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Analysis Of The Effect Of Social Media Use On Power Consumption Based Smartphones

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ABSTRACT
This study analyzes the effect of social media usage on power consumption on web-based smartphones and also explores the difference in power consumption between web-based social media applications and native applications (applications downloaded and installed directly on smartphones). Further analysis will compare the energy efficiency of various types of activities such as scrolling, video streaming, and content uploading. Thus, this study not only provides insight into the effect of social media usage on battery power, but also provides recommendations for users and developers to minimize the impact of power usage on smartphones. The final results are expected to be a reference for improving the design of more energy-efficient applications. The use of social media through web applications can affect the efficiency of battery usage on smartphone devices. This study measures the power consumption patterns of several popular social media platforms and evaluates factors that affect power usage, such as duration of use, interactive activities, and system optimization. The results of the study are expected to provide insight for users to manage power consumption efficiently and for application developers to improve the performance and energy efficiency of their platforms.

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INTRODUCTION

A Social media has become an important part of the daily lives of modern society. More and more users access social media platforms through web-based smartphones to interact, share content, and obtain information. However, the use of social media on smartphones can also have an impact on battery power consumption which runs out quickly. In recent years, the development of smartphone technology has resulted in an increase in the use of web applications to access social media, compared to the use of dedicated native applications. Web applications allow users to access social media directly through their web browsers without the need to download additional applications. Although more accessible, using social media through web applications can have an impact on higher battery power consumption compared to native applications. Using social media on web-based smartphones requires the use of resources such as CPU, data network, and screen which can affect battery life.

Activities such as scrolling news feeds, playing videos, sending messages, and

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uploading photos can put a significant load on these components, which can ultimately reduce the battery life of smartphones. Therefore, it is important to conduct an analysis of the effect of social media usage on power consumption on web-based smartphones. With a better understanding of the factors that affect power consumption, application developers and smartphone manufacturers can design more efficient strategies and features to reduce power consumption when using social media. In addition, smartphone users will also gain insight to manage their social media usage wisely in order to extend their battery life.

In this study, we will analyze the effect of social media usage on power consumption on web-based smartphones. We will identify factors that affect power consumption, compare social media usage between web applications and native applications, and propose optimization strategies to reduce power consumption on social media usage. This study is expected to contribute to the development of smartphone applications and devices that are more efficient in power usage and provide smartphone users with a better understanding of the impact of social media usage on power consumption.

Literature Review

Social Media

In using Whatsapp on a smartphone or web, it is important to pay attention to power consumption because power consumption on the device affects how long the battery can last. By identifying the data sent in the form of text, images and videos, the amount of power consumption required by Whatsapp can be known .

The amount of power consumption required by Whatsapp can be analyzed using Joulemeter software for web-based Whatsapp and the Accubattery application for smartphones. Power measurements with hardware such as in [6] are not effective because of the many processes running on web and smartphone applications and the difficulty of extracting data consumption for certain applications. So the author is interested in conducting a study of power consumption on the Whatsapp application using software-based measuring instruments, namely Joulemeter and Accu-battery.

Communicate Technologies

Basically, social media is a development of new internet-based web technologies that make it easier for everyone to communicate, participate, share and form a network online so that they can spread their own content such as creating a blog or making videos on YouTube so that they can be viewed directly by millions of people for free. Joulemeter is a software released by Microsoft that can be used to measure computer power consumption such as CPU, total power, monitor, disk, base and application in real time. The results of the measurements can be seen by saving the measured data in the form of a text file. The appearance of the Joulemeter software can be seen in the image below

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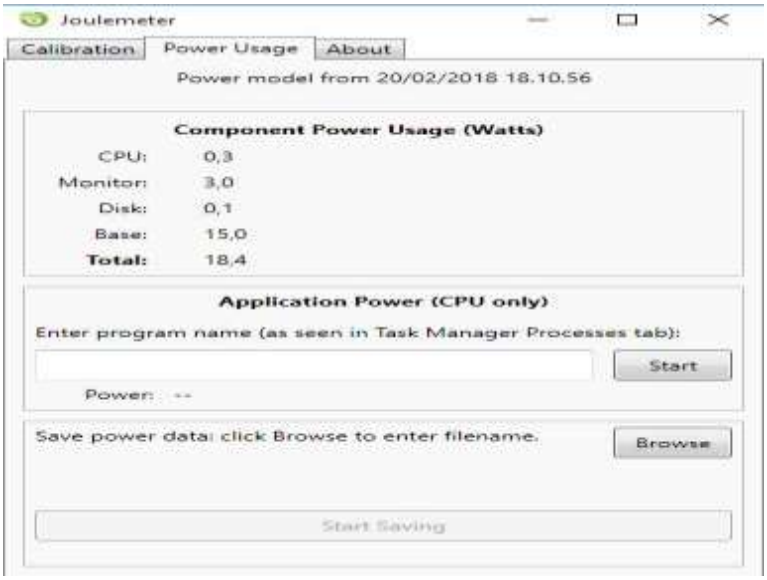

Figure 1. Software Joulemeter

METHOD

The research flow begins by extracting data to determine the type of file and the size of the file to be analyzed. Next, the setup is carried out on the power meter application. In the WhatsApp web test, Joulemeter is used to determine the power consumption that occurs during the delivery. While in the WhatsApp application on the smartphone, Accubattery is used as shown in Figure 2.

Figure 2. Flowchart System

The measurement method is carried out to find out how to find out the power consumption required for the software used. The steps for the Joulemeter measurement

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method are:

1. Activate Joulemeter, which is to analyze the amount of power consumption from CPU performance or hardware applications against applications used as delivery media and also affects the storage memory of the hardware.
2. Activate the application, which is as a data delivery medium where in this thesis the delivery is carried out with 2 different applications: Google Chrome and Whatsapp web, with the 2 applications having different power consumption.
3. Consumption analysis, namely the amount of power consumption obtained from sending data in the form of text, images and videos that are carried out. The data delivery carried out has certain parameters, in sending text the parameter analyzed is how many characters are sent on the delivery media, while in sending images the parameter analyzed is how large the pixel size of the image is, also different from sending data in the form of video, the parameter analyzed is how long the duration of the video is.

RESULT

Result Power

Measuring the power of sending text with the number of characters from 10 bytes to 50 bytes using Joulemeter software, the power consumption value on the CPU and application is taken as shown in Table 1.

Table 1. Results of Text Sending Tests Against Power Consumption

Size (byte)	CPU (W)	Application (W)
10	3,84	2,37
20	3,92	2,41
30	4,23	2,68
40	4,98	3,34
50	5,02	3,38

Discussion Measure

Measurement of image sending power with sizes from 197 Kb to 547 Kb using Joulemeter software, the power consumption values on the CPU and application are taken, as shown in Table 2.

Table 2. Image Delivery Results Against Power Consumption

Size (Kb)	CPU (W)	Application (W)
197	18,56	12,26
270	17,87	12,25
350	17,64	12,21
445	17,51	12,35
547	18,11	12,01

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Measurement of video transmission power with sizes from 5.94 Mb to 9.31 Mb using Joulemeter software, the power consumption value on the CPU and application is taken, as shown in Table 3.

Table 3. Results of Video Transmission Against Power Consumption

Ukuran (Mb)	CPU (W)	Application (W)
5,94	22,95	14,63
6,6	22,24	14,62
7,45	21,31	14,22
8,15	22,61	15,37
9,31	21,62	14,04

Measurement of text sending power with the number of characters from 10 bytes to 50 bytes using the Accubattery application, the power consumption value is taken on the application, as shown in Table 4.

Table 4. Accubattery Test Results for Sending Text Against Power Consumption

Size (byte)	Application (W)
10	5,51
20	6,1
30	6,42
40	6,81
50	7,45

Measurement of image sending power with sizes from 197 Kb to 547 Kb using the Accubattery application, the power consumption value is taken on the application, as shown in Table 5.

Table 5. Results of Image Sending Against Power Consumption on AccuBattery

Size (Kb)	Application (W)
197	12,26
270	12,25
350	12,21
445	12,35
547	12,02

CONCLUSION

The conclusions obtained from the measurements carried out in this thesis are as follows: The results of the power consumption of the web-based Whatsapp social media application through sending data in the form of text, images and videos have the largest power consumption value, namely in sending video data as well as sending via applications on smartphones. The power consumption value of the web-based Whatsapp social media application has a CPU consumption value that is greater than the application consumption value. The power consumed from the data measurement depends on the size of the file size sent, namely in the form of text, images and videos, as well as sending on smartphone

applications.

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