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International Conference on
Engineering and Technology Development

3rd ICETD 2014

28, 29 October 2014, Bandar Lampung, Indonesia

Hosted By :
Faculty of Engineering and Faculty of Computer Science
Bandar Lampung University, Indonesia

UBL In coorporation with :

THE UNIVERSITY OF KITAKYUSHU

INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

3rd ICETD 2014

The Third International Conference On Engineering And Technology Development

28 -29 October2014
Bandar Lampung University (UBL)
Lampung, Indonesia

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Organized by:

PREFACE

The Activities of the International Conference is in line and very appropriate with the vision and mission of Bandar Lampung University (UBL) to promote training and education as well as research in these areas.

On behalf of the Second International Conference on Engineering and Technology Development (3rd ICETD 2014) organizing committee, we are very pleased with the very good response especially from the keynote speaker and from the participans. It is noteworthy to point out that about 80 technical papers were received for this conference.

The participants of the conference come from many well known universities, among others : University Kebangsaan Malaysia – Malaysia, IEEE – Indonesia, Institut Teknologi sepuluh November – Indonesia, Surya Institute – Indonesia, International Islamic University – Malaysia, STMIK Mitra Lampung – lampung, Bandung Institut of Technology – Bandung, Lecture of The Malahayati University, B2TP – BPPT Researcher – lampung, University of Kitakyushu – Japan, Gadjah Mada University – Indonesia, Universitas Malahayati – Lampung, Lampung University – lampung,

I would like to express my deepest gratitude to the International Advisory Board members, sponsor and also to all keynote speakers and all participants. I am also gratefull to all organizing committee and all of the reviewers who contribute to the high standard of the conference. Also I would like to express my deepest gratitude to the Rector of Bandar Lampung University (UBL) who give us endless support to these activities, so that the conference can be administrated on time

Bandar Lampung, 22 October 2014

Mustofa Usman, Ph.D
3rd ICETD Chairman

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Portal Website Analysis Using ISO / IEC 9126-4 Metric Effectiveness

(Case Study Indonesia Wi-Fi Portal Website)

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Abstract

According to the increasing of human necessity, Development of technology have to bring the same increasing in order to support and facilitate every activity in all sorts of the human life. Internet is the one of the real outcome from the development of technology. Indonesia Wi-Fi is a public internet network server based on Wi-Fi/Hotspot technology developed by TELKOM Group and other related operator to the TELKOM enterprise. Portal website of Indonesia Wi-Fi is used as a portal for user to connect the internet network. In order to develop this portal website for the better service, a correct and pledge information. The quality in use of this portal website have to be evaluated. One of the standards can be used to evaluate this portal website is ISO/IEC 9126-4 Effectiveness metrics. ISO/IEC 9126-4 Effectiveness metrics is an international standard published by ISO (International Organisation for Standardisation) and IEC (International Electro-technical Commission) to measure the quality in use of software in effectiveness aspect. In this research, portal website of Indonesia Wi-Fi measured using ISO/IEC 9126-4 Effectiveness metrics. The measurement result show score 1 in Task Effectiveness metric, score 1 in Task Completion metric and score 1 in Error Frequency metric. The results prove that portal website of Indonesia Wi-Fi is good quality using ISO/IEC 9126-4 Effectiveness metrics measurement.

Keywords *: ISO/IEC 9126-4, effectiveness metrics, portal website, Indonesia Wi-Fi*

I. INTRODUCTION

According to the increasing of human necessity, Development of technology have to bring the same increasing in order to support and facilitate every activity in all sorts of the human life. Internet is the one of the real outcome from the development of technology. One of the ways to present information from the internet networks is using website. Website is an application contain multimedia documents (text, image, sound, animation, video) using HTTP (Hyper Text Transfer Protocol) protocol and can be accessed using software called browser. [1]

Website have various kind, one of them is portal website. portal website is a website designed as a portal for user to connect the World Wide Web (WWW). [4]

Indonesia Wi-Fi is a public internet network server based on Wi-Fi/Hotspot technology developed by TELKOM Group and other related operator to the TELKOM enterprise. Portal website of Indonesia Wi-Fi is used as a portal for user to connect the internet network.

In order to develop this portal website for the better service, a correct and pledge information. The quality in use of this portal website have to be evaluated. One of the standards can be used to evaluate this portal website is ISO/IEC 9126-4 Effectiveness metrics.

ISO/IEC 9126-4 Effectiveness metrics is an international standard published by ISO (International Organisation for Standardisation) and IEC (International Electro-technical Commission) to measure the quality in use of software in effectiveness aspect. There are 3 metric in Effectiveness metrics, the metrics are Task Effectiveness, Task Completion and Error Frequency.

In this research, portal website of Indonesia Wi-Fi measured using ISO/IEC 9126-4 Effectiveness metrics. With that result, it can be used in order to answer about question of portal website of Indonesia Wi-Fi quality measurement.

II. LITERATURE REVIEW

1. Research journal by Dewi Kemala Sari (2000) "Evaluation of Using Chem-is-try.org Sites to Comply Information Necessity by Student of Chemical Department Mathematics and Science Faculty University of North Sumatera".

In this research prove that a good quality website can be measured in 5 indicator that cover aspect of functionality which appropriate with the goal, interesting design, appropriate content to users need, originality of the web which cannot be duplicated by other web, professionalism and effectiveness.

2. Research journal by Iman Sanjaya (2013) "Website of Department Computer and Information Service Quality Measurement Using WebQual 4.0 Method"

In this research explain that WebQual 3.0 results analysis bring to 3 dimension identification from a website quality, that include quality in use, information quality and service interaction quality. Quality in use is quality which related to

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the website design, for the example interface design, easy navigation and interface to user. Information quality is the quality of website content, correct content to user need as accuracy, format and relevance. Service interaction quality is service interaction which user feel when they learn more about a website, formed by credibility and emphatic, for example transaction and information security problem, product delivery, personalization and communication with website owner.

3. Research Journal by Tayyaba Nafees (2011) "Impact of User Satisfaction on Software Quality in Use"

The idea of user satisfaction is not new. But how important it is in quality in use is new and under description. Satisfying the customers is an essential element to staying in business in this modern world of global competition. Software companies satisfy and even delight their customers with the value of their software products and services to gain their loyalty and repeat business. Customer satisfaction is therefore a primary goal of process improvement of software quality. Most of the software companies give the more importance to user satisfaction rather than McCall other quality factors. So in this paper I argue about the quality in use and user satisfaction, its relationship and its importance.

III.METHODS

This research using a quantitative method. quantitative method is a method of research that make representation about problem which identified by researcher where research object explained from the researcher view. [11]

III.1 Data Collecting Method

Data collecting method used in this research is observation method. Observation method is human natural skill to observe using eye sense and supported by other sense. [11] Purpose of observation is to describe learned setting, related present activities, people related to the activities and problem mean from their perspective about activities they observe. [11]

III.2 Research Variable

Research Variable used in this research is based on ISO/IEC 9126-4 Effectiveness Metrics standard. Effectiveness metrics measure whether a task performed by users meets the needs of specified users to achieve specified goals with accuracy and completeness in specified context.

Observation was implemented to identification every possible task can performed by users in the portal website of Indonesia Wi-Fi and related to measurement variable of ISO/IEC 9126-4 Effectiveness Metrics.

Identified tasks tested by execute the tasks one by one. Executing process executed repeatedly 10 times on each task to make sure the accuracy.

The results of testing process are calculated and measured using contained metrics in ISO/IEC 9126-4 Effectiveness Metrics to identify scores on each metric.

Figure 1 : ISO/IEC 9126-4 Effectiveness Metrics

Figure 1 Show there are 3 metrics in Effectiveness Metrics, the following Metrics is:

1. **Task Effectiveness**
   This sub variable used to measure what proportion of the goals of the task is achieved correctly. The following measurement formula is :

$$M1 = |1 / \sum A_i|_1$$

A_i = Proportional value of each missing or incorrect component in the task output

$$0 <= M1 <= 1$$

The closer to 1.0 the better.

2. **Task Completion**
   This sub variable used to measure what proportion of the tasks are completed. The following measurement formula is :

$$X = A / B$$

A = number of tasks completed
B = total number of tasks attempted

$$0 <= X <= 1$$

The closer to 1.0 the better.

3. **Error Frequency**
   This sub variable used to measure error frequency of the tasks are attempted. The following measurement formula is :

$$X = A / T$$

A = number of error
T = time or number of tasks

$$0 <= X$$

The closer to 0 the better.

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III.3 Measurement Scale

This research not using any measurement scale. Because of the result of this measurement and calculation using ISO/IEC 9126-4 Effectiveness Metrics that present the result using score. If the measurement result presented in form of 'good' or 'bad' scale, it is just an assumption of the researcher according to the measurement results.

IV.   RESULTS AND DISCUSSION

IV.1 Procedure to Use Indonesia Wi-Fi Internet Network

The following pocedure to Use Indonesia Wi-Fi Internet Network:

a. User's device connect to Indonesia Wi-Fi network, Main page is automatically displayed when the users first connected to Indonesia Wi-Fi.
b. User choose internet server operator (provider) to use.
c. User do log in process by enter the ID and password to connect the internet using Indonesia Wi-Fi network.
d. User connect to internet

IV.2 System Analysis

System analysis of the object in this research was did by direct observation to the portal website of Indonesia Wi-Fi. The following result of the observation :

a. Main Page

Main page is the first page that users meet. Main page is automatically displayed when the users first connected to Indonesia Wi-Fi. This page is where the users choose internet server operator (provider) to use.

b. Portal Page

Portal page is where the users do log in process by enter the ID and password to connect the internet using Indonesia Wi-Fi network.

c. Home Page

If the home page displayed it is mean that the user have been connect to the internet. Home page included by articles and log out feature if user want to disconnect with the internet. The following screenshots of Indonesia Wi-Fi portal website:

Figure 2: Portal Website Main Page Screenshot
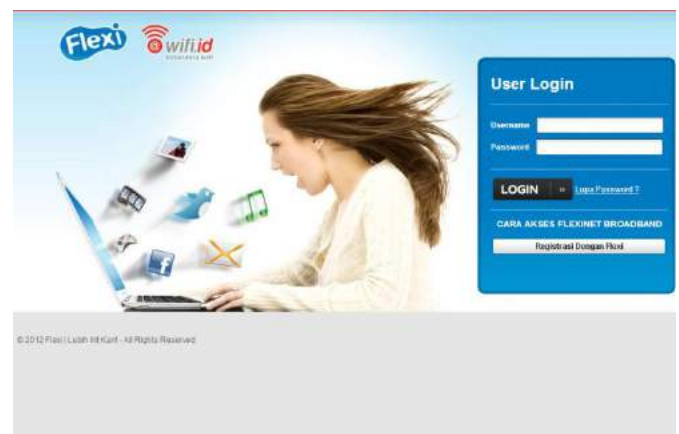

Figure 3: Flexy login page Screenshot

Figure 4: Speedy login page Screenshot

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Figure 5: Portal Website Home Page Screenshot

IV.2 Tasks Identification

In this phase, observation was implemented to identification every possible task can performed by users in the portal website of Indonesia Wi-Fi and related to measurement variable of ISO/IEC 9126-4 Effectiveness Metrics. The following identified tasks showed in Table 1.

No	Task Name	Task Output
1	Bahasa	Display changed to Indonesian
2	Chinese	Display changed to Chinese
3	English	Display changed to English
4	Francais	Display changed to Francis
5	Deutsch	Display changed to Germany
6	Italiano	Display changed to Italian
7	Espanol	Display changed to Spanish
8	Speedy Instant (SPIN)	Display Speedy Instant login page
9	Telkomsel	Display Telkomsel login page
10	Speedy	Display Speedy login page
11	Voucher	Display Voucher login page
12	Radnet	Display Radnet login page
13	Esia	Display Esia login page
14	Login Speedy Instant	If ID Accepted, Display home page
		If ID Denied, Show "Access Denied" message box
15	Login Telkomsel	If ID Accepted, Display home page
		If ID Denied, Show "Access Denied" message box
16	Login Speedy	If ID Accepted, Display home page
		If ID Denied, Show "Access Denied" message box
17	Login Voucher	If ID Accepted, Display home page
		If ID Denied, Show "Access Denied" message box
18	Login Radnet	If ID Accepted, Display home page
		If ID Denied, Show "Access Denied" message box
19	Login Esia	If ID Accepted, Display home page
		If ID Denied, Show "Access Denied" message box
20	Logout	Exit from home page

Table 1: Tasks Identification

IV.3 Assessment Result

In this phase, every identified tasks tested by execute the tasks one by one. Executing process executed repeatedly 10 times on each task to make sure the accuracy. The following results of testing process showed in Table 2.

No	Task Name	Missing/ Incorrect	Completed	Error
1	Bahasa	No	Yes	No
2	Chinese	No	Yes	No
3	English	No	Yes	No
4	Francais	No	Yes	No
5	Deutsch	No	Yes	No
6	Italiano	No	Yes	No
7	Espanol	No	Yes	No

8	Speedy Instant (SPIN)	No	Yes	No
9	Telkomsel	No	Yes	No
10	Speedy	No	Yes	No
11	Voucher	No	Yes	No
12	Radnet	No	Yes	No
13	Esia	No	Yes	No
14	Login Speedy Instant	No	Yes	No
15	Login Telkomsel	No	Yes	No
16	Login Speedy	No	Yes	No
17	Login Voucher	No	Yes	No
18	Login Radnet	No	Yes	No
19	Login Esia	No	Yes	No
20	Logout	No	Yes	No
Total		0	20	0

Table 2: Assessment Result

Executing process of assessment executed repeatedly 10 times on each task and show the same results that showed in Table 2.

IV.3 Measurement

In this phase, the results of testing process are calculated and measured using contained metrics in ISO/IEC 9126-4 Effectiveness Metrics.

a. Task Effectiveness

Identified :
$A_i = 0/20$
$A_i = 0$

Calculation :
$M1 = |1 / 0|_1$
$M1 = 1$

b. Task Completion

Identified :
$A = 20$
$B = 20$

Calculation :
$X = 20 / 20$
$X = 1$

c. Error Frequency

Identified :
$A = 0$
$T = 20$

Calculation :
$X = 0 / 20$
$X = 0$

V. CONCLUSIONS

V.1 Conclusions

The results of present study reveal that:

a. The result of the Task Effectiveness Metric in this research show score 1. According to ISO/IEC 9126-4 Effectiveness Metrics Task Effectiveness metric, score that closer to 1.0 is better. In other word, portal website of Indonesia Wi-Fi in Task Effectiveness Metric is good quality.

b. The result of the Task Completion Metric in this research show score 1. According to ISO/IEC 9126-4 Effectiveness Metrics Task Completion metric, score that closer to 1.0 is better. In other word, portal website of Indonesia Wi-Fi in Task Completion Metric is good quality.

c. The result of the Error Frequency Metric in this research show score 0. According to ISO/IEC 9126-4 Effectiveness Metrics Error Frequency metric, score that closer to 0 is better. In other word, portal website of Indonesia Wi-Fi in Error Frequency Metric is good quality.

d. According to this research about Indonesia Wi-Fi portal website analysis using ISO/IEC 9126-4 Effectiveness Metrics, all metrics contained in Effectiveness Metrics show good score. The conclusion is portal website of Indonesia Wi-Fi in Effectiveness is good quality using ISO/IEC 9126-4 Effectiveness Metrics Standard.

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