

USABILITY AND PERFORMANCE EVALUATION OF SOCIAL MEDIA WEBSITES

Gui Yu Xuan¹

¹School of computing, Faculty of Engineering,
Universiti Teknologi Malaysia
¹guixuan@graduate.utm.my

ABSTRACT

With the advancement of technology, the Internet has become the source of information. Hence, increasing the interaction of humans and technology. I found that there are thousands of websites on the Internet and the most visited websites are social media. Hence, I am more interested in understanding the performance of social media to attract users. This study used a survey method based on the WAMMI questionnaires to obtain people's feedback on social media performance. The social media website that has been evaluated are Facebook, Instagram, and YouTube. Based on the results, I found that Facebook has the highest usability and performance.

Keywords: interaction, human, technology, social media, performance, usability, WAMMI

1. INTRODUCTION

There is increasing of 24 percent social media penetration from 2016, which is 62 percent in Malaysia. [1]. This statistic shows that almost all Malaysians use social media platforms in their daily lives. Social media was created to increase the connection between people. With the progress of time, everyone can obtain the network through the construction of the network structure. This means that it is easier for people to connect through social media. Hence, increasing the interaction between humans and technology.

Social media provides a platform for people to share information, ideas, and lives in different ways such as pictures, videos, or text. By sharing our thoughts and living styles, we can better understand the cultures and lifestyles of people in different countries. By understanding the culture and lifestyle of others, we can avoid misunderstanding people from different backgrounds. Hence, social media can strengthen the connection between people. People's willingness to learn new things has also become one of the reasons for the development of social media.

Besides that, learning tools can be obtained from social media. People can gain knowledge and learning materials from social media. Some educators will share their findings and their ideas through social media. Hence, social media provides a platform for people to discuss. People can also get the latest news from social media. Only by preventing from

outdated able us to seize the opportunity. This is because knowing new things allow us to know the latest development in society. Hence, more people are using social media.

We can evaluate social media by its performance. Research by Cha Ji Young (2010) shows that college students often use social media websites that are easier to use. [2]. According to the statistic done by Cha Ji Young (2010), a simple interface and navigation can improve the efficiency and productivity of social media websites. This will indirectly improve social media performance. [2]. Online privacy is also one of the reasons that affect the performance of social media. The research shows that online security is essential to protect user-information from being stolen by others. [2]. Websites without online privacy may reduce the number of users using social media. [2].

The innovation of social media websites is very important to enhance social media performance.[3]. The process of improving the usability and quality of the websites is important to meet the user's needs. Continuously improving the quality of the website will attract more users. This is because people always evaluate things from their first impression. For example, color, page layout, fonts, and typography must be visible and easy to read.

Before the advent of the Internet, online communication was mainly characterized by non-synchronous or unidirectional communication. Today, online communication has been widely used for multidirectional and synchronous communication. The rise of social networking sites has greatly contributed to the creation of a new type of online communication. [4]. Among the social media websites, Facebook has 2.853 billion users and become the most popular social media website, while YouTube ranks second with 2.291 billion users. 1.386 billion users using Instagram. [5]. Hence, the ease of communication has led to more users using social media websites. This statistic has motivated researcher to do the study of website usability and performance.

The purpose of this research is to evaluate the usability of users when using the social media websites such as Facebook, Instagram, and YouTube by using WAMMI questionnaires. The reason for studying Facebook, Instagram, and YouTube

are because these websites have the highest usage rates among the social media websites. Through this research, the researcher believes that able to find out why the performance of these websites is higher than other websites. WAMMI stands for Website Analysis and Measurement Inventory can calculate user satisfaction by asking users to rate their experience when using the websites.

2. METHODOLOGY

2.1 Preliminary Process

The researcher had research from the Internet to find out the type of websites and the popularity of the websites. From the study, the researcher found that social media website is the most popular website. Therefore, the researcher is interested in discovering the reasons for the popularity of social media websites. Besides that, the researcher also noticed that among the social media website, Facebook, Instagram, and YouTube have the most users. Hence, Facebook, Instagram, and YouTube are the samples for this study.

2.2 Sampling Process

The sampling procedure is a process used for statistical analysis. Random sampling is used to obtain observations from different populations. 11 respondents had been selected to answer the questions.

2.3 Survey Method

A survey-based on WAMMI questionnaires has been created by using Google Form. The Google Form has been divided into 8 sections. The researcher had introduced the selected social media website to the respondents in the first section. Then, the respondents will be asked to do the task given by the researcher. The task given is as follows:

- I. Task 1: Searching for something.
- II. Task 2: Find some pages. (Public or private account)
- III. Task 3: Find your pages.

Then, the respondents will be asked if they have used the following social media website in sections 2, 4, and 6. If the respondents use the following social media website, then the respondent must answer the questions provided in the next section.

2.4 Questionnaire

Table 1. Distributed Survey Questions WAMMI [7]

Controllability	
No	Questions
1.1	I feel in control when I am using this website.

1.2	It is difficult to move around this website.
1.3	Remembering where I am on this website is difficult.
1.4	I can easily contact the people I want to on this website.
Efficiency	
2.1	The website is too slow.
2.2	I can quickly find what I want on this website.
2.3	Using this website is a waste of time.
2.4	I feel efficient when I am using this website.
Learnability	
3.1	Using this website for the first time is easy.
3.2	Everything on this website is easy to understand.
3.3	This website needs more introductory explanations.
3.4	Learning to find my way around this website is a problem.
Attractiveness	
4.1	This website has some annoying features.
4.2	The pages on this website are very attractive.
4.3	This website has much that is of interest to me.
4.4	I do not like using this website.
Helpfulness	
5.1	This website helps me find what I am looking for.
5.2	This website seems logical to me.
5.3	It is difficult to tell if this website has what I want.
5.4	I get what I expect when I click on things on this website.

2.5 Dimensions

i. Controllability

It is easy for users to move around and do whatever they want on the website. [8]

ii. Efficiency

The website will provide quick feedback to users. [8]

iii. Learnability

The interface of the website can be easily understood by users. [8]

iv. Attractiveness

The website interface takes attention from users. [8]

v. Helpfulness

The website can help users to solve their problem.
[8]

2.6 Analysis Method

Data analysis was performed by using descriptive statistics such as mean. The question is in the form of Likert scale, hence the mean will be used for calculation. To calculate the mean, each item was determined by statement agreement. Mean is obtained based on the score of the answer.

Table 2. Scale of Statement Agreement

Statement Agreement	Score
Strongly Disagree	1
Partially Disagree	2
Neutral	3
Partially Agree	4
Strongly Agree	5

Excel had been used to calculate the mean for the three social media websites. The formula, =AVERAGE() had been used in Excel. Then the mean value is used to determine the level of agreement. The scale is referred to [6, Table. 3]. R Studio is used to perform the ANOVA test to compare the performance of three websites.

Table 3. Scale of Level of Agreement

Mean	Level of Agreement
1.00 – 2.49	Low
2.50 – 3.49	Normal
3.50 – 5.00	High

```
#Analysis based on ANOVA
Facebook <- c(3.30,3.14,3.09,3.18,3.52)
Instagram <- c(3.33,2.90,3.13,3.18,3.20)
YouTube <- c(2.66,3.00,3.07,3.23,3.55)

groups <- data.frame(cbind(Facebook, Instagram, YouTube))
summary(groups)

stackedGroup <- stack(groups)
stackedGroup

anovaResults <- aov(values ~ ind, data = stackedGroup)
summary(anovaResults)
```

Figure 1: The formula for ANOVA test.

3. RESULTS AND DISCUSSION

Are you on Facebook?
11 responses

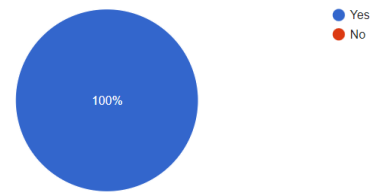


Figure 2: Distribution of respondents on Facebook

Are you on Instagram ?
11 responses

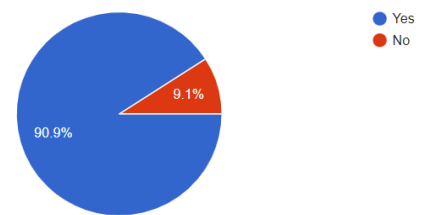


Figure 3: Distribution of respondents on Instagram

Do you used YouTube?
11 responses

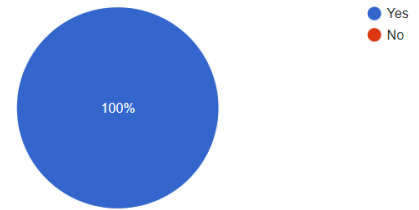


Figure 4: Distribution of respondents on YouTube

From the figures above, we can know that 11 respondents are using Facebook and YouTube, which indicates 100 percent. However, there are only 10 out of 11 respondents are using Instagram which indicates 90.9 percent.

Table 4. Mean Value of Different Type of Dimension

	MEAN		
Type of Dimension	Facebook	Instagram	YouTube
Controllability	3.30	3.33	2.66
Efficiency	3.14	2.90	3.00
Learnability	3.09	3.13	3.07
Attractiveness	3.18	3.18	3.23
Helpfulness	3.52	3.20	3.55

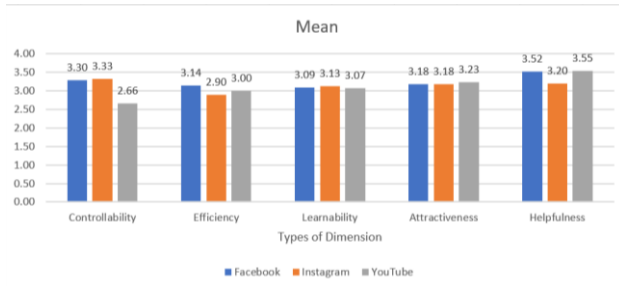


Figure 5: Mean Score of The Websites by Type of Dimension

As can be seen from the above table and figure, Instagram has the highest controllability dimension with the mean score of 3.33 meanwhile the mean score of Facebook and YouTube is 3.30 and 2.66 respectively. However, even if Instagram gets the highest mean score, the agreement level in the controllability dimension is normal. From the efficiency dimension, we can see that the highest mean score is 3.14, which refers to Facebook meanwhile Instagram has the lowest score which is 2.90. The YouTube efficiency dimension is 3.00 mean score. According to the scale of level of agreement, the efficiency of Facebook is normal. Besides, Instagram scored the highest mean score in the learnability dimension, which is 3.13 meanwhile Facebook only scored 3.09 and YouTube scored 3.07. Instagram has a normal learnability dimension. Moreover, YouTube shows the highest mean score of attractiveness dimension, which is 3.23 while Facebook and Instagram only scored 3.18. Nevertheless, the attractiveness of YouTube is only normal according to the scale of agreement level. YouTube has scored the highest mean in helpfulness dimension, which is 3.55 while Facebook denotes 3.52 mean score and Instagram display a 3.20 mean score. According to the scale of agreement level, the helpfulness dimension of YouTube is high.

```
> Facebook <- c(3.30,3.14,3.09,3.18,3.52)
> Instagram <- c(3.33,2.90,3.13,3.18,3.20)
> YouTube <- c(2.66,3.00,3.07,3.23,3.55)
> groups <- data.frame(cbind(Facebook, Instagram, YouTube))
> summary(groups)
```

	Facebook	Instagram	YouTube
Min.	:3.090	Min. :2.900	Min. :2.660
1st Qu.	:3.140	1st Qu.:3.130	1st Qu.:3.000
Median	:3.180	Median :3.180	Median :3.070
Mean	:3.246	Mean :3.148	Mean :3.102
3rd Qu.	:3.300	3rd Qu.:3.200	3rd Qu.:3.230
Max.	:3.520	Max. :3.330	Max. :3.550

```
> stackedGroup <- stack(groups)
> stackedGroup
```

	values	ind
1	3.30	Facebook
2	3.14	Facebook
3	3.09	Facebook
4	3.18	Facebook
5	3.52	Facebook
6	3.33	Instagram
7	2.90	Instagram
8	3.13	Instagram
9	3.18	Instagram
10	3.20	Instagram
11	2.66	YouTube
12	3.00	YouTube
13	3.07	YouTube
14	3.23	YouTube
15	3.55	YouTube

```
> anovaResults <- aov(values ~ ind, data = stackedGroup)
> summary(anovaResults)
```

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
ind	2	0.0541	0.02705	0.507	0.615
Residuals	12	0.6405	0.05337		

Figure 6: ANOVA: Single Factor Test

From figure 6, we can see that the overall mean for Facebook, Instagram, and YouTube. Facebook has the highest mean value which is 3.090. Meanwhile, YouTube has the lowest mean value which is 2.660. Instagram shows 2.900 mean value. Hence, we can conclude that Facebook has the best usability and performance compared to Instagram and YouTube. According to the agreement level, Facebook, Instagram, and YouTube have normal usability and performance.

In addition, we knew that the p-value, 0.615 is higher than the significance threshold which is 0.05. This result shows that there is no significant difference exists.

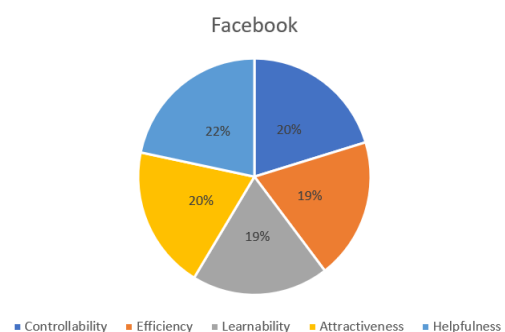


Figure 7: Overall Evaluation of Facebook

From the pie chart above, the helpfulness dimension of Facebook has the highest percentage which is 22 percent while the learnability dimension and efficiency dimension has the lowest percentage which is 19 percent. Controllability and attractiveness indicate 20 percent. This statistic shows that Facebook should improve its learnability and efficiency dimension.

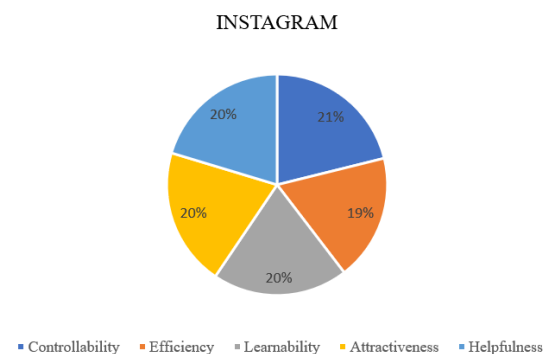


Figure 8: Overall Evaluation of Instagram

From the pie chart above, the controllability dimension of Instagram has the highest percentage which is 21 percent while the efficiency dimension has the lowest percentage

which is 19 percent. Controllability, learnability, and attractiveness indicate 20 percent. This statistic shows that Instagram should improve its efficiency.

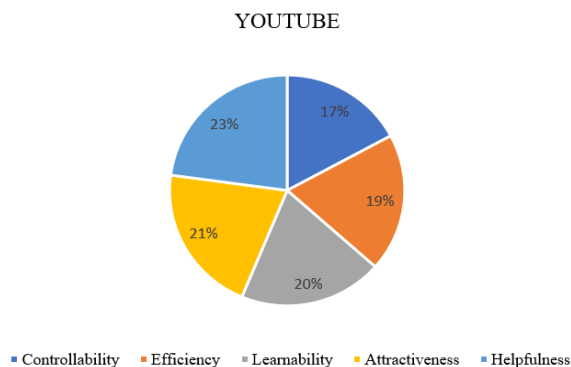


Figure 9: Overall Evaluation of YouTube

From the pie chart above, the helpfulness dimension of YouTube has the highest percentage which is 23 percent while the controllability dimension has the lowest percentage which is 17 percent. Attractiveness, learnability, and efficiency indicate 21 percent, 20 percent, and 19 percent respectively. This statistic shows that YouTube should improve its controllability.

4. CONCLUSION

The advancement of networks and technology has led to an increase in the usability of the website. Hence, a good usability website performance is important to encourage the interaction between humans and technology. Hence, the researcher conducted a survey based on the WAMMI questionnaire to identify the usability website performance of the user on the social media website.

The analysis of the social media website is done by survey and ANOVA test. The survey is used to collect the point of view of users on the performance of social media websites. By conducting a survey, we can gather information about the needs and opinions from users. It is important to improve the performance of the website from the measurement of the satisfaction of users. [9]

First, the company should ensure that the website it produces must be easy for users to operate. Website readability is important because most users have limited time and limited mental resources to learn things from the website. [10] Besides that, an easy-to-understand navigation tool and the menu are important to reduce the time spent by users when they are using the website. For example, YouTube should create a shortcut key for users to save time. The shortcut key such as pressing “J” can rewind the video. In addition, YouTube can provide services that arrange videos according to video types. Hence, users can easily find the video they want by genre.

Second, the efficiency of the website is important to attract more users. An efficient website means that users can get the response in the shortest amount of time. No user would want to wait longer for a response from the website. Hence, Facebook and Instagram should improve their efficiency.

Third, learnability of website. Familiar icons and layouts allow users to understand the function such as a magnifying glass. The language used on the website should be simple so that users can easily understand its meaning. The most important thing is to make the website as simple as possible. Hence, Facebook should be modified to make it simple so that users can move around on the website.

The attractiveness of the website is important to impress users. An attractive website should help users find what they want in a shorter time and has a fast-loading speed. The colour and layout used should be readable by users.

Lastly, the helpfulness dimension is important to keep users stay on the website. Providing 24 hours customer service to users able to help them solve their problems at any time. For example, a website should provide a list of frequently asked questions. This is because users can find the answer directly without spending too much time waiting for a response.

Based on the mean score of five dimensions which are controllability, efficiency, learnability, attractiveness, and helpfulness, we can know that every website has its good and bad aspects. Therefore, every website needs to improve its usability and performance to attract more users using the website. To conclude, based on the overall mean, Facebook is the best social media website among the three social media websites that had been selected.

5. REFERENCE

- [1] Joschka Muller, 2021, Social media users as a percentage of the total population Malaysia 2021, viewed on 5 Nov 2021
<https://www.statista.com/statistics/883712/malaysia-social-media-penetration/>
- [2] Joschka Muller, 2021, Social media users as a percentage of the total population Malaysia 2021, viewed on 5 Nov 2021
<https://www.statista.com/statistics/883712/malaysia-social-media-penetration/>
- [3] Cha, J.Y., “Factors affecting the frequency and amount of social networking site use: Motivations, perceptions and privacy concerns,” First Monday, vol.15, no 12, October 2010. [online serial]. Available: <https://firstmonday.org/article/view/2889/2685>. [Accessed Nov. 5, 2021].
- [4] Busselle. R, Reagan. J, Pinkleton. B, Jackson. K, “Factors affecting Internet use in a saturated-access population,” Telematics and Informatics, vol 16, pp 45-58, March 1999. [online serial]. Available: doi:10.1016/s0736-5853(99)00018-0. [Accessed Nov. 5, 2021].

- [5] Raacke, J., and Bonds-Raacke, J. "MySpace and facebook: applying the uses and gratification theory to exploring friend-networking sites," *Cyberpsychol. Behav.* vol 11, no 2, April 2008. [online serial]. Available: <https://doi.org/10.1089/cpb.2007.0056>. [Accessed Nov. 6, 2021].
- [6] Statista, 2021, Global social networks ranked by number of users 2021, viewed on 6 Nov 2021, <https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>
- [7] Landell, K. (1997). *Management by menu*. London: Wilay and Sms Inc.
- [8] M.A. Al-Shaher, "Evaluation of e-Portal Services from an Employee Satisfaction Perspective: The Communications Directorate as a Case Study", *U.P.B. Sci. Bull., Series C.*, Vol. 79, Iss. 3 (2017), pp. 19-30Y.
- [9] WAMMI, 2010, Graphical profile of WAMMI results. Viewed on 12 Nov 2021, <http://www.wammi.com/demo/graph.html>
- [10] Hampton, C., Vilela, M., (n.d.), Section 13. Conducting Surveys. Viewed on 12 Nov 2021, <https://ctb.ku.edu/en/table-of-contents/assessment/assessing-community-needs-and-resources/conduct-surveys/main>
- [11] Hotjar, (n.d.), Website readability: a definition. Viewed on 12 Nov 2021, <https://www.hotjar.com/conversion-rate-optimization/glossary/website-readability/>

6. AUTHOR PROFILE



Name: Gui Yu Xuan
 Matric ID: A20EC0039
 Email: guixuan@graduate.utm.my