Twitter as Public Sphere to Connect between Librarians and Library Users: A Bibliometric Analysis of Research Topics Trend Related to Twitter Usage and Library Service

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Abstract
Academic libraries must adapt to the development of the era. Twitter as social media can become a new form of the public sphere. The public sphere is the place where people can go for discussion without feeling restricted by the status or regulation of authorities This study aims to investigating the topics that had becoame research trends of publications related to the usage of Twitter and library service in University. This study uses a bibliometric analysis to process the secondary data. The secondary data are from Scopus website with the samples from three global university libraries, namely Harvard, Cambridge, and Airlangga University. The duration of the samples were 2016–2021 and the data were gathered using keyword search in Scopus. Those keywords were *library* and *Twitter*.

There were 66 samples from Harvard University, 97 samples from Cambridge University, and 7 samples from Airlangga University. The result showed that Harvard University focused more on IOT, especially on macine learning to enhance the Twitter usage for library service. meanwhile, Cambridge university balanced between the usage of Twitter and library as their research topics. Airlangga University had few topics related to those two.

Keywords: IOT, academic library, Twitter, education, media literacy, developing countries.

1. Introduction

The emergence of "industrial revolution 4 (Cowan, 2018) affects the whole system of global library standards based on IFLA standard, to compete with the never-ending growth of society's interest (Te Boekhorst, 1995). In this era, society cannot live without interacting with digital technology (Pratama et al., 2020). As such, libraries, including those of universities, as institutions that offer information and insight to society should adopt digital technology into their system (Seeman, 2018). One of the adjustments toward the digital era is the creation of an e-library to access books and articles collection using the library website (Kruger, 2018)

Application and library websites can offer online transactions, such as ordering books for loan, repository detection of which book or article is a late returned item, and which books and articles are available. Moreover, by using digital repository, librarians can add more collections without worrying about space for books or maintenance for books or articles to prevent deteriorating collection because of mould or climate (Alvermann, Sanders, 2019),

To update information on the latest library collection, library opening hours, as well as provided library facilities, librarians should keep in touch with the society through social media. Librarians are also able to update details of events held in the library to meet public expectations.

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The fourth industrial revolution has led to the penetration of social media into all people without border (Han, et.al., 2018). Social media also enables librarians to build their forum of discussion for certain academic majors. Moreover, it also makes it possible for librarians to keep in touch with users and visitors (Maceli, 2018), and also to update them with the latest trends and information needed. In the case of university libraries, this is especially true in relation to academics (Lacey, Lomness, 2020).

Abeyrathne and Ekanayake in their study state that academic libraries have responsibilities to meet the required information related to research (Windsor, 2019), since they focus on the insight of higher education (Yudkevich, 2019). These libraries are supported by the government to meet academics' demand for the growing popularity of specific majors. Libraries of higher education should maintain all of the collection and events adapted to the life of research since the goal of higher education is on research (Cervone, Brown, 2019).

The use of social media has become indispensable because librarians have to keep in touch with academics and academic communities, especially students who need materials for their assignments or research projects (Juliansyah et al., 2021). One of the most commonly used social media by librarians in universities is Twitter (Himelbolm et al., 2017). Twitter is easy to use and does not need a long loading time like Facebook, because there is hardly any advertisement on the platform. Moreover, Twitter does not limit its users in downloading resources uploaded by other users, as all of these features are free to use (Brems et al., 2017).

By using social media, the library reputation is also increased because academics feel that librarians pay attention to their demands. Twitter also offers unlimited storage for users to upload contents that are related to higher education learning process (Smith et al., 2015). Based on the background above, this study aims to observe the research trend of topics related to the usage of Twitter and library service published by universities libraries from three countries. The theoretical implication of this study is expected to provide insights and advice for librarians in universities.

2. Materials and methods

The public sphere is the place where people can go for discussion without feeling restricted by the status or regulation of authorities. Habermas is a sociologist and philosopher who is often associated with the concept of the Public Sphere. According to Habermas, Public Sphere is depicted as a reality of social life in which there is a process of exchanging information on various views, regarding the subject matter (Sharman et al., 2018). The existence of the Public Sphere shows the activeness of the community by utilising their rights to participate in thinking and being involved in a hot discourse, especially related to political issues (Audunson et al., 2019).

The concept of Public Sphere emerged as a new era by the demolition of bourgeois group in global, and the rise of middle and lower class into high class as a result of globalization and democracy. With the existence of mass democracy, the public which was originally represented by a limited educated elite began to be joined by the majority of people who were not well educated (Wardhana, 2021a). The birth of social media that creates limitless room for discussion for many people regardless of the status and power is the new era for the public sphere (Rodriguez, 2020).

The birth of a social networking site, which is a web-based service, allows users to create profiles, view a list of available users, and invite or accept friends to join the site. The relationship between mobile devices and internet web pages through "social networks" has become a standard in digital communication. Social media does not only become discussion space (Kursuncu et al., 2019) to replace meeting places of workers, rather it is also a space to gain authority against certain power (Stolze, 2019). Habermas states that the concept of 'public space' is an independent and separate space from the state and market (Audunson et al., 2019). The public sphere ensures that every citizen has access to be a leading figure of public opinion. This public opinion has a role to influence, formally or informally, the perspective of society and marketplace that is related to the economy (Stolze, 2019).

This study uses a bibliometric analysis to process the secondary data. The data gathered from Scopus website with subscription service, so that it could generate more meta-data from many papers (Wardhana, 2020). This study used purposive sampling technique in gathering samples. The samples were publications from three universities of different countries, namely Harvard University – the USA, Cambridge University – the UK, and Airlangga University – Indonesia. The three universities were selected because Harvardis the first rank university in the world, Cambridge

University is famous for its curriculum of education that is used globally and Airlangga University was chosen because one of the largest university in Indonesia (Mafruchati, Makuwira, 2021).

The duration of the samples were 2016-2021 and the data were gathered using keyword search in Scopus. Those keywords were *library* and *Twitter*. There were 66 samples from Harvard University, 97 samples from Cambridge University, and 7 samples from Airlangga University.

The data then exported in CSV format file and analyzed using Vosviewer sftware version 1.1.16. Vosviewer could visualize the trending topics inside the samples along with the connection of each topics. Moreover, Vosviewer also could distinguish topics between each year in colored dots, so that the samples could be identified when it appeared (Mubarrok, 2020).

3. Discussion

Twitter has become a fast and interactive media to distribute information as well as effective correction medium for many news media (Melissa et al., 2020; Vraga et al., 2022), therefore university also intensively uses twitter to spread their university news to the public.

Interestingly, there was a topic *machine learning* and *spatial analysis* as research topics which were became trend in 2020. It could be said that librarians in Harvard University take a measure seriously to the machine learning as a part of their research to improve the quality of library's service. Machine learning gather the data from social media and study them to know the current trend of library users' intention in visiting library.

The use of social media is inevitable including the university libraries, the media literacy competence also become important skills that information providers should have. Media literacy education is introduced in college level (Ashley, 2015; Chanda, 2017). It is a good movement if library invest on their human resource to study media literacy either through degree or short courses to equip their staff with those competencies.

Study by (Torabian, 2019) stated that the top university in the world, especially ranked top ten by Webometric and QS World Ranking University emphasize their library service not only in the human resouces, but also in the sophistication of technology to boost the research life of academicians.

A first rank university must have a great library to support the needs of academicians of finding a good information that could help to fill their research gap in making a paper or conducting laboratory project. This is not necessarily true in the case of other universities with a mediocre global ranking. Top ranking university does not only have to maintain the good quality of its library service, but also have a great number of potential research results as their achievement (Anna et al., 2019).

Social media as part of human and organization life has become a bridge by those university to spread the university value and goodwill. This is a changing since university differ to news agency that has human resources that support the broadcasting activity. News agency are used to send message to various type of public effectively (Tully et al., 2020). While in library this job usually done by librarian that do not have advance competency like a journalist on the news media.

Open access and digitization also become trending hashtags (Hargittai, 2010). This is not surprising, since first-rank universities, such as Harvard University, have to adapt to the development of the era, especially with the emergence of the fourth industrial revolution (Yudkevich, 2019).

Rachman in his study states that the electability of university depends on the quality and quantity of its research that is supported by its library as an information provider (Rachman, Putri, 2018). Moreover, the digital native behaviour in the learning process is completely different from previous generations which were considered digital migrants (Bahr, 2019).

It is no surprise that the digital native generation or generaton which is born as milleneal and generation Z which are born around 2000 until now is much more intelligent than the librarians themselves (Halim et al., 2018). If a university does not pay attention to the development of its library system and its librarians' competence, the quality of its library will soon deteriorate and this will affect the global reputation of that university (Wardhana, Ratnasari, 2022).

Eynon and Goniets (Eynon, Goniets, 2016) stated on their study show that digital natives feel the comfort of the learning process with technology. In the digital learning process, digital natives can easily adapt to new technology or devices/applications. They need to be directed to be aware of the truth behind information, by generating positive discussion and to give insight which technology or application is needed to support learning process (Pratama et al., 2020).

Digital natives also tend to want something quick, especially in theirlearning process. They tend to avoid monotonous processes with little gain, which is different from the old generation or the socalled baby boomers. Library service that can adapt to this situation is essential, since most of the young students are digital natives (Anwary, 2019).

When the age of the fourth industrial revolution emerged, the dissemination of social media immersed so fast in all levels of society. People who live in this era cannot be separated from social media. social media is also used by corporations and public institutions to keep in touch with society. Institution like public university uses social media to update their latest news (Lysik et al., 2014), as a branding and promotion media (McCorcle, Payan, 2017; Vetsianos et al., 2017). Social media is more deficient in disseminating news since they do not need any radio towers or expensive facilities to share content. Moreover, society can engage in discussion in university's account anytime. The public relation of public universities can lead the mass opinion that can give benefit to the institution, especially in building reputation (Panahi et al., 2016).

Figure 2 also showed that there was also a topic *female* that became trending topic in research related to the library and twitter. It means that the role of women in online library service become the concern of the research by academicians in Cambridge University. This was similar with the study by Stentiford, that the more women take the role in important positions, the stronger gender equality can be maintained inside campus life (Stentiford, 2019).

Public sphere in the past is restricted by set of rules and the domination of class in controlling the discussion. But in current era, public sphere is free from the intervention of class authority, thanks to social media as discussion space. Moreover, the varieties of social media allows society to create individual public sphere with no boundaries (Audunson et al., 2019). Cambridge University library allows the new wave of feminism to engage in the digital public sphere where women asresearchers as well as academicians could participate and manage the public sphere (Jouët, 2018). Cambridge University library has a great capability to ensure that their Twitter account are related to the research's environment (Torabian, 2019).

Ismail in his study states that different from the Western world that emphasises individualism, Indonesian people appreciate social activities. It is apparent that past or recent chaotic incidentsand conflicts are resolvable througha peaceful way (Ismail, 2019). Indonesia has not yet fully transformed social media as a place for a new public sphere for academic purposes. Moreover, it is still uncommon for academics to conduct discussions in public groups of social media using English, which is the mostly used language in social media, including Twitter. They feel that conversing in a language other than Indonesian, such as English is seen as boastful (Zein, 2017).

Nonetheless, students in many parts of the world, especially in countries where English is not spoken as a first language, are generally poor in English language learning. Students' difficulties in learning English are attributed to gaps in social backgrounds and cultural conditions (Nuridin, Anwar, 2019). Students in developing countries such as in Indonesia has rarely used english in social context (Irindayanti, 2018), except in higher education. Thus, the situation in where many family in indonesia also not accustomed in using English in daily conversation also makes english is privileged as a language for education, not in social context (Zein, 2017).

Study (Salahudin et al., 2020) also stated that Indonesian were not accustomed to spent most of their times in using social media for educational purpose. Instead, indonesian tend to use Twitter for political purpose and to find people that shares the same political choice. Moreover, Twitter was used by some of the political endorser known as Buzzer. Those buzzers have a purpose to defend the dignity of the public figures and create negative opinion of the opposing parties.

They were paid by the perpetrator for gathering mass attention as well as vote for presidential and general election. One of the example of the street politic led by the 212 alumni and reunion of 212 on each 2th of December were the result of the public opinion built by buzzers (Wildan, 2017). The US also use twitter for politics during election (Buccoliero et al., 2020), also in Australian election use Twitter for political purposes (Kušen, Strembeck, 2018).

However, buzzers were also dispatched by the government to defend public perception about them. Study by (Amanullah et al., 2018) stated that proxy war through social media was more crucial than implementing street politic, because public opinion was faster to built through social media.

Moreover, social media offer fast and massive information about latest update of the political news, including the one that was not spread through formal media and journalist. One of the example was several leakage of the information about corruption cases which were not sigted by

journalists, such as Garuda Indonesia scandal, Social Aid for COVID-19 corruption, and scandal about civil servant recruitmnet in 2021 (Wardhana, 2021).

4. Results

Figure 1 showed that *social networking (online), black twitter* becomes the trending research topic in 2021. It means that the library users along with the librarians have accustomed to the usage of internet to run their dailiy life in university as a result of restriction implemented by the US governmkent to prevent the dissemination of SARS-COV-2. Figure 1 also showed that *twitter* becomes trending topic of research because many librarians used twitter as a public sphere to discuss with the library users.
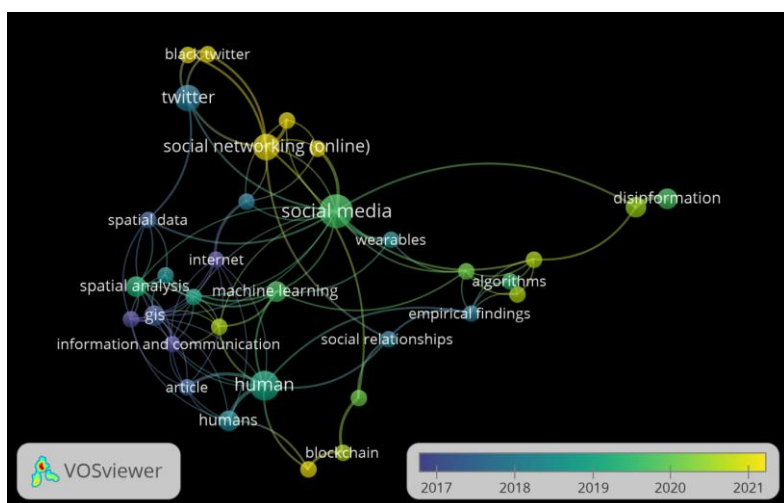

Fig. 1. Trending topic of research related to library and Twitter in Cambridge University

Source: Data processed by Vosviewer 1.1.16

Figure 1 also showed a topic social media became the major topic in 2020. It could be understood because during 2020, social media became the place to connect between library users and librarians. Moreover, during the fourth quarter of 2020, there was a topic blockchain that became trending topic of research. It could be means that the study about blockchain to make sure that the information provided from the librarians to the library users as customers could be maintained well and credible.
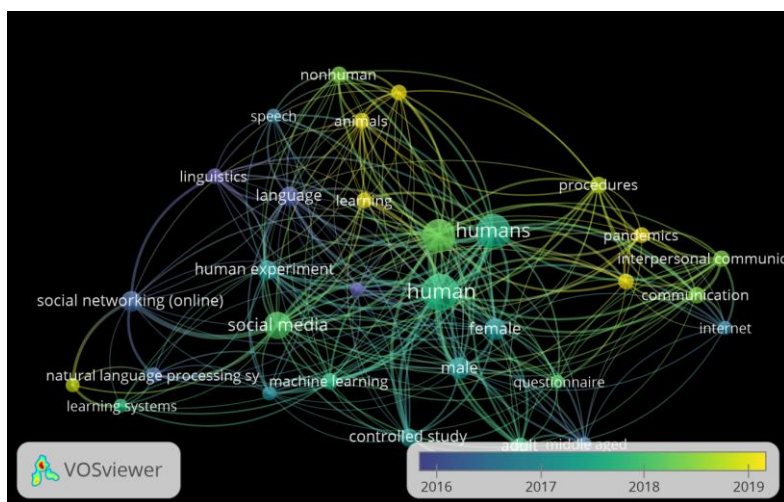

Fig. 2. Trending topic of research related to library and Twitter in Cambridge University
Source: Data processed by Vosviewer 1.1.16

Figure 2 showed that the trending topics were more related to academic terms, especially related to the internet of things (IOT) than library. the topics *social media* and *human* became the trending topics in research around 2018-2019. However, Cambridge university had no research topic related to library and twitter in 2020 and 2021.
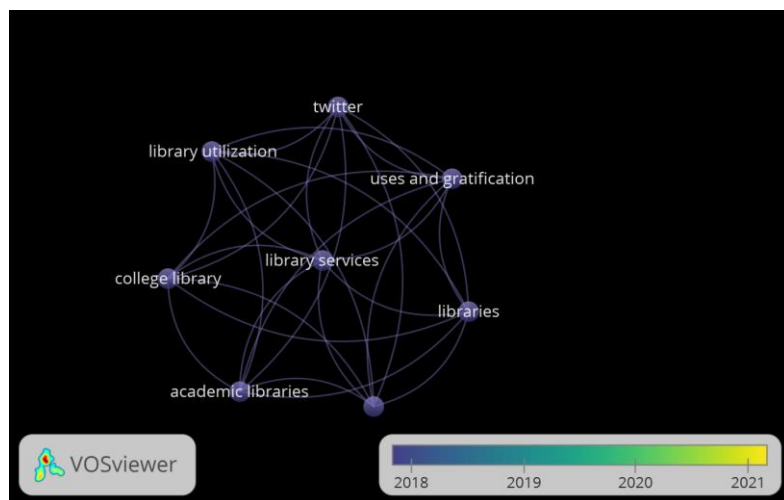

Fig. 3. Trending topic of research related to library and Twitter in Airlangga University

Source: Data processed by Vosviewer 1.1.16

Figure 3 showed that there were only a few of topics in published research papers by Airlangga University related to twitter and library. There was no topic which was related to IOT, instead it focused only in library, especially in service and utilization. One possible explanation is because the Indonesian people still prefer face-to-face communication to digital communication (Umar, 2019). They want to maintain the principle of cooperation by trying to not be immersed in virtual communication. Moreover, by conducting face-to-face communication and using real place as public sphere location, they believe that it will create an atmosphere of mutual understanding (Rodriguez, 2020).

5. Conclusion
Based on the result above, it can be concluded that Harvard University library gave attention to the topics related to the IOT to explore the correlation between Twitter usage and library to their publications. They aware that IOT could enhanced the effciency of twitter as a form of digital public sphere for communication purpose.

Meanwhile, Cambridge University library did similar approach as Harvard University in conducting research, which was shown by the topics which were related to IOT as well as library. However, Cambridge University also arose a topic about female's role in library service in their publications distinguished between topic trend of Harvard and Cambridge University.

Thus, Airlangga University had only a few topics related to the usage of *Tiwtter* and library. There was no IOT related thing in their publications. It could be means that they still did not pay attention toom much to the research related to the library and the usage of *Twitter* as a form of digital public sphere. The possible reason is because Indonesia has different cultural practices from its counterparts in the Western world, hence it tends too mphasise more on face to face communication rather than virtual communication.

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