Performance Comparison of Progressive Web Apps and Regular Websites for Website Marketing Strategy

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Abstract- ***Website is important in marketing strategy. Some companies build websites by utilizing website technology to optimize marketing strategies, including using Progressive Web Apps or PWA. This study was conducted to compare the performance of two websites, one website using PWA technology and one website not using PWA. The aspects tested in this research are SEO Friendly, Onload Time, Fully Loaded Time, Offline Mode, and Installable. Testing using tools from GTMetrix and Chrome Developer Tools, namely Network, Application, and Lighthouse. Based on the test results, it appears that websites with PWA technology are superior in terms of SEO friendly.***

Indexed Terms- ***Descriptive Approach, Marketing, PWA, Website***

I. INTRODUCTION

Many types of websites can be found today, from news portal websites, job vacancies, company or organization profiles, education, online communities, and portfolios, to social media. Along with the development of technology, various kinds of technology can be used to create a website. One of the technologies that companies can use to provide the best experience for their users when accessing their websites is Progressive Web Apps (PWA) technology. PWA, or Progressive Web Apps, is a concept that combines the advantages of regular website applications and mobile applications to produce an application that has features on a regular website but is optimized with the benefits that exist in mobile applications [1]. PWA is just an ordinary (common) website-based application but is optimized by the presence of several excellent features of native mobile applications, such as being accessible offline, definitely responsive, and can be installed on mobile devices.

The primary function of a website is widely used for marketing a company's products by directing as much traffic as possible to the website or what is commonly referred to as a Website Marketing strategy. This strategy has considerably impacted the world of business and marketing. Most of the goals of a website marketing strategy are to gain top rankings on search engine results pages (SERPs) through the application of search engine optimization tactics of SEO, content marketing, social media engagement, and other digital and offline efforts [5]. Previously, companies marketed their business or products in traditional ways such as on television, radio, and newspapers now, it can be done online, and one of them is through the website.

The website marketing strategy is very promising because, with many people who are already using the internet today and can even use it every day, there is great potential if a company's website can be seen by more people, especially when compared to traditional marketing methods. To maximize the website marketing, various strategies can be used, one of which is performing and optimizing SEO (Search Engine Optimization) strategies. SEO optimization aims to place the website on the first page or top in search results based on targeted keywords [2]. SEO is a strategy for website marketing that is done by optimizing search engines such as Google. SEO optimizes website search, so internet users can easily find the website. SEO is also expected to develop marketing and generate increased sales of a product [6].

One aspect that can optimize an SEO strategy is the website's speed. In his article, Evan Digital (2020) said that website loading is an important factor in implementing On-Page SEO. Loading a website sooner or later is very significant for marketing campaigns. Even if you have prepared interesting and quality content, it will be useless if the website is slow.

The technology of a website can affect the website's marketing strategy. PWA is a technology that can help optimize SEO and the speed of a website because PWA uses a Service Worker service to manage the cache usage of a website. A company that uses PWA technology on its website is BMW.

Although PWA has many advantages, many companies still use standard website technology that has not implemented the concept of PWA technology on their websites. An example is one of the competitors, BMW, namely Mercedes-Benz. As Suryadi Kurniawan (2019) said that a website that has implemented PWA technology could be seen through its active service worker status in the inspect section of the Google Chrome browser. It does not appear on the website of Mercedes-Benz. With the background described above, it is necessary to examine the comparison of websites that use PWA technology and regular websites, especially those that affect website marketing strategies.

II. METHODOLOGY

The research method used is a qualitative research method with a descriptive approach. The first stage is to conduct a needs analysis. All materials and tools needed will be prepared by the tests to be carried out. The required software is Google Chrome browser as the primary media for testing and Google spreadsheet to tidy up and save test result data. Then the hardware used in this study is a laptop and a smartphone. Several tools are needed to compare website performance, namely GTMetrix, which is used to test aspects of Onload Time and Fully Loaded Time, and Network and Application Chrome Developer Tools to test parts of Offline Mode. Lighthouse Chrome Developer Tools to test SEO Friendly and Installable aspects.

GTMetrix is a website-based tool that is useful for testing a website to determine the performance of the website viewed from several aspects to be analyzed. Chrome Developer Tools is a suite of website development tools that integrates directly into the Google Chrome browser. These tools can be used to edit web pages in real time, diagnose problems more quickly, and build better websites faster. This set of tools can be accessed and used by anyone even non-website developers. The tools from Chrome Developer Tools that will be used for website testing in this research are Network, Application, and Lighthouse.

The second stage is testing websites that use PWA technology with regular websites with measured aspects, namely SEO Friendly, Onload Time, Fully Loaded Time, Offline Mode, and Installable. Onload Time is an application's speed in completing all its processes when accessed. All other needs, such as photos and videos, have been downloaded. Meanwhile, Fully Loaded Time is almost the same as Onload Time. Still, the calculation process is a little longer because there is an additional process to ensure that no more activities require a working network [4].

The third stage is the results and analysis of the test. At this stage, all the test results will be attached and discussed in the next chapter.

III. RESULTS AND DISCUSSION

A. Testing Result

The following are the results of testing all predetermined performance aspects from two different types of websites, namely the BMW website for the PWA website type and the Mercedes-Benz website for the regular website type.

1. SEO Friendly Aspect

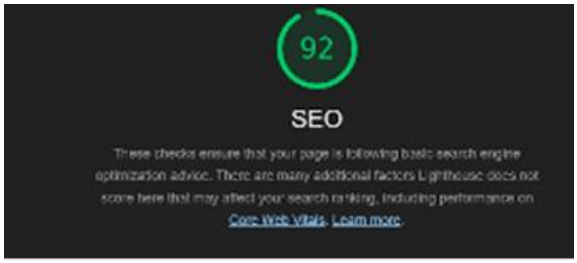

Figure 1. Results of Testing SEO Friendly Aspects on the BMW Website

Figure 2. Testing Results for SEO Friendly Aspects on the Mercy Website

2. Onload Time Aspect and Fully Loaded Time

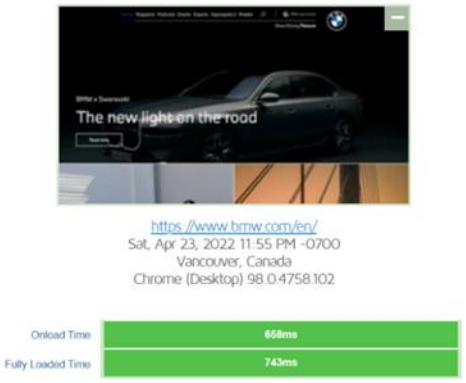

Figure 3. Testing Results of Onload Time and Fully Loaded Time on the BMW Website

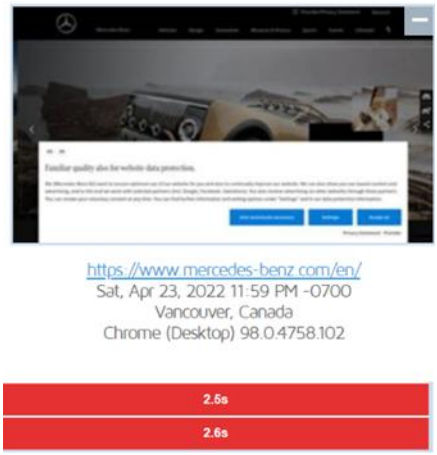

Figure 4. Results of Testing Aspects of Onload Time and Fully Loaded Time on the Mercy Website

3. Offline Mode Aspect

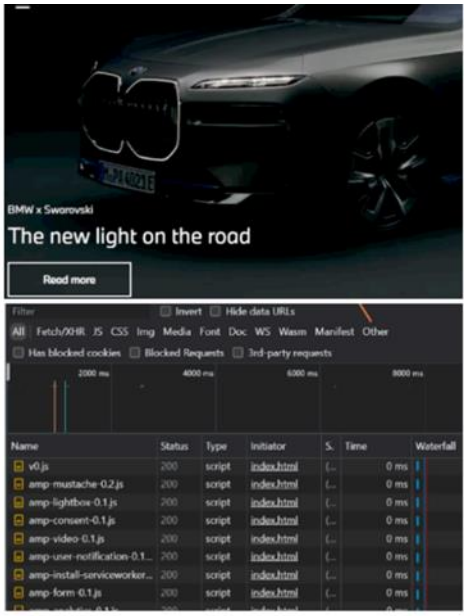

Figure 5. Results of Testing Aspects of Offline Mode on the BMW Website

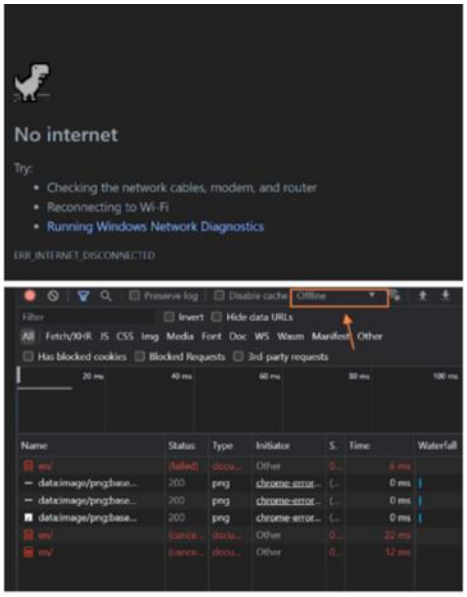

Figure 6. Testing Results of the Offline Mode Aspect on the Mercy Website

4. Installable Aspect

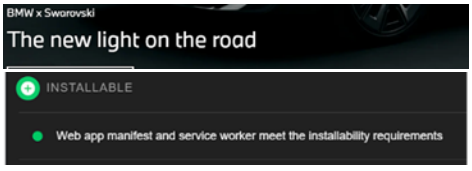

Figure 7. Results of Installable Aspect Tests on the BMW Website

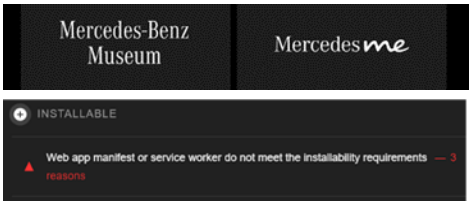

Figure 8. Testing Results for Installable Aspects on the Mercy Website

The following is a comparison table of all performance aspect testing results on the BMW and Mercedes-Benz websites:

Table 1. Comparison of Test Results of All Performance Aspects

Website	Jenis Website	SEO Friendly	Onload Time	Fully Loaded Time	Offline Mode	Installable
BMW	PWA	92	658 ms	743 ms	✓	✓
Mercedez Benz	Reguler	87	2.5 s	2.6 s	x	x

B. Analysis of Testing Result

The first aspect is SEO Friendly. Based on the test results, it can be seen that the PWA website, namely the website from BMW, has a higher SEO friendliness value of 92, while the Mercy website, which is still a regular website, has a value of 87. Good SEO from a website usually affects a good user experience; in this case, the PWA can support this with its service worker architecture. PWA will be helpful for website marketing strategies because it can optimize SEO friendliness more than regular websites.

The second and third aspects are Onload Time and Fully Loaded Time. Speed is one of the things that is very much an advantage of a PWA website. This is further proven in this study by the BMW website, which has a higher value than the Mercy website in two aspects related to speed, namely Onload Time and Fully Loaded Time. The BMW website has an Onload Time speed of 658 ms and a Fully Loaded Time of 743 ms, while the Mercy website has an Onload Time speed of 2.5 s and a Fully Loaded Time of 2.6 s. Therefore, PWA websites will be helpful to help with website marketing strategies by providing a better user experience than regular websites in terms of speed.

CONCLUSION

Based on the tests that have been carried out, it can be concluded that websites that use PWA technology have advantages in terms of performance, compared to regular websites, especially in website marketing strategies. PWA technology provides a better user experience with a higher value of SEO friendliness.

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