SATISFACTION ANALYSIS OF RESPONSIVE WEB DESIGN (RWD) USING PIECES METHOD IN YOBAGI: TECHNOLOGY PLATFORM BASED ON SOCIALPRENEURSHIP

Dwi Yuny Sylfania[1], Rendy Rian Chrisna Putra[2], Fransiskus Panca Juniawan[3*)]

Teknik Informatika[1,2]
Institut Sains dan Bisnis Atma Luhur [1,2]
www.atmaluhur.ac.id [1,2]

Teknologi Informasi[3]
Universitas Bangka Belitung[3]
www.ubb.ac.id[3]
dysylfania@atmaluhur.ac.id[1], rendyriancp@atmaluhur.ac.id[2], fransiskuspj@ubb.ac.id[3*)]

Abstract— *The Covid-19 pandemic has had a huge impact on society. There have been layoffs for some people, which has an impact on their economy, which is getting worse. Another impact was felt by MSMEs where their transactions also decreased. Yobagi is proposed to overcome this problem by becoming a social entrepreneurship-based media platform that becomes an intermediary media for anyone who has the desire to share their skills, knowledge, and experiences. Yobagi users access the system from various devices, namely mobile and desktop. For this reason, the Responsive Web Design (RWD) function is applied to make Yobagi perform optimally according to the device used by the user. This study aims to analyze the performance of Yobagi's Responsive Web Design system as measured by the PIECES method from the user's point of view and PageSpeed Insight to get RWD performance. The results of the test show that the user is very satisfied with the RWD performance with a score of 6.380 and good for Performance with a score of 83.55.*

Keywords: *Socialpreneurship, Yobagi, Responsive Web Design, PageSpeed Insights, PIECES*

INTRODUCTION

Covid-19 become the biggest factor in the decline in the community's economy (Oeliestina, 2021). One of the reasons is because there are many workers who get laid off from the company where they work (Indayani & Hartono, 2020). This has an impact on increasing the unemployment rate nationally. The people of Pangkalpinang also experienced these problems (Bangka Belitung, 2022). Likewise, Micro, Small, and Medium Enterprises (MSMEs) are also affected by the pandemic. The important role of MSMEs in the national economy is the reason the Government continues to encourage MSMEs to be rise from economic downturn (Bahtiar, 2021). One of the challenges for MSMEs to be able to rise is related to incentives where not all MSMEs can receive these incentives. In addition, these incentives do not necessarily guarantee the sustainability of MSME businesses. Therefore, Socialpreneurship can be a solution to reduce the gap in the business world with cooperation and mutual help among others (Cakranegara et al., 2020). The socialpreneurship model is a form of entrepreneurship that has the aim of helping the community, which can cover all fields (Sofia, 2017). In addition, the advantage of socialpreneurship is that it can become a business activity by involving innovative resources in making social change, especially young people (Safitri, 2020). For this reason, more social awareness is needed that can support the sustainability of the MSMEs economy and the community.

The socialpreneurship model has been widely applied to various conditions, one of them, which is to support the empowerment of productive villages with a socialpreneur approach with the aim of obtaining additional income for the community (Lathifah & Herlina, 2021). Another example is its application to the tourism sector in the city of Tasikmalaya which can be concluded to be a solution to the pandemic in overcoming community economic problems (Cakranegara et al., 2020).

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Socialpreneurship has also been implemented to help the MSMEs economy. Tirta Alam Bumi Bertuah Foundation has successfully implemented entrepreneurship by involving young people in its implementation (Safitri, 2020). Makassar City MSMEs also apply socialpreneurship in their research (Verawaty & Lutfi, 2020).

Based on the spirit of socialpreneurship, Yobagi is proposed to be one of the solutions to solve these problems. Yobagi has some features, likely, the MSME market, Procurement of Goods from MSMEs, and also sharing activities from the community for the community. Yobagi is developed on a web-based system by implementing a Responsive Web Design (RWD) interface for desktop and also mobile users. RWD is used so that users can be more comfortable in accessing the website using a mobile device (Novianty, 2017).

A website must be able to display the website page responsively following the display settings of the access device so that it can display the website according to the device settings. This feature is called Responsive Web Design (RWD) which can be applied to mobile-based devices, such as smartphones, tablets, and netbooks (Pamungkas et al., 2019). Yobagi development has implemented a responsive web function as a solution for users who use mobile devices. To analyze the Yobagi system, a user satisfaction analysis was carried out using the PIECES framework method which can facilitate system evaluation (Nur Fauzi et al., 2022). Previous research analyzed the influence of RWD on website quality using the PIECES method. From the results of the analysis, it is known that the lack of RWD is in the domain of performance and economics (Pamungkas et al., 2019). Another study conducted an analysis of user satisfaction using the PIECES method with the result that on average the system built had very satisfactory results with a score of 4.22 (Syafii et al., 2022). The PIECES method can also be used as a tool in the development of a system because it can describe how the role of the system in helping complete existing work with 6 aspects of PIECES analysis (Fikastiana Cahya et al., 2021). Other studies also use PIECES to analyze the database requirements and user interface of a system (Rahasomar & Hamdani, 2022). This study aims to analyze the performance of Responsive Web Design (RWD) of users using the PIECES method.

METHODOLOGY

This study uses a methodology consisting of several stages which are described as follows.

A. Literature Study

At this stage, a literature study is carried out where information and references needed for research are collected. The sources used are previous research, scientific articles, and primary library sources in the form of books.

B. Data Collecting

At this stage, the necessary data collection is carried out in conducting research. The data collected was in the form of a questionnaire which was distributed to find the value of Yobagi's user satisfaction in assessing Yobagi's Responsive Web Design (RWD). The questions given to users were then analyzed using the 7-point Likert scale rating criteria as shown in Table 1.

Table 1. Likert Scale

Scale	Description
7	Strongly Agree
6	Agree
5	Quite Agree
4	Netral
3	Quite Disagree
2	Disagree
1	Strongly Disagree

Questionnaires were given to 32 Yobagi users who are the leading MSMEs in Pangkalpinang.

C. Analysis of Data Collection Results

After completing data collection through questionnaires, the next step is to analyze it using the PIECES Framework method to obtain the average score of the questionnaire. The PIECES Framework method has seven levels of satisfaction which are described in Table 2.

Table 2. Satisfaction Level of PIECES Method

Criteria	Satisfaction Level	Grade
6 - 7	Very Satisfied	A
5 – 5,9	Satisfied	B
4 – 4,9	Quite Satisfied	C
3 – 3,9	Netral	D
2 – 2,9	Quite Dissatisfied	E
1 – 1,9	Dissatisfied	F
0 – 0,9	Very Dissatisfied	G

The indicators used in analyzing the level of user satisfaction are described in Table 3.

Table 3. PIECES Method Indicators

Indicator	Description
Performance	Knowing the performance of a system is good or not
Information	Knowing how much and clearly the information provided

Economics	Knowing whether the system is right to be applied in terms of the financing to be issued
Control	Knowing the extent of supervision and control carried out by the system
Efficiency	Knowing the level of efficiency and effectiveness of the system
Service	Knowing the services provided by the system to users

D. System Evaluation

The next stage is the evaluation of the system based on the results of the PIECES Framework method analysis to determine the highest score obtained. The evaluation also uses the PageSpeed Insights tool with the indicators shown in Table 4.

Table 4. PageSpeed Insights Indicators

Indicator	Description
First Contentful Paint (FCP)	An indicator used to calculate the time when a text or image is first shown to the user.
Time to Interactive (TTI)	An indicator used to calculate the time it takes for a ball-man application to become fully interactive.
Speed Index (SI)	An indicator that is used to calculate how fast an application page displays the overall content.
Total Blocking Time (TBT)	An indicator used to calculate the sum of all time periods between the FCP and TTI indicators.
Largest Contentful Paint (LCP)	An indicator used to calculate the time against the largest text or image to be displayed to the user.
Cumulative Layout Shift (CLS)	An indicator that is used to calculate the movement of the layout of a content that is visible to the user.

The pages tested by PageSpeed Insights tool are shown in Table 5.

Table 5. Pages of Yobagi

Code	Description
H1	Login Page
H2	Dashboard Page
H3	Product Page
H4	Eproc Page
H5	Activity Page
H6	Information Page
H7	About Us Page

RESULTS AND DISCUSSION

A. System Implementation

The Yobagi system was built using the Bootstrap framework with the aim of getting a user-friendly interface and having Responsive Web Design (RWD) features.

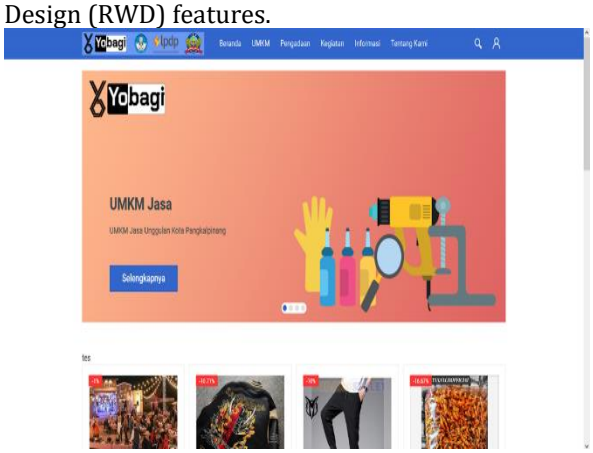

Figure 2. Display of Home page on Desktop

Figure 2 is a display of the home page accessed via browser on a computer desktop device.

Figure 3. Display of Dashboard Page on Smartphone

Figure 3 is display of the home page which is accessed through browser on a smartphone device.

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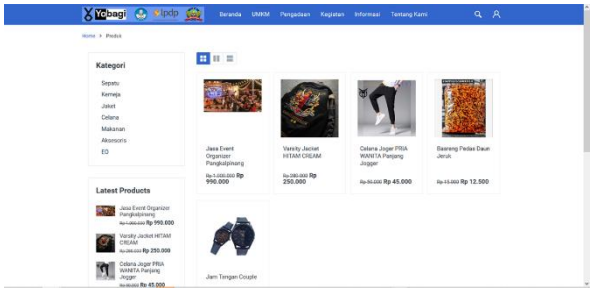

Figrue 4. Display of Product page on Desktop

Figure 4 is view of Product Page that displays all MSME products that are accessed from computer browser.

Figure 5. Display of Product page on Smartphone

Figure 5 is a display of the MSME Product Page which is accessed from a smartphone browser.

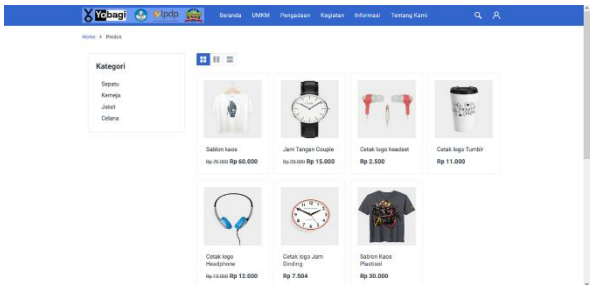

Figure 6. Display of Eproc page on Desktop

Figure 6 is E-procurement page that is accessed from a computer browser. On this page, MSMEs can display any products that the community can choose for their procurement activities.

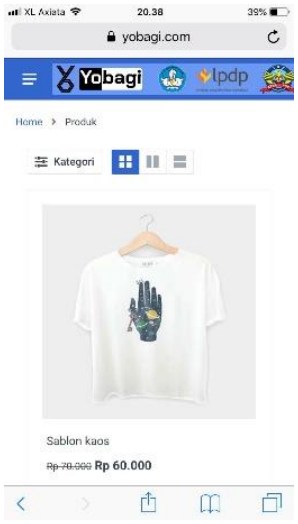

Figure 7. Display of Eproc page on Smartphone

Figure 7 is E-procurement page that is accessed from a smartphone browser.

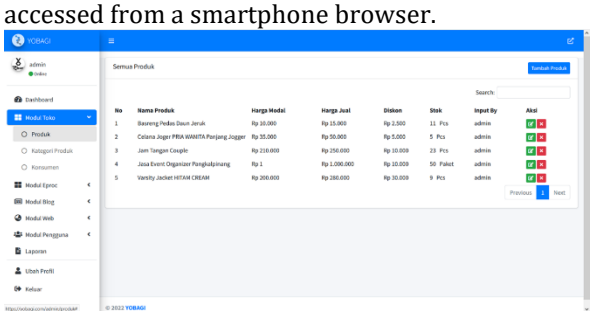

Figure 8. Display of Backend page on Desktop

Figure 8 which is a display of the backend page from the admin side which is accessed from a browser from desktop device.

Figure 9. Display of Backend page on Smartphone

Figure 9 which is a backend page view from the admin side which is accessed from a smartphone's browser.

B. Validity Tests

This test is carried out to find out whether there are items from questions that are not valid. The test is carried out by comparing the value of the *r* calculated questionnaire with the *r* table value. To get valid results, it must meet the conditions *r* count > *r* table. The value of *r* table at a significance of 0.05 with the number of instruments 26 items is 0.388. For *r* count can be seen in Table 6.

The results in Table 6 prove that all the calculated *r* items have a corrected item total value above 0.388, so that all variables of importance can be declared valid.

Table 6. Results of Validity Test

No.	*r* Count	*r* table	Description
1	0,571	0,388	Valid
2	0,487	0,388	Valid
3	0,417	0,388	Valid
4	0,619	0,388	Valid
5	0,478	0,388	Valid
6	0,465	0,388	Valid
7	0,392	0,388	Valid
8	0,438	0,388	Valid
9	0,448	0,388	Valid
10	0,467	0,388	Valid
11	0,579	0,388	Valid
12	0,554	0,388	Valid
13	0,426	0,388	Valid
14	0,446	0,388	Valid
15	0,412	0,388	Valid
16	0,395	0,388	Valid
17	0,441	0,388	Valid
18	0,497	0,388	Valid
19	0,553	0,388	Valid
20	0,397	0,388	Valid
21	0,46	0,388	Valid
22	0,413	0,388	Valid
23	0,457	0,388	Valid
24	0,625	0,388	Valid
25	0,533	0,388	Valid
26	0,659	0,388	Valid

C. Reliability Tests

So that the results of the questionnaire answers used in a study can be trusted as a data collection tool, it can be tested with reliability tests. In a questionnaire, it can be said to be reliable or trustworthy if the respondent's answers to the questionnaire questions are stable or consistent (Nur Fauzi et al., 2022). Measurement of reliability test is shown in the form of a number called the value of the reliability coefficient. If the value of the reliability coefficient is close to 1, then the questionnaire has high reliability. In general, the level of reliability can be considered sufficient in carrying out the test if it exceeds the value of 0.7 (Firmansyah, 2021).

Table 7. Case Processing Summary

		N	%
Cases	Valid	32	100.0
	Excluded[a]	0	.0
	Total	32	100.0

a. Listwise deletion based on all variables in the procedure.

Table 7 proves that the test results of respondents with a total of 32 respondents are valid with a value of 100%.

Table 8. Reliability Measurement Results

Cronbach's Alpha	*N of Items*
.855	26

Based on Table 8, it can be seen that the value of Cronbach's Alpha has a value of 0.855. Because the Cronbach's Alpha value is 0.855 > 0.349 *r* table, then this shows that the reliability testing of the results of the questionnaire can be accepted and trusted.

D. Analysis of PIECES Method

To perform PIECES method analysis, this study uses the PageSpeed Insights webtool with the interface shown in Figure 10.

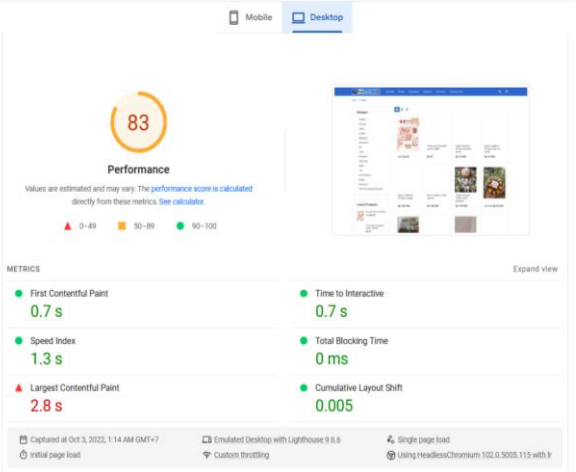

Figure 10. PageSpeed Insights

Table 9 describes the results of testing all Yobagi pages using the PageSpeed Insights webtool. There are six indicators used by PageSpeed Insights, namely First Contentful Paint, Time To Interactive,

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Speed Index, Total Blocking Time, Large Contentful Paint, and Cumula-tive Layout shifts.

From the table 9, it can be seen that the average score obtained by Yobagi has a value of 78.1 for mobile devices and 89 for desktop devices. The average indicators obtained are 2.58 seconds for FCP (First Contentful Paint) mobile devices and 0.7 seconds for desktop devices, 5.36 seconds for TTI (Time To Interactive) mobile devices and 0.7 seconds for desktop devices. Furthermore, there is the SI (Speed Index) indicator getting a value of 3.88 seconds for mobile devices and 1.38 seconds for desktop devices, 42.9 milliseconds for TBT (Total Blocking Time) for mobile devices and 0 milliseconds for desktop devices, 4, 76 seconds for LCP (Large Contentful Paint) mobile devices and 1.83 seconds for desktop devices, and the last 0.08 for CLS (Cumula-tive Layout Shift) mobile devices and 0.043 for desktop devices.

Table 9. PageSpeed Insights Results

Code	FCP		TTI		SI		TBT		LCP		CLS		Performance	
	M	D	M	D	M	D	M	D	M	D	M	D	M	D
H1	2,6	0,7	4,1	0,7	2,6	0,7	20	0	3,5	0,7	0,001	0,005	86	99
H2	2,6	0,7	5,5	0,7	11,7	4,8	100	0	11,5	2,9	0	0,005	58	74
H3	2,6	0,7	4,1	0,7	2,6	1,3	20	0	3,2	2,8	0	0,005	88	83
H4	2,6	0,7	5,5	0,7	2,6	0,7	30	0	3,8	1,2	0	0,005	82	97
H5	2,6	0,7	12	0,7	2,6	0,8	120	0	9,8	1,8	0,532	0,187	49	87
H6	2,6	0,7	3,8	0,7	2,6	0,7	10	0	2,7	2,6	0,004	0,089	91	84
H7	2,5	0,7	2,5	0,7	2,5	0,7	0	0	2,6	0,8	0	0,005	93	99
∑	2,58	0,7	5,36	0,7	3,88	1,38	42,9	0	4,76	1,83	0,08	0,043	78,1	89
	s	s	s	s	s	s	ms	ms	s	s				

From the results of the questionnaire data that has been distributed to 32 leading MSMEs actors in Pangkalpinang City, the results of measuring the level of user satisfaction with the Yobagi system have been obtained. The indicators used to analyze the level of user satisfaction using the PIECES Framework method. This method uses six indicators, namely, performance, information, economic, control, efficiency, and service. Calculation using equation 1.

$$Average\ Score = \frac{\sum RK}{n} \quad \text{.....(1)}$$

$$Average\ Score = \frac{6{,}531 + 6{,}469 + 6{,}156 + 6{,}375 + 6{,}344 + 6{,}406}{6}$$

$$Average\ Score = 6{,}380$$

From the calculation using equation one, the average score for each aspect in the PIECES method is obtained with a value of 6.380. Furthermore, by looking at the table, Yobagi can be declared Very Satisfied by the users.

CONCLUSION

From the results of the questionnaire analysis on the satisfaction of using RWD with the PIECES method on Yobagi, a score of 6.380 was obtained which can be stated as Very Satisfied. This means that Yobagi users are very satisfied with the performance of Yobagi's Responsive Web Design (RWD). Furthermore, from the Yobagi test on the PageSpeed Insights web tool, it has a Performance value of 78.1 for mobile devices and 89 for desktop devices which on average gets a score of 83.55. This means that the performance of all pages on the Yobagi system is in the good category.

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