Evaluation Of The Quality Of The Online Sales Application Of Light Steel Material Using The Mccall Quality Factors Method

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Abstract.

We are unable to survive without technology in today's entirely digital environment. Especially when managing corporate activities that depend on technology, hardware or software can be used in the technology. This business manufactures items out of mild steel. The prioritized products include roof trusses, building frame columns, and metal roof tiles. This business uses soft steel elements to provide three applications to support online sales. But because the organization has yet to conduct any testing, there are still a lot of faults or problems, making it necessary to manually assess the mobile application until a scenario report is generated and the testing findings are implemented. Scenario photographs and error sections make up the data that was collected. Based on this, the application's quality has been assessed to determine the correctness, comprehensiveness, and standard of the software used in the Metalmens Application. However, the system's quality still needs to be discovered. The McCall method is used as the measurement technique in this investigation. According to the McCall Method results, the quality of Metalmen Applications is solid, scoring 84%, with dependability scoring 84% and reliability scoring 62%. Dependability is the best indicator, scoring 84%.

Keywords: *McCall's method, online sales, measurement, and application quality.*

I. INTRODUCTION

We must use technology in our daily activities in a wholly digital environment [1]. Because each person spends an average of 6 hours and 42 minutes using online services [2]. Especially when managing corporate activities that depend on technology, hardware, or software can be used in the technology. Therefore, technology plays a sizable function in facilitating a company's activities. Due to this, various technologies, particularly applications, are now available to help businesses manage internal operations up to purchasing and selling commodities.A business involved in the production of mild steel products. Metal roof tiles, columns for frame buildings, and roof trusses are the products that are the focus. Multi Roof metal roof tiles were the first offering from this business, which has been around since 1994.

Additionally, an application must be present for a business activity to execute better [3]. Technology was required to enhance their effectiveness, mainly when COVID surfaced [4]. For the business to improve the application's functionality, this evaluation must be carried out to determine how much is required to know the quality of the software [5]. The approach for rating apps will be based on the McCall Factors manual testing method [6]. The author will offer advice for the Metalmen application if any flaws are found. This test serves as a way to look for mistakes and defects in the three applications. Software measurement is required so that, by taking into account any flaws identified by the measurement findings, the system development that will be carried out will better meet the requirements of the company's business operations [7].

II. METHODS

McCall

Not just from the product side but also from the side of the software development stage itself is a software seen. McCall's technique is one model used to explain the software quality factor or software quality [8]. The three essential viewpoints of this paradigm are product operation (the operational characteristics of software), product revision (the capacity of software to change), and product transition (the flexibility of software to adapt to new contexts) [9].

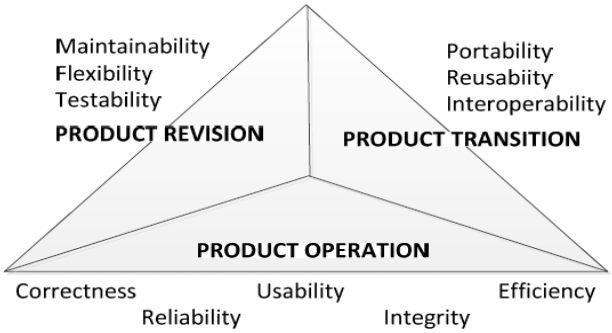

Fig 1. McCall's Model.

Product operations, product revisions, and product transitions are the three critical interrelated sections that McCall breaks down factors into. Correctness, Reliability, Efficiency, Integrity, and Usability are McCall's criteria relating to the operating characteristics of the program [10].

III. RESULT AND DISCUSSION

To improve the system, an information system measurement and assessment are required[11]. In the history of software engineering, software quality has been the subject of inquiry and analysis from generation to generation [12]. Beginning with what will be measured (whether a process or a product), whether software can be measured, the measurement's point of view, and how to choose the parameters for software quality assessment, the study [13] explores these topics.

1) Correctness

Correctness is one of five product operation criteria, and it has the requirement that the output match the user-supplied input query [14].

Table 1. Tabel *Correctness*

No	Scenario	Expected Result	Actual Result	End Result	Recommendation
1	User enters personal data in the form of name, email, and password when registering	A pop-up appears that the register was successful.	User enters personal data and it is Successfully stored in the database	Success	-
2	The user logs in with the data that has been inputted	User successfully logs in without ny problems	User login successfully	Success	-
3	User edits profile	The data entered by the user has changed ccording to what was inputted	The inputted data is Successfully entered into the database	Success	-
4	User changes Password	The user password was successfully changed.	A pop-up appears that the Password change was successful	Success	-
5	User searches for items	A list of items searched appears	List of items searched appears	Success	-

To determine whether the output produced by the application matches the input from the user, Table 1. is a scenario arrangement used.

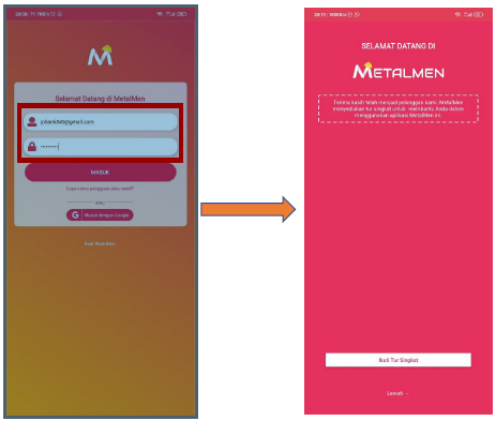

Fig 2. Results of Scenario 1 – Correctness

Figure 2 depicts the first situation, in which the user logs in using already registered information. And according to the findings of the testing done, the login was successful, as evidenced by the presence of the application's tutorial layer.

2) Integrity

Integrity has a role when it comes to securities. The application must be able to block access from unauthorized users where this is required [15].

Table 2. *Integrity*

No	Scenario	Expected Result	Actual Result	End Result	Recommendation
1	The user wants to log in using the email and password that was registered first.	Users get a verification code before entering the application for user data security.	The user has successfully logged in to the application without getting a verification code.	Error because the user enters the application without a verification code.	Generate a verification code when logging in
2	The user forgot the password.	The user changes the password.	Users can change their password.	Success	Allows the user to change the password

Table 2 contains a set of test scenarios used to determine whether this application has a security system and is secure.

3) Reliability

Providing an application's functionality incorrectly is related to reliability [16].

Table 3. Reliability

No	Scenario	Expected Result	Actual Result	End Result	Recommendation
1	The user selects the category function button	Enter the category page	The user has successfully entered the category page	Success	-
2	The user selects the suggested function key	Go to the recommended page	Go to the recommended page	Success	-
3	The user selects the famous button	Go to a popular page	The user has successfully entered the popular page	Success	-
4	The user selects the basket button	Enter the layer workshop list.	The user has successfully entered the workshop list ayer	Success	-
5	The user selects the dropdown menu button and uses all the functions in the dropdown menu	A list of function keys appears in the dropdown menu, and all function keys work properly	All function buttons appear in the dropdown menu, and all functions work properly	Success	-
6	User selects an item in the category section	Each category shows its items	Only a few items appear, namely "Mild steel, accessories, my floor, and vouchers."	Error, because not all items in the category is displayed.	To complete the contents of each item category.
7	User uses sort function after searching in search box	Product changes order when using sort function	Product arrangement Changes according to the sort function	Success	To add sort or filter functionality on the category page
8	User makes a Purchase transaction from start to check out	The transaction process went smoothly until the end	In transaction stage 5, there is an error, where the user is asked to log in again, even though the user has already logged in at the beginning when entering the application.	Error, the user is prompted to login	Improved the transaction section to avoid re-logins.

The functionality of the application scenario is described in Table 3, where the search feature or each button can operate adequately.

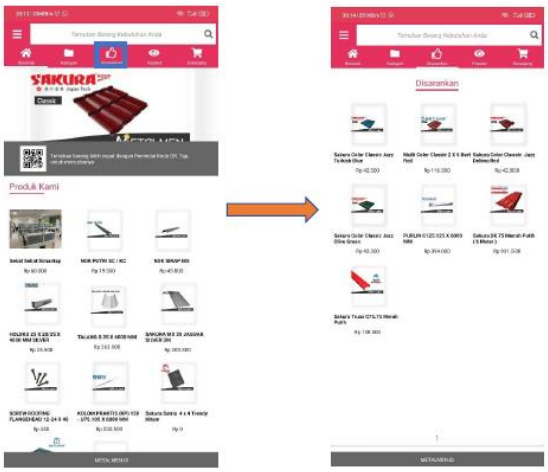

Fig 3. Scenario 2 Results - Reliability

In the instance shown in Figure 3, the user chooses the product button that the application suggests. When a user clicks the "popular" button, which displays items that customers frequently buy, the results indicate recommended products. The successful results also show well-liked things demonstrating how the basket button works. You can access the transaction basket page according to the results.

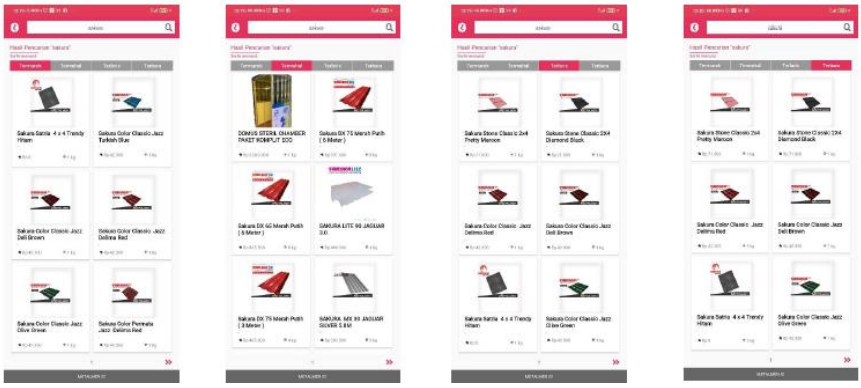

Fig 4. Scenario 3 Results - Reliability

When conducting a product search in Sakura, the user is shown sorted in Figure 4. Furthermore, when sorting, objects are grouped according to their particular purposes.

4) Efficiency

Efficiency is a consideration that has to do with how much hardware the program uses. Resulting from the consumption of RAM, memory, etc.[17].

Table 4. Efficiency

No	Scenario	Expected Result	Actual Result	End Result	Recommendation
1	Admin tried to run the Metalmen" application on Xiaomi Mi 9 obile phone:Android version 10 torage128 GB 4GB RAM.	The app runs smoothly without any glitches	The application runs well	Success	-

This section merely describes the testing user's device. Additionally, the device can successfully run the application while being tested. Table 4 includes the device's specifications.

5) Usability

A factor that affects human resources is usability. This parameter evaluates how simple it is for consumers to utilize the application[18].

Table 5. Usability

No	Scenario	Expected Result	Actual Result	End Result	Recommendation
1	Using the app to order goods.	The order was successful without any difficulties.	*User is blocked at the 5th transactionstage*	*Error,because stage Five transaction failed.*	Correction of transaction section
2	Log in to be able to use the features in the	Successful login, all featuresin the application can be used.	After successfully logging in there are some features that are	Success.	-

	application.		not working properly.		
3	Browsing through the items in the app	Users can View items for sale	Users can Search for items	Success	Although the item search process worked well, there were some products that did not appear.

It is explained in the usability section whether or not this application is user-friendly. The previous elements have clarified how this application functions. This application is user-friendly and is also included in Table 5's scenario.

A feasibility table is required for the following analysis of the program's quality:

Table 6. Eligibility Category

No.	Category	Percentage
1	Very good	81%-100%
2	Good	61%-80%
3	Good enough	41%-60%
4	Not good	21%-40%
5	Not very good	<21%

Table 7 below shows the results of the software quality assessment collected from 40 respondents after calculating the average value for each criterion and the weight based on interests:

Table 7. Criteria Value

No.	Indicator	Statement	Weight	Value Criteria
1	Correctness 0,3	This application is capable of performing data processing.	0,3	4,10
		The features contained in this system are all functional	0,3	3,75
		Features and table design on every page are the same	0,4	4,75
		Form features and design and the buttons on each page are the same	0,3	3,75
		Language used is consistent on every page	0,3	4,70
		Shape and structure same data processing reporting	0,4	3,12
		Can track sales transactions	0,5	4,50
2	Usability 0,3	The language used is easy to understand	0,3	4,20
		The writing on each page can be read clearly	0,3	4,08
		The function of each button is clear	0,3	3,92
		Menu options and buttons on the system are easy to use	0,5	3,82
		Users easily understand the existing item coding system	0,4	3,60
		There is a hint service provided by the system to help assist new users	0,4	3,66
3	Integrity 0,3	The login process can run correctly, and as expected	0,4	3,75
		This application can control user access by limiting access rights	0,3	3,70
4	Reliability 0,2	This application is easy to enter the input required by the system	0,3	3,96
		This application can display data that precisely according to the user's needs precisely according to the keywords searched	0,4	3,87
		This application provides data and information that suits the user's needs precisely	0,4	3,98
		Information from the system is accurate and error-free	0,3	3,85
		Users can obtain the required information in a timely manner	0,3	3,87
		Access to applications and data cannot be used by those not authorized to use them	0,3	3,85

		The information in this system is easy to understand without any difficulties.	0,3	3,92
		The menu in this system can be easily understood without any difficulties	0,2	3,86
5	Efficiency 0,2	The service menu functions and data are in accordance with the needs	0,2	3,95
		The function of the content in the system has accommodated the delivery of all information about the Metalmen application.	0,2	4,05

Finding each sub-indicator and indicator's value, which results in a steal and a percentage, is the factor quality (Fa) value stage. For each sub-indicator, the following formula is used to determine its value:

$$\mathbf{Fa = w1c1 + w2c2 + w3c3 + \dots + wncn}$$

Where :

Fa: total value of factor

w: weight of each interest

c: the value of the average matrix (criteria value)

The percentage is calculated using the following formula, taking into account the functionality of the questionnaire results from the 40 respondents:

Percentage Functionality = (Value Obtained)/(Maximun Value) x 100 %

Therefore, the percentage of functionality is calculated as follows:

$$= \frac{(0.3 * Fa1) + (0.3 * Fa2) + (0.3 * Fa3) + (0.2 * Fa4) + (0.2 * Fa5)}{Nilai\ Maksimum} * 100\ \%$$

$$\sum = \frac{(0.3 * 3.10) + (0.3 * 2.88) + (0.3 * 2.73) + (0.2 * 3.90) + (0.2 * 4.0)}{5} * 100\%$$

$$= \frac{0.93 + 0.864 + 0.819 + 0.78 + 0.8}{5} * 100\%$$

$$= \frac{4{,}193}{5} * 100\%$$

$$= 0.84\ * 100\ \% =\ 84\ \%$$

The statistics in Table 2 show how the percentage levels are grouped according to the feasibility category, and it can be inferred that the Metalmen application falls into the outstanding category overall with a level between 81% and 100% = 84%.

IV. CONCLUSION

Using the McCall technique, which has been implemented and measured the quality of the Metalmen application information system by 84%, users may evaluate the Metalmen application information system's quality objectively. As a result, the system falls into the Very Good category. According to the McCall method, there are five (five) assessment indicators: correctness, efficiency, integrity, reliability, and usability. The values of each indicator are as follows: correctness = 65%, efficiency = 66%, integrity = 62%, reliability = 75%, and usability = 63%. It can be seen that the reliability indicator has the best indicator value, with a percentage value of 84%, and the integrity indicator value has the worst indicator value, with a percentage value of 62%.

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