

Analysis of the Community Website Usability Using Koohang's Model Based on Task Performance Comparison Result

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Abstract— Kaskus.co.id is one of the biggest community site which ranks 1st in Indonesia and 257 positions for the world in 2010. As time went on, many other similar sites with kaskus.co.id that is able to meet the needs of Indonesian social-networking communities such as forum.detik.com. This gives the impact of a decline in the number of access to the site kaskus.co.id and shift its rank. The results of the interview against the user community site kaskus.co.id is there are some shortcomings on the site, i.e. the process of posting the increasingly complicated, too many ads that cover the main content, and the difficulty of organizing pictures. The purpose of the research is to determine the value of usability of the community site kaskus.co.id as Indonesia's largest sites which ranks 1st in Indonesia in 2010. There are 22 indicators divided into 3 indicators for task performance and 19 indicators Koohang model. Task performance is used to find out the level of site performance directly while the indicator of Koohan's models used for qualitative questionnaire assessment. The determination of the value of usability of the site kaskus.co.id obtained using WEBUSE with merit conversion scale. The whole valuation WEBUSE respondents will be processed to earn points for each questionnaire indicators and the level usability of the community site kaskus.co.id. The results of this study in the form of value of usability of the sites, the analysis of the 19 indicators that affect the value of usability and indicators guide the creation of community sites. In this kaskus.co.id case, we obtained information that kaskus.co.id has a moderate level of usability.

Keywords— *Website community; Koohang's model; Usability; Task performance*

I. INTRODUCTION

The Internet is a huge network that connects computer networks either from business organizations, government organizations, and schools from all over the world directly and quickly [1]. Internet users in Indonesia is 55 million users in 2011, 63 million users by 2012, 71.2 million users by 2013 and 88.1 millions of users by 2014 [2]. This proves that the internet is increasingly sought after and needed in carrying out various activities in the field of trade, services, education, Government, and others. From 88.1 millions of users by 2014 there is 87.4% of communities use the internet to access social networking sites [2]. Kaskus.co.id is one of the biggest community site which ranks 1st in Indonesia and 257 positions

for the world in 2010 [3]. As time went on, many other similar sites with kaskus.co.id that is able to meet the needs of Indonesian social-networking communities such as forum detik.com. This gives the impact of a decline in the number of access to the site kaskus.co.id and shift its rank. The results of the interview against the user community site kaskus.co.id is there are some shortcomings on the site, i.e. the process of posting the increasingly complicated, too many ads that cover the main content, and the difficulty of organizing pictures.

In the beginning of the year 2016 kaskus.co.id occupies the position of the 8th regional Indonesia and 317 in the position. Ordering Web site ranking by the *World Web Ranking Alexa* based on number of users access to the site kaskus.co.id which recorded on database alexa.com [4]. This decline can be attributed to the value of usability of Kaskus site. ISO has set the usability as explanatory that a product can be used by a particular user to fulfill their goals with effective, efficient, and capable of providing customer satisfaction [5]. This study will use the task performance and questionnaire methods to measure the value of usability of the kaskus.co.id site. Task performance has become a function of knowledge, skills, attributes and abilities that are directed to support the role behavior [6] and task performance is influenced by cognitive processes [7]. Task performance method has 3 assessment indicators [8]. This method is used to find out the position of kaskus.co.id with other community site based on the performance of the respondent and to complete a detailed questionnaire that is a subjective measurement. On a questionnaire to be used 19 indicators based on Koohang which is able to provide usability for community sites and in accordance with the site to be examined [9]. This model is a form of the development of the ISO 9241-11 and Shackle model. The benefit of usability measurement by using task performance and Koohang's model is to know the level of usability of the kaskus.co.id site. Usability able to measure the extent to which a product or system effectively and efficiently meet the needs and specifications of the user [10]. Website usability is the level of effectiveness, efficiency and satisfaction due to website design [11]. There are several

methods that can be used to evaluate the usefulness of the website [12]. The first is based expert inspection method, second methods of testing by users and third methods is the cognitive processes associated with customer information on usability [13]. This research used third methods

The purpose of this study is to measure the usability of the kaskus.co.id site, analyze the 19 indicators of usability based on priority levels and 3 indicators of task performance as well as providing indicators guide to the creation of community site based on the results of the analysis of kaskus.co.id usability.

II. RESEARCH METHODS

A. Task performance

Task performance is a data capture phase was first performed by the selected respondents. Respondents will be given 5 tasks (T1-T5) that have been compiled and will see how the value of the performance of the 3 indicator related. There are 5 tasks with varying difficulty, and all such activities were recorded in order to get an accurate indicator data. Table I contains the task performance indicators. After collecting the data successfully, conducted a test of Kruskal-Wallis to know influence of the difficulty of the task, experience, and the type of site design against performance of the respondent.

B. Questionnaire

After doing a task performance, respondents are required to fill out a detailed questionnaire using 19 indicators [9]. Table 2 contains the indicators in the questionnaire. This questionnaire divided into 3 parts;

- Part 1. Contains the data to be filled in by the respondents, such as name, age, gender, and place of residence.
- Part 2. Assessment of usability based on the experiences of respondents.
- Part 3. Assessment of usability based on the expectations of the respondents.

Validity, reliability and normality test was used in this method. After the data passed the tests, data will be converted according to WEBUSE to get the value of usability for each indicators and total value of kaskus.co.id usability [14].

III. PARTICIPANTS AND PROCEDURE

The study was conducted against the kaskus.co.id in March – April 2016 in Semarang. Total respondents to be taken are 60 people which is divided into two categories namely the inexperienced ($P=1$) and experienced ($P>1$) in terms of access site kaskus.co.id. The selection of respondents is performed based on the criteria specified. The sampling technique used was purposive sampling. The procedure starts with determining study themes and problem identification, the study of literature as well as the type and source of data, the preparation tasks for task performance and a detailed

questionnaire, determining the criteria and the number of respondents, data collection, data processing and analysis.

After the data had been collected, the task performance data was tested with the Kruskal-Wallis test by (1).

$$H = \frac{12}{N(N+1)} \sum_{j=1}^k \frac{R_j^2}{n_j} - 3(N+1) \quad (1)$$

Description:

H = the value of the Kruskal-Wallis from the calculation results.

R_j = the number of rank from group/category to-j

n_j = the number of cases in the sample group/category to-j

k = the number of groups/categories

N = the total number of observations ($N = n1 + n2 + n3 + \dots + nk$)

TABLE I. TASK PERFORMANCE INDICATORS

Task Performance Indicators	Operational Definition
Task Complete (TC)	The task finishes on request.
Task Completion Time (TCT)	The time required to complete the task.
Number of clicks (NoC)	The number of clicks needed to complete the task

Source: [8]

TABLE II. QUESTIONNAIRE INDICATORS

Indicator	Operational Definition
Simplicity	It has a simple look
Comfort	Provide comfort for the users
User-friendliness	Easy to use
Control	Users can use and control the entire existing features on the site.
Navigability	The ease to access page
Load/access time	Time to load a page
Readability	Using language that is easy to understand
Adequacy/Task Match	Provide enough information
Link Visibility	The link clearly visible
High & readable color contrast	The use of contrasting colors that are indistinguishable
Appropriate font type and size	This type of font and size appropriate/suitable
Well organized	The site organized and well structured
Visual Presentation	Display the emphasis such as bold, italic and underline
Recognition	Able to identify important points
Information relevancy	Information in accordance with the terms of the search
Right to the point information	Concise and precise
Consistency	Consistency of page views, the use of terms, words, and actions link

Feedback	Feedback to the users of the site
Direction	Provides a way to use the site

Source: [9].

In the processing of the results, the entire data WEBUSE questionnaire which has been declared valid, reliable, and normal distributed, converted into conformity scale merit contained in Table III.

This is done to calculate the value of usability points each charge indicators will. For the calculation of points reusability is defined as follows (2):

$$x = \frac{\sum \text{Merit for all categories}}{N} \tag{2}$$

Where

N = the total number of observations ($N = n1 + n2 + \dots + nk$)

Following is Table IV that contains the value of the relationship points with usability level.

IV. FINDINGS AND DISCUSSION

A. The Limitations

The limitations in this study are; only addressing the site interface, research conducted at the University of Diponegoro environment to gain the same internet network power and the results of this study in the form of the indicator analysis of usability for kaskus.co.id as well as guide indicators to make a community site.

B. General Overview of Respondent

There are 60 respondents are divided into two groups, the experience (P) 1 access times ($P = 1$) and access more than 1 time ($P > 1$). The selection of respondents is performed based on the criteria specified. Table V contains the Characteristics of respondents obtained in this study.

TABLE III. SUITABILITY OF MERIT

Options	Merit
Strongly Disagree	0,00
Disagree	0,25
Neutral	0,50
Agree	0,75
Strongly Agree	1,00

Source: [14].

TABLE IV. QUESTIONNAIRE INDICATORS

Poin x	Usability Level
$0 \leq x \leq 0.2$	Very Bad

$0.2 < x \leq 0.4$	Bad
$0.4 < x \leq 0.6$	Medium
$0.6 < x \leq 0.8$	Good
$0.8 < x \leq 1.0$	Very Good

Source: [14].

C. Task performance

Based on the results of the data processing of 60 respondents, obtained the data comparison the average $P=1$ and $P>1$ Task Complete (TC), Task Completion Time (TCT) and the Number of Clicks (NoC). Fig. 1 contains the average results of the comparison between $P = 1$ and $P > 1$ TC, Fig. 2 for TCT and Fig. 3 for NoC

TABLE V. CHARACTERISTICS OF RESPONDENTS

Characteristics	Total (People)	Percentage
Gender		
• Male	38	63,33 %
• Female	22	36,67 %
The Experience of using the Internet		
• 3 – 5 years	2	3,33 %
• More than 5 years	58	96,67 %
Kaskus.co.id Access Experience		
• 1 time	30	50 %
• More than 1 time	30	50 %
Region of Origin		
• Java	45	75 %
• Sumatra	15	25 %

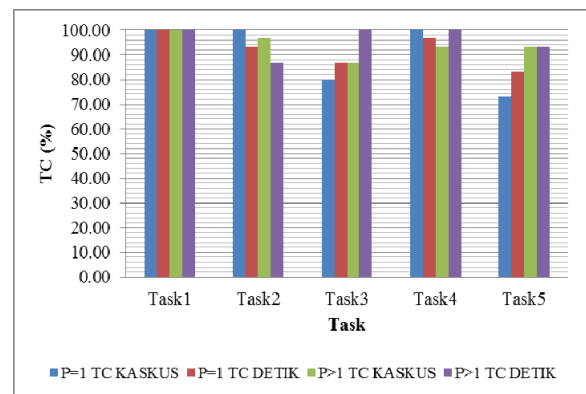
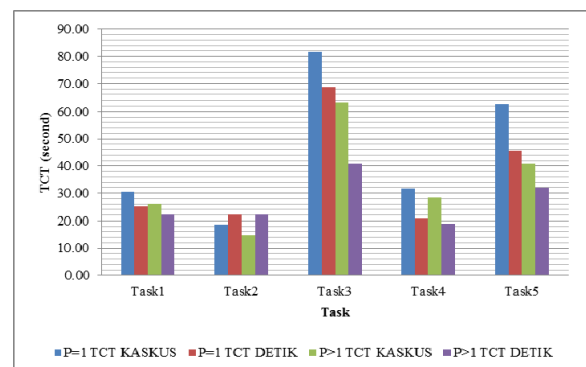


Fig. 1. TC Comparison



relevancy and comfort with a consecutive grades 0.908, 0.908, 0.875, 0.867 and 0.858.

Table VIII contains the order of the ranking of perceived and expectation of the groups of respondents $P>1$.

Based on Table VIII and earned information as follows:

- 5 indicators of $P > 1$ worst value perceived namely, link visibility, user-friendliness, navigability, simplicity, right to the point information with consecutive values 0.533, 0.550, 0.567 0.575, and 0.575.
- 5 indicators of $P > 1$ expectation with best value namely, user-friendliness, comfort, load/access time, information relevancy, simplicity with a consecutive grades 0.875, 0.858, 0.858, 0.858 and 0.850.

Fig. 2. TCT Comparison

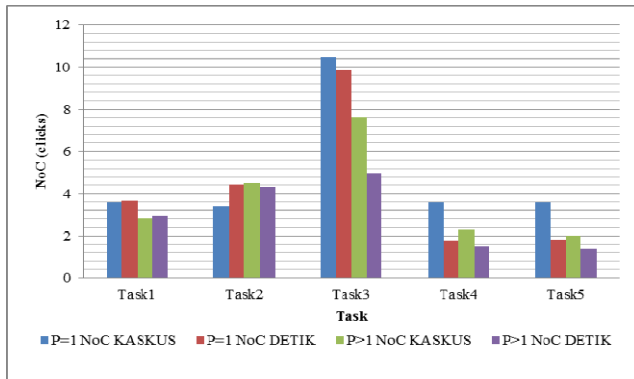


Fig. 3. NoC Comparison

Based on Fig, 1, 2 and 3 gained an average total comparison between Kaskus and Detik. Table VI contains the results of the average comparison of Kaskus and Detik for $P=1$ and $P>1$.

TABLE VI. AVERAGE COMPARISON RESULT

Indicators	P=1		P>1	
	KASKUS	DETIK	KASKUS	DETIK
TC (%)	90.67	92.00	94.00	96.00
TCT (seconds)	45.07	36.51	34.62	27.21
NoC (clicks)	5	4	4	3

D. Questionnaire

A detailed questionnaire that was given to respondents is divided into two types: perceived and expectation. The perceived questionnaire is based on the experience of respondents during task performance, whereas expectation questionnaire is based on the desire of the respondent against the very charge indicators will. The entire data questionnaire results obtained from respondents Group $P=1$ and $P>1$ are converted into merit scale. Then processed by (2) to get the values of each indicator and the total value of usability. This conversion phase done after the questionnaire data passed the validation test, reliability test, and normality test.

The following will be shown the comparison between the perceived and expectation of Group $P = 1$ in Fig. 4. Fig. 5 contains a comparison between the perceptions and expectations of $P > 1$. Table VII contains the order of the ranking of perceived and expectation of the groups of respondents $P=1$.

Based on Table VII were obtained the following information:

- 5 indicators of $P = 1$ worst value perceived, namely simplicity, user-friendliness, comfort, navigability and high & readable color contrast with consecutive values 0.408, 0.442, 0.467, 0.475 and 0.525.
- 5 indicators of $P = 1$ expectations with best value, namely simplicity, user-friendliness, recognition, information

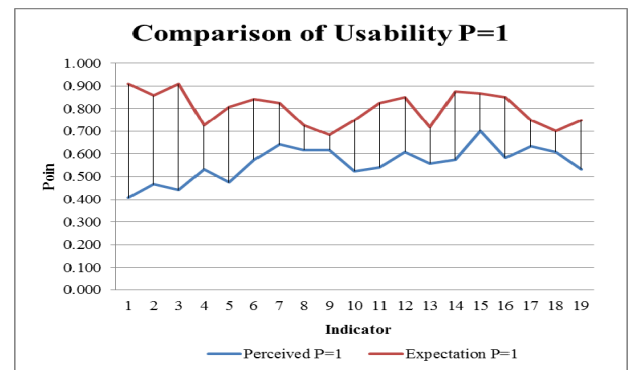


Fig. 4. Comparison of Usability $P=1$

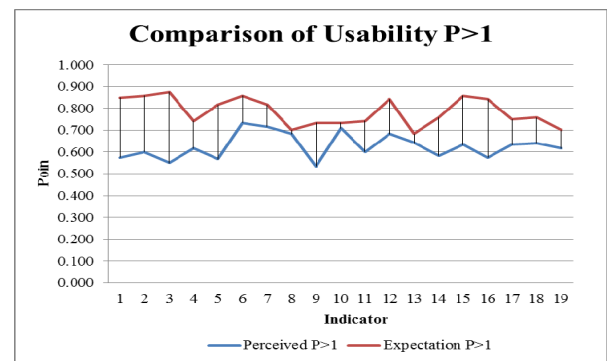


Fig. 5. Comparison of Usability $P > 1$

TABLE VII. $P=1$ INDICATORS RANK

Rank	Perceived		Expectation	
	Indicator	Usability Point	Indicator	Usability Point
1	X1	0.408	X1	0.908
2	X3	0.442	X3	0.908
3	X2	0.467	X14	0.875
4	X5	0.475	X15	0.867
5	X10	0.525	X2	0.858
6	X4	0.533	X12	0.850
7	X19	0.533	X16	0.850
8	X11	0.542	X6	0.842
9	X13	0.558	X7	0.825
10	X6	0.575	X11	0.825
11	X14	0.575	X5	0.808
12	X16	0.583	X10	0.750
13	X12	0.608	X17	0.750
14	X18	0.608	X19	0.750
15	X8	0.617	X4	0.725
16	X9	0.617	X8	0.725
17	X17	0.633	X13	0.717
18	X7	0.642	X18	0.700
19	X15	0.700	X9	0.683

TABLE VIII. $P > 1$ INDICATORS RANK

Rank	Perceived		Expectation	
	Indicator	Usability Point	Indicator	Usability Point
1	X9	0.533	X3	0.875
2	X3	0.550	X2	0.858
3	X5	0.567	X6	0.858
4	X1	0.575	X15	0.858
5	X16	0.575	X1	0.850
6	X14	0.583	X12	0.842
7	X2	0.600	X16	0.842
8	X11	0.600	X5	0.817
9	X4	0.617	X7	0.817
10	X19	0.617	X14	0.758
11	X15	0.633	X18	0.758
12	X17	0.633	X17	0.750

13	X18	0.642	X4	0.742
14	X13	0.642	X11	0.742
15	X8	0.683	X9	0.733
16	X12	0.683	X10	0.733
17	X10	0.708	X8	0.700
18	X7	0.717	X19	0.700
19	X6	0.733	X13	0.683

After acquiring the entire indicator value $P = 1$ and $P > 1$ for perception and expectation, the GAP should be noted by way of looking for a difference between the perception and expectation. The rankings are compiled from the perception of the value of the most low-high. It aims to find out the problematic indicators so as to make kaskus.co.id has a value of reusability. The order of the ranking compiled from the most value expectations high-low with the purpose of knowing the indicators considered important by respondents $P = 1$ or $P > 1$ to build a great community site. The GAP is largest by value and become an additional discussion.

Table IX contains the order of the rankings GAP for $P=1$ and $P > 1$. The biggest GAP for $P = 1$ is simplicity with a value of 0.500 and user-friendliness for $P > 1$ with 0.325.

E. The Total Value of Kaskus.co.id Usability

The final calculation that obtained from questionnaire data processing is total value of usability. This value is obtained from the average of the entire valid indicators of a group of respondents with experience one times and access more than one time. The perceived questionnaire type was used for the total value of usability because it was filled by the respondent based on what respondents feel when doing a task performance. The total of kaskus.co.id usability point is 0.593 and included into medium level category. The designation is taken based on table IV.

TABLE IX. THE ORDER GAP FOR $P=1$ AND $P > 1$

Indicator	GAP $P=1$	Indicator	GAP $P > 1$
X1	0,500	X3	0,325
X3	0,467	X1	0,275
X2	0,392	X16	0,267
X5	0,333	X2	0,258
X14	0,300	X5	0,250
X11	0,283	X15	0,225
X6	0,267	X9	0,200
X16	0,267	X14	0,175
X12	0,242	X12	0,158
X10	0,225	X11	0,142
X19	0,217	X4	0,125
X4	0,192	X6	0,125

X7	0,183	X17	0,117
X15	0,167	X18	0,117
X13	0,158	X7	0,100
X17	0,117	X19	0,083
X8	0,108	X13	0,041
X18	0,092	X10	0,025
X9	0,067	X8	0,017

V. CONCLUSION

After processing the data, the conclusions on the study is the value of the site usability for $P = 1$ is 0.560 (medium) and $P > 1$ is 0.626 (good). The total average of kaskus.co.id usability value is 0.593. The value of 0.593 included into the range $0.2 \leq x < 0.6$, which belongs to the category of medium. In the most influential indicators analysis of kaskus usability, retrieved seven combined results indicators, namely simplicity, user-friendliness, comfort, navigability, link visibility, high and readable color contrast, and right to the point information. The whole of these indicators is closely related with the end result of Kaskus task performance value worse than Detik sites. Guide indicators for making community site obtained from the result of expectation questionnaire. There are six ranks highest i.e., user-friendliness, simplicity, recognition, information relevancy, comfort and load/access time. So, in making a community site community, these indicators should be six of reference so that the site can run well and able to be operated by new users or old users. Based on the highest GAP analysis, things that can be done to minimize the GAP simplicity $P = 1$ is reduced ads or grouping of ads in one lane to the right or left column, save the emoticons into flash so that only elements will be loaded when clicked by the user, removes the column interface which has a number of access/click far below target. For user-friendliness $P > 1$ it is better if captcha systems were removed and replaced with a developed browser extension to detect the use of computer-bot, so the user will not be able to enter into Kaskus and spamming the comment page. In future, we will be conducting the same study on all website types starting from e-learning, e-commerce, e-business, etc.

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