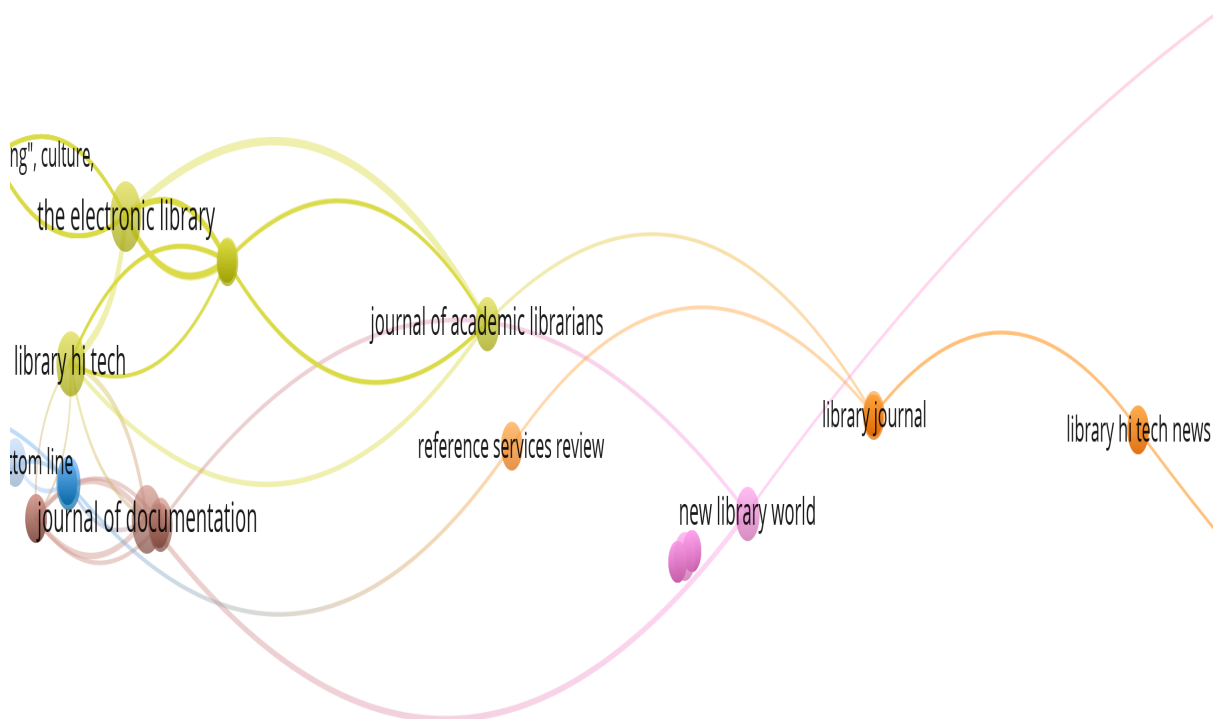


Figure above shows on how studies conducted by Airlangga academicians of library and information science majors are related to topics related to journals and publications. But such topics are not always connected to the library service, except for electronic libraries to the journal of academic librarians. Study about reference, library method, or documentation of library collection are not always related to management of the facility itself. Rather, they emphasise more on the study of collection and repository of articles inside library.

Some of the sub topics have strings connected to each other, but they are faint. For example, library journal has a string connected to library hi tech news and reference service review, since three of them are the products of writing. Journal of documentation has some strings connected to some topics, such as library hi tech, journal of academic librarians, reference service review, and new library world. It means that some articles in the journal of documentation use citation from articles of those journals that are connected by strings.

It can be concluded that articles published in the journal of documentation focus more on repository and library management, rather than hi-tech things like information science. but the number of articles published by the journal of documentation are fewer than in electronic library or the hi tech library. It can be seen by the shape of the circle of journal of documentation which is smaller than the circle shapes of those two other journals. Abeyrathne and Ekanayake in their study state that the emergence of industrial revolution 4 also affects on how librarians should adapt their insight to meet the expectation of what society needs. So, librarians need to do more research to create more innovation about library service and technology (Abeyrathne and Ekanayake, 2019).

Majority of Favoured Journals by Library and Information Science Academics

Figure 4. Density visualisation of intended journal for library studies

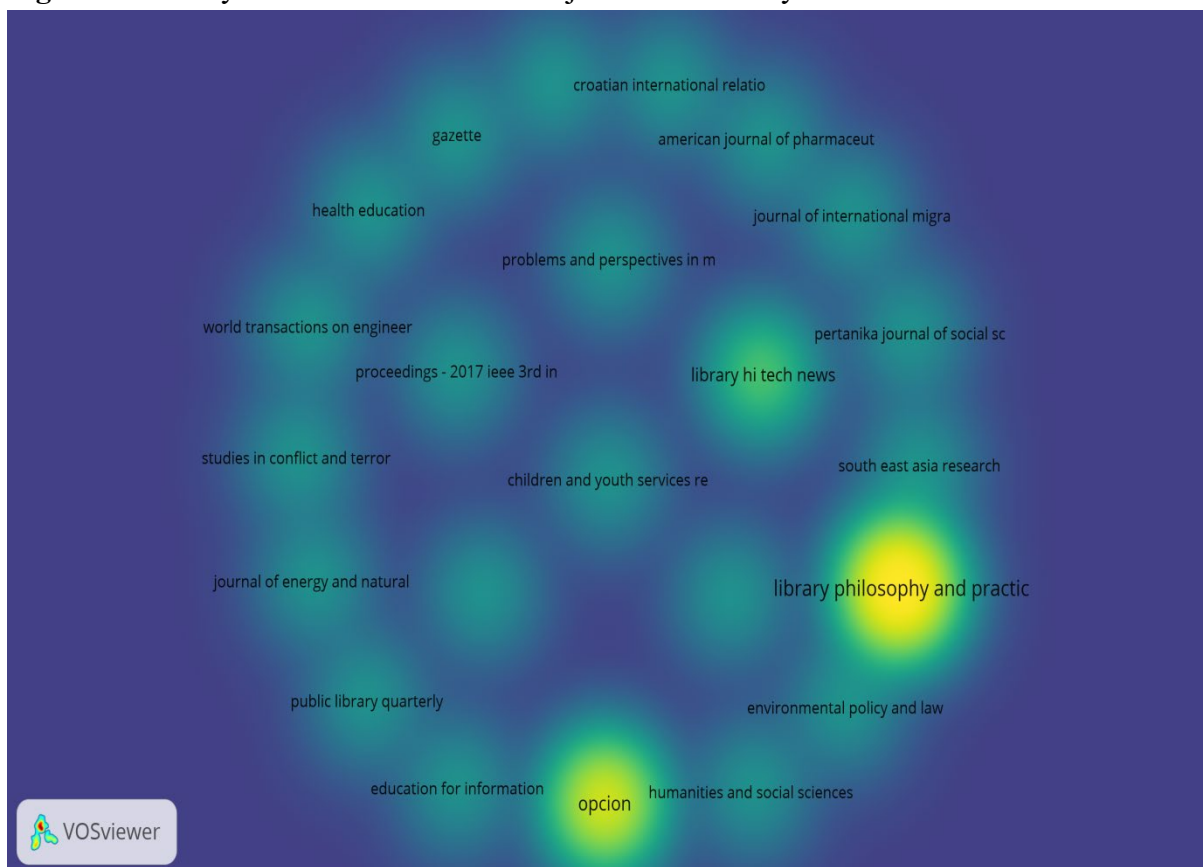


Figure above shows library philosophy and practice is the most favoured journal by academics of library and information science majors. This journal is indexed by Scopus and suited with all topic related to library. One of the reason why most of the academics in Universitas Airlangga are interested in this journal is because of the good reputation, depicted on Scimago website as a Quartile 2 journal. Another journal that becomes the destination of publishing article is Opcion, but not as highly interested in as the previous one. It's indicated with the dimmer colour of the circle. Opcion has no focus of a major study, instead, this journal covers almost all of research in social science. Another alternative journal is library hi tech news, but it is not so popular because the topics is missing library management and service.

Barus and Mungkasi state in their research that academics tend to have faith in journals that have the name that closely resembles their field of expertise. They believe that selecting a journal name that is associated with their major will shorten the reviewing time needed for an article to be accepted (Barus and Mungkasi, 2019). The name of journal also affect the speeding time of review, but the quality of study as well as how many issues a journal publishes every year, are the common cause of the waiting time for a paper to be completely reviewed by editor (Ahmar et al., 2018).

Number of Studies between Library and Information Science Based on Topic

Figure 5 String comparison between library service and information literacy based on topic

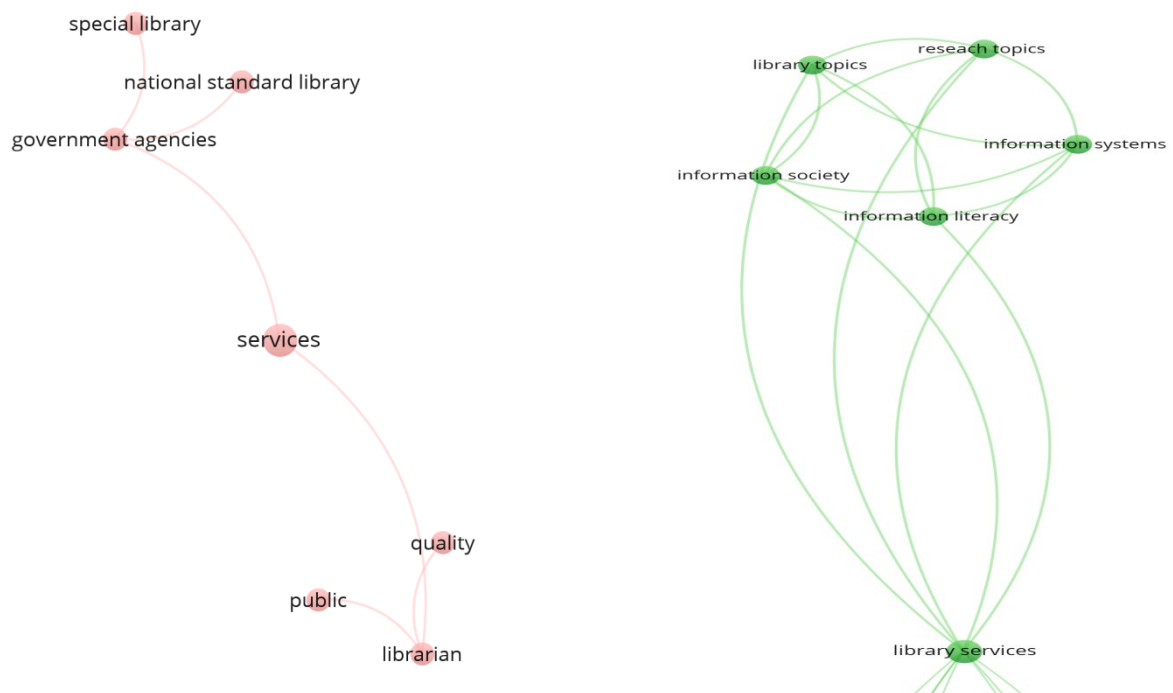
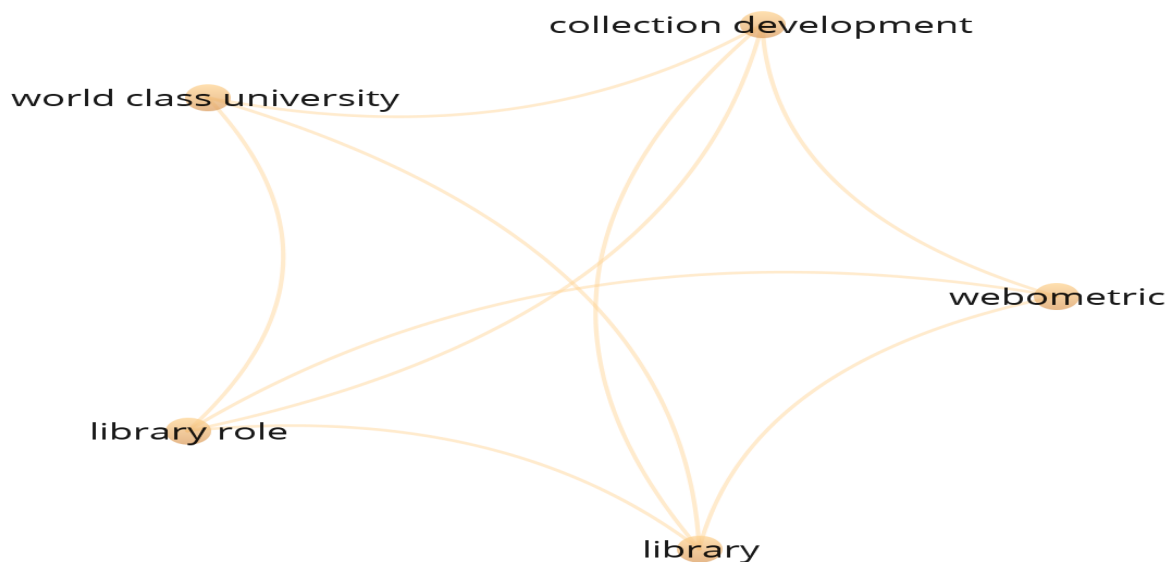


Figure above shows that both information literacy and library topics also have their own various sub topics. The interesting part is, topic of library service has some strings connected to topic about information science such as information literacy, society, system, and research topics. Kruger in his research states that service of library in industrial revolution 4 will be much different from past era because clients of library are not only the one that visit the place, but also society that accesses library content through the online window and authorities who ask for certain data (Kruger, 2018). The access of library have to be expanded into digital content as well as act as a data provider of certain subjects that can be useful for authorities and academics. Librarians must have information science skills to remodel the conventional library into a hi-tech library with mobile service (Asari et al., 2019). The topic of “service” is in general also connected library, even “service” in general has broader meaning than “library service”. It can be seen that topic service has a string connected to quality which is also related in real life, because service always measured by its own quality. Service also related with government agencies that regulate the national standard library and special library, shown by strings connected to them. Service of public library also depends on the policy assigned by authorities, and includes type of library collection, library agenda, and management system (Black and Muddiman, 2017).

Figure 6. String related to library and its role based on topic



Another figure above shows other topics that become trends in articles published by Universitas Airlangga academics. It shows that library topic is connected to World Class University and Webometric. Library in digital era is the pillar of the university to increase its ranking in international level based on webometric website. Universitas Airlangga focuses on achieving ranking of 500 world ranking university, also emphasize library and information



science major to increase the number of its publication. The study of webometric and world class university ranking are closely related with information science, since both of them are required in collecting data through various websites (Aguillo, 2018). Library topic in the figure above also shows related to collection development and library role. Both of those two topic also related to library management, since collection development needs good management to allocate funds, as well as library role to determine how to manage the library (Farida et al., 2015). It can be concluded that studies based on topic involves both library and information science exist in a balanced number.

Conclusion

Based on the result above, it can be concluded that information science is closely related with library, although those two major subjects are different. Based on the criteria of citation, articles written by this university are dominated with information science used in libraries. Only a few articles are pure library subject. Based on the criteria of keywords used, information science is not really related with library. Based on the targeted journal criteria, general library topic is the most favoured journal by academicians of this university. Based on the topic criteria, both library and information science are also related to each other. It can be said that information science and library are always related in the articles written by academic of Universitas Airlangga recorded by Scopus.

Ethical Clearance

This study does not involve any participants in the survey, instead it is literary analysis study with theoretical point of view. The present study was carried out in accordance with the research principles. This study implemented the basic principle ethics of respect, beneficence, nonmaleficence, and justice.

Conflict of Interest

The authors swear that there will be no conflict of interest in the future

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