
Use of Social Media for Scholarly Communication

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Abstract

Background of the study: Social media is widely used in the current educational context and significantly affects scholarly communication. This informal scientific communication activity is an activity that is not "covered" in the world of educational curricula and is more directed at increasing the scientific group by making scientific discussions. Until now, scientific discussion activities in tertiary institutions are still carried out massively by students, including students on the island of Lombok.

Purpose: The purpose of this study was to measure the level of WhatsApp users for scientific communication and the effect of user motives on the level WhatsApp used for scientific communication.

Method: Using a quantitative approach with a survey method, it was conducted for seventy-five (75) library students who were actively using WhatsApp for scientific communication.

Findings: The majority of respondents indicated that WhatsApp has a high usage rate for scientific communication purposes. The results showed that information motives and social interaction motives have a significant effect on the level of WhatsApp used for scholarly communication, while personal identity motives have no effect.

Conclusion: The conclusion is that students have not maximized the use of social media for scientific communication. Students do activities to searching and searching information but do not carry out activities to build interactions such as holding discussions or collaborating to produce scientific work with other academics.

Keywords: Social media; Scholarly communication; User motives

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Introduction

In recent years social media has become a popular communication tool due to its focus on an interactive and collaborative environment ([Chen, & Bryer, 2012](#)). Social media, which has been around for a long time, is becoming increasingly important due to improvements in information technology making it easier to access and operate. Social media is becoming a new form of informal scientific communication channel for academics, to disseminate and disseminate new knowledge easily. The rapid acceptance and use of social networks to interact and exchange ideas has changed the research process and scientific communication activities in academic settings ([Gruzd, Staves, & Wilk 2012](#)).

Scientific communication activities carried out are usually related to the disciplines of interest. Through scientific communication there is a development of science because researchers get ideas and ideas from the exchange of information. The interactions that exist in scientific communication are not only limited to one scientific discipline but various disciplines. Scientific communication plays an important role in the research process because there is interaction between academics regarding data, methods and even research results through formal and informal communication channels ([Pikas, 2016](#)).

Informal scientific communication is the beginning of the formation of formal scientific communication (scientific journal publication). Informal scientific communication is a process of sharing ideas with colleagues related to the research process flexibly without any specific procedures ([Bjork, 2007](#)). Informal communication channels differ from formal communication channels because they allow for more interaction between the informant and receiver, which is difficult to occur in formal channels ([Russell, 2002](#)). Some researchers consider that informal scientific communication plays an important and fast role in transferring information compared to formal scientific communication ([Michailov, Chernyi, & Giliarevski, 1984](#)). The existence of social media allows academics to increase communication from various parts of the world to discuss scientific and academic issues online.

The real benefit of informal communication is that it can help identify suitable research ideas and hypotheses, narrow research approaches, refine research findings, and place them in the context of other research ([Mahmood, Rowley, & Hartley, 2009](#)). This happens when researchers or scholars have problems in conducting research. Researchers communicate their research problems to other colleagues and receive feedback in the form of solutions to their research plans.

This informal scientific communication activity is an activity that is not "covered" in the world of educational curricula and is more directed at increasing the scientific group by making scientific discussions. Until now, scientific discussion activities in tertiary institutions are still carried out massively by students. Many scientific groups are still emerging, whether they are affiliated with majors, study programs, or appear because of a common vision to improve scientific abilities academically ([Crowley, 2018](#)).

Some of the results of research studies regarding the development of scientific communication in the digital era. [Work, Hausteine, Bowman, and Larivière \(2015\)](#) state that social media is increasingly used in scientific research and communication, as scholars interact on Facebook, LinkedIn and Twitter, and on specialized websites such as ResearchGate, Academia.edu and Mendeley. Some research results reveal that the existence of social media for scientific communication helps to facilitate research processes such as access to information, publication and collaboration ([Algarni, 2014](#); [Kramer & Bosman, 2016](#)). The development of social media is a solution for academics to facilitate the transfer of information and increase collaboration in research activities. Academics also use social media to build reputation for themselves and their institutions.

Previous research conducted by [Algarni \(2014\)](#), entitled The Use Of Social Media in Informal Scientific Communication Among Scholars: Modeling The Modern Invisible



College. This study identifies scientific communication that occurs through social media. Create a model that differentiates the workflow of formal and informal scientific communication. Using a descriptive quantitative research method, it was conducted to find out the perceptions and motives for using social media for scientific communication purposes, as well as the factors that influence the use of social media for scientific communication as seen from age, gender, academic position and discipline. The results of this study reveal that only 37% of respondents use social media every day for scientific communication. The most used social media are Facebook, Twitter, YouTube and Google+. The Uses and Gratifications theory is used to reveal usage motives, but only focuses on cognitive (information) motives ([Letierce, et al. 2010](#); [Papacharissi, 2009](#)).

Research conducted by [Budiman \(2018\)](#), entitled Analysis of the function of using Facebook by UGM Postgraduate School Students. This study aims to determine students' motives for using Facebook. This study uses the Uses and Gratifications theory to determine a person's motives for using Facebook. The results of this study indicate that Facebook is dominantly used by students as a medium of entertainment, information and social interaction. Meanwhile, the function of personal identity is not a motive for using Facebook. Facebook social media is still used massively by students in tertiary institutions to support learning facilities at universities.

The difference between the previous research above and this research is that this research focuses on social media WhatsApp only because the use of social media is the highest in Indonesia. Statistical data from We Are Social (2023) also shows active social media users as much as 60.4% of Indonesia's total population. The social media platform that is widely used is WhatsApp 92.1% (We Are Social, 2023). WhatsApp is an instant messaging application so that it can connect one individual to another so that it makes it easy to communicate. Students who are academics experience fast response and interaction with each other through social media platforms to expedite academic activities.

The next difference with previous research is the use of social media for scientific communication. Research conducted by [Algarni \(2014\)](#) revealed the use of social media for scientific communication, both formally and informally. Meanwhile, this study only focuses on the use of WhatsApp social media for informal scientific communication among library students. The research above shows the level of use and various types of social media used for scientific communication. The difference in the level of use of social media lies in the social and psychological environment such as needs (information, social interaction, personal identity) that are perceived as problems and media used to reduce those problems (need satisfaction). So that this research will also reveal the motives for using social media in terms of information, social interaction, personal identity, not just focusing on one motive.

The research above shows that there are various motives that influence someone in using social media for scientific communication purposes. Various types of social media used by academics have their own motives that support academic activities. Based on this description, the researcher intends to conduct research with the title "The use of WhatsApp social media for scientific communication among library students on Lombok Island". This study aims to determine the level of use of social media, especially WhatsApp for scientific communication, to determine user motives and the influence of user motives on the use of WhatsApp for scientific communication. This study uses the theory of Uses and Gratifications, which explains the motives for the use and selection of media by individuals. User motives consist of information motives, social interaction motives and personal identity motives ([McQuail, 2011](#)), which were later developed by [Whiting & Williams \(2013\)](#).



Method

Research Type

This type of research uses explanatory research with a quantitative approach, because it aims to test a hypothesis. The method used in collecting data is a survey method. The research was conducted on 75 library students on Lombok Island. Determination of the sample in this study using the Purposive Sampling method by determining the number of research participants with conditions that meet certain characteristics, namely students who have a WhatsApp account and use it for scientific communication purposes. Purposive Sampling is a way of taking samples not based on strata, random or region but based on having a specific purpose ([Arikunto, 2013](#)).

Variables

To determine the effect of user motives on the level of use of social media for scientific communication, the variables are divided into two types, namely the independent variables consisting of information motives (X1), social interaction motives (X2), personal identity motives (X3) of students in using social media and the dependent variable is the level of use of social media for scientific communication (Y).

Measurements

Questionnaires are used as the main source for obtaining data in the field. Variable measurement in the questionnaire uses a Likert scale with 4 score values. The reason is to avoid the tendency of respondents to choose answers in the middle of the scale used to protect themselves (Idrus, 2007). Before being distributed to all samples, instrument testing was carried out covering the validity test and reliability test. The results of the validity test showed that the 32 question items had a value of $r_{count} > r_{table}$ (0.349), which means that the questionnaire was declared valid. The results of the reliability test show that each variable has an alpha coefficient value > 0.6 , so the item is reliable.

Data Analysis

This study uses the SPSS 21 program for data processing. Data analysis was performed using descriptive statistical analysis, classical assumption test, multiple linear regression, hypothesis testing, correlation coefficient (R), coefficient of determination (R²) and predictor contribution. Multiple linear regression analysis was used to determine the effect of the independent variables, namely information motives (X1), social interaction motives (X2) and personal identity motives (X3) on the dependent variable, namely the level of social media use (Y). Then seen the magnitude of the contribution of influence as a whole and each independent variable on the dependent variable.

Result and Discussion

First, the characteristics of research respondents based on gender consisted of 28 male respondents (37.3%) and 47 female respondents (62.7%) of the total respondents. Second, the characteristics of respondents based on age consisted of 18-24 years of age, the majority of respondents were relatively young, dominated by 20 years of age, namely 22 respondents (29.3%). Finally, the characteristics of the respondents based on the batch consisting of 3 batches, namely 2019, 2020, 2021, and 2022 which are dominated by the 2022 batch of 37 respondents (49.3%).

At the level of using Whatsapp for scientific communication by library students who are active, it shows that the majority of library students consider WhatsApp important to use for informal scientific communication (73.3%, $n = 55$). This differs from the findings of [Al-Aufi and Fulton \(2015\)](#), who found that almost a third (29.9%) of humanities and social sciences



academics from Oman and Ireland had never used social media for academic purposes and [Elsayed \(2015\)](#) identified use low social media among Arab social science academics. Subsequent findings also show that the frequency of using social media is in the high category (3.00), which means that respondents often use WhatsApp for scientific communication. Respondents access WhatsApp 11-15 times in one week which is included in the high category (2.51). The duration of using WhatsApp for scientific communication, which is 61-120 minutes, is included in the low category (1.87). In terms of length of use, the majority of respondents reported that using WhatsApp for informal scientific communication purposes between two to three years is included in the high category (2.38).

Further findings show that the use of WhatsApp as a medium for informal scientific communication is included in the high category (2.92). The use of WhatsApp for scientific communication by students is high due to the ease of communicating using WhatsApp such as being able to transfer files easily and is widely used by students and library lecturers.

Table 1. Frequency Distribution of WhatsApp Social Media Usage Levels (Y)

No	Question	Average	
		Item WA	category WA
1.	Frequency of using social media for scientific communication	3,21	2,92 Tinggi
2.	The intensity of the use of social media for scientific communication	2,72	
3.	Duration of using social media for scientific communication	2,13	
4.	The period of use of social media for scientific communication	2,66	
5.	Value the usefulness of using social media for scientific communication	3,37	

With these findings, it can be seen that WhatsApp is an important social media for communicating scientifically, such as sending files, interacting between lecturers and students. Then what about the use of E-mail, which used to be a medium for sending files. Do academics still use E-mail to communicate scientifically or do they consider E-mail to be a less important medium for facilitating academic activities. This can be studied further related to other social media that have the potential for scientific communication activities. Whereas Facebook, based on previous research conducted by [Budiman \(2018\)](#) regarding the function of using Facebook by UGM Postgraduate School students, shows that the use of Facebook by students is dominated by entertainment motives, such as playing games or to spend free time. Previous research conducted by [Budiman \(2018\)](#) regarding the function of using Facebook by UGM Postgraduate School students shows that the use of Facebook by students is dominated by entertainment motives, such as playing games or to spend free time.

Furthermore, the effect of information motives on the level of WhatsApp social media use based on the first hypothesis states that in the t test information motives have a significant influence on the level of WhatsApp use for scientific communication, which means that H₀ is rejected and H_a is accepted, can be seen in Table 2. This can be seen in Table 2. known by comparing the significance value $\alpha = 0.05$ or comparing tcount with ttable. H₀ is rejected if there is no influence between the independent variables (X₁, X₂, X₃) on the dependent variable (Y), if tcount < ttable or if the significance level is > 5%. H_a is accepted if there is influence between the independent variables (X₁, X₂, X₃) on the dependent variable (Y), if tcount > ttable or if the significance is at level <5%.



Table 2. WhatsApp User t test results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-12,009	1,765		-6,802	,000
1 Information (X1)	,393	,051	,631	7,669	,000
Social interaction (X2)	,244	,075	,229	3,258	,002
Personal Identity (X3)	,131	,094	,099	1,393	,167

Based on the results of statistical calculations, the effective contribution (SE) of the information motive to the level of WhatsApp usage for scientific communication is 52.7% and the relative contribution (SR) is 71.5%, which means that the information motive is the most dominant motive influencing the level of communication. use. The main motivation for library students to use WhatsApp social media for scientific communication is due to the need for scientific information to be used to support academic activities. In line with research conducted by [Manca and Ranieri \(2017\)](#) found that the most common reason Italian academics use social media is to stay abreast of the latest information and to get information. WhatsApp social media is a channel that can help open scientific communication, such as the availability of research findings that are able to provide information quickly for the purpose of educating students. Social media is able to create a wider dissemination of scientific information from research findings, without being hindered by access restrictions behind paid databases.

Students get information from various scientific information that is shared by social media users quickly and comfortably, thus increasing knowledge and educational facilities for students. In this study it was found that scientific communication activities on WhatsApp were more dominated by information sharing activities, then information seeking. However, surveillance activities (supervision) to obtain information on activities carried out by academics and other communities are still lacking. This could be because students do not have time to supervise other academic posts or the scientific community they follow. In accordance with the opinion of [Al-Daihani, Al-Qallaf, and AlSaheeb \(2018\)](#) that there is a barrier to using social media for informal scientific communication is lack of time.

The second hypothesis is to determine the effect of social interaction motives on the level of social media use, stating that in the t test social interaction motives have a significant influence on the level of WhatsApp use for scientific communication, which means that H0 is rejected and Ha is accepted, can be seen in Table 2. Contribution effective (SE) given social interaction motives of 15.1% and relative contribution (SR) of 20.5%. This means that WhatsApp is able to effectively bridge meetings between colleagues, both locally and globally. [Shehata, Ellis, Foster \(2015\)](#) stated that social media is used by academics as a dissemination platform, because it encourages interaction between academics or researchers, and increases collaboration among academics.

The use of WhatsApp to meet the needs of interaction between academics generally occurs due to the similarity in the use of the application. For example, the use of WhatsApp which is able to mediate brainstorming such as the availability of groups in the same field of knowledge and the same usage with other lecturers and students so that interaction occurs by discussing research problems or assignments and other supporting activities such as transferring files, data and report writing. However, on the other hand, when using WhatsApp, students do not use it to carry out further interactions with lecturers and other academics, such as discussing and obtaining input from other colleagues. WhatsApp should be able to help



increase the effectiveness of discussions. Social media should be able to encourage interaction between academics or researchers, and increase collaboration among academics ([Shehata, Ellis & Foster, 2015](#)).

Social media supports collaboration and communication among colleagues, as it provides many tools that allow researchers to communicate and share work instantly ([Gruzd, Staves, & Wilk, 2012](#)). However, WhatsApp is not used by students in finding opportunities for collaboration. Whereas using social media to collaborate on a project will be beneficial in terms of time and distance management. The lack of collaborative activity among WhatsApp users could be due to the university not providing encouragement for collaboration between researchers or academics through social media. The lack of further discussion and collaboration activities affected the few effective contributions made.

The third hypothesis to determine the effect of personal identity on the level of WhatsApp social media use, states that in the t test personal identity motives do not have a significant effect on the level of WhatsApp use for scientific communication, which means that H₀ is accepted and H_a is rejected, can be seen in Table 2. This is because students do not feel that WhatsApp can improve their quality as academics. This could be because students choose other social media to build a professional profile online. As research conducted by [Zhu and Procter \(2015\)](#) on PhD students in the UK, PhD students differentiate between social media used for personal and professional activities. They maintain professional profiles on commercial social media such as Twitter, Research Blog, LinkedIn, Academia.edu, and ResearchGate, but keep their Facebook profile private to connect with friends and family.

The results of statistical calculations show that personal identity motives have an influence on the level of use of WhatsApp for scientific communication. The effective contribution (SE) given was 5.9% and the relative contribution (SR) given was 8.0%. This score is low because students are not used to showing themselves as academics and lack self-expression such as commenting or giving opinions related to scientific information. Students prefer to remain silent rather than comment on scientific information or scientific activities, especially on WhatsApp groups. This can be caused by students feeling a lack of confidence and knowledge about how to start and what to write. Research conducted by [Zhu & Procter \(2015\)](#) states that many students do not build sufficient confidence in their skills or feel vulnerable when posting or commenting on social media for fear of exposing their ignorance. Students also do not form their identity or promote themselves via WhatsApp. It can be concluded that students are not used to showing their true selves in cyberspace. In contrast to research [Manca and Ranieri \(2017\)](#) found that social media is used by academics, especially lecturers, teaching assistants and academic staff to enhance academic careers and self-development. This could be due to the different profiles of researchers. This research focuses on students who feel they lack confidence when giving comments or criticism to colleagues or other academics who are considered to have more expertise than them, such as lecturers and researchers.

Various motives are the needs of students to use WhatsApp for scientific communication. Based on statistical calculations, student motives have a significant influence on the level of use of WhatsApp for scientific communication with an effective contribution of 73.7% which can be seen in Table 3.

Table 3. Results of the WhatsApp User Determination Coefficient Test

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,858 ^a	,737	,727	1,973

The findings in this study are that students have a need for information, social interaction and personal identity which is the motivation for students to use WhatsApp. This is

in line with the Uses and Gratifications theory which states that there are various motives behind individuals using certain types of media for certain purposes ([Whiting & Williams, 2013](#)). According to [Al-Daihani, Al-Qallaf, and AlSaheeb \(2018\)](#) the use of social media by academics has different motives which will affect the level of use of social media so as to show satisfaction in using the media. When these motives are fulfilled, it will be seen how the individual uses the media he has chosen to fulfill his needs.

Conclusion

This research resulted in several conclusions, namely students realized the importance of using WhatsApp for scientific communication. The level of WhatsApp usage among library students is high. The level of use of social media for scientific communication is high among students due to motives that influence usage. The information motive (X1) is the most dominant motive making an effective contribution to the level of WhatsApp usage for scientific communication (Y). Social interaction motives (X2) have an influence on the level of use of WhatsApp for scientific communication, whereas personal identity motives (X3) have no effect on the level of use of WhatsApp for scientific communication. This shows that students want to get information according to their needs but do not want to build further interactions (Example: discuss, collaborate) and do not show professional identity (Example: do not comment or ask questions regarding scientific information obtained through colleagues) so with a lack of social interaction activities and personal identity, students do not know how useful the scientific information they get is.

In connection with the conclusions above, it is recommended for universities, libraries and relevant departments to design, develop and provide education about the use of social media for scientific communication. The training is conducted demonstrating the uses, features and advantages of social media and strategies for academics increasing the potential value of social media. So that academics, especially students, are able to integrate social media in research activities. The university also encourages each faculty or discipline to embed the use of social media in reporting research work.

Further research can be carried out by combining it with other theories or models that are carried out in a wider scope so as to increase understanding of the use of social media by academics for scientific communication. It will also be interesting to compare the use of general social media (Facebook, Twitter, Instagram, Tiktok, WhatsApp) and academic social media (such as ResearchGate and Academia.edu). Research for the future can also be carried out by designing the design and content of training programs to increase the use of social media for academic activities.

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Authors' Contributions

All authors have contributed to the final manuscript. The contribution of all authors: Nurul Fikriati Ayu Hapsari, Iwin Ardyawin, Rohana, Dodi Firdausi Nuzula: conceptualization, methodology, formal analysis, writing original draft preparation, writing review and editing. Hasnah Hashim: writing review and editing. All authors have read and agreed to the published version of the manuscript.

Conflict of Interest

All authors have no conflict of interest related to this study.



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