ANALYSIS OF MANUAL AND AUTOMATIC TESTING METHOD COMPARISON AT PT DUSDUSAN.COM

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***Abstract*— The software development process, especially those implementing agile methods, cannot be separated from the testing stage. End-to-end testing ensures that the application functions properly in a production environment and provides a seamless user experience. The purpose of this study is to conduct a comparative analysis of manual testing and automation testing using the Katalon Studio tool on the Dusdusan.com website and to determine a faster testing method so that software development runs smoothly and on time. This study was conducted by involving manual testing via the Google Chrome web browser and automatic testing using the Katalon Studio tool for 12 iterations. Based on the results obtained, the average time required for automation testing is shorter than manual testing. Therefore, in terms of time efficiency, automation testing is proven to be faster than manual testing.**

***Index Terms*— automation testing, comparasion analysis, dusdusan.com, end-to-end testing, katalon studio** *(key words)*

I. INTRODUCTION

In today's increasingly advanced digital era, the need for reliable and high-quality software is becoming increasingly important. PT Dusdusan.com, as a company engaged in e-commerce, faces the challenge of ensuring that products are free from errors and can function properly in various conditions. To achieve this goal, software testing becomes a critical component in the software development cycle.

Software testing can be done using two main methods: manual testing and automated testing. Manual testing involves direct inspection by testers to find bugs or errors in the software. This method requires the tester's thoroughness and expertise to identify problems that may not be detected by automated tools. On the other hand, automated testing uses scripts and automated tools to run the same tests repeatedly, which can increase efficiency and consistency in the testing process.

Although both methods have their respective advantages and disadvantages, it is important to understand the comparison between manual and automated testing to determine the best approach to apply in the software testing process. Manual testing is often more flexible and able to capture complex or unexpected problems, but can take more time and resources. Conversely, automated testing can save time and costs in the long run, but requires initial investment in tools and training.

II. METHOD

This research begins with the planning stage of the test scenario, which is prepared using Microsoft Excel software. The preparation of test scenarios aims to ensure that the system being tested can run as it should in accordance with the needs that have been determined from the start, and is able to provide the right response to invalid input. The test scenarios used in this study are presented in Table 1 below

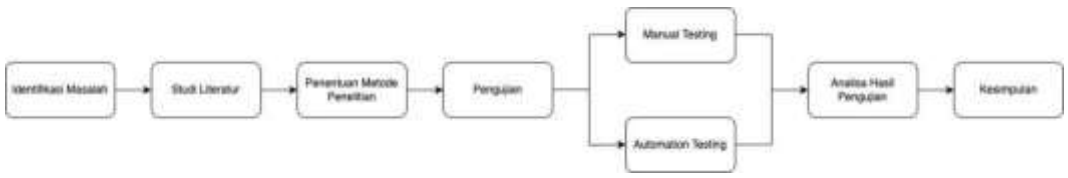

Figure 1. Research Method Flowchart

. The software used as the object of research or Software Under Test (SUT) in this study is the dusdusan.com website. Testing is focused on several pages that are generally used by users in carrying out the product ordering process, which includes the login page, product search, product details, shopping cart, up to the logout stage. Testing is carried out using hardware in the form of a 2022 production year MacBook Pro laptop. The supporting software used includes the Google Chrome web browser version 136.0.7103.49 and the Katalon Studio automatic testing tool version 9.5.0.

Table 1. *Test Scenario Login*

Scenario	***Scenario ID***	***Test Case***	***Pre-Condition***	***Test Step***	***Expected Result***
Login	TC_01	*Login Email Invalid*	*User already has an account*	*1. Navigate to the URL dusdusan.com* *2. Go to the login page* *3. Enter an invalid email address* *4. Enter a valid password* *5. Click the login button*	An error message appears "*wrong email address or password*".
	TC_02	*Login Email Null*	*User already has an account*	*1. Navigate to the URL dusdusan.com* *2. Go to the Login page* *3. Leave the Email field blank* *4. Enter a valid password* *5. Click the Login button*	An error message appears "*email must be filled in*".
	TC_03	*Login Password Invalid*	*User already has an account*	1. Navigate to the URL dusdusan.com 2. Go to the login page 3. Enter a valid email address 4. 4. Enter an invalid password 5. 5. Click the login button	An error message appears "*Incorrect email address or password".*

Scenario	*Scenario ID*	*Test Case*	*Pre-Condition*	*Test Step*	*Expected Result*
	TC_04	*Login Password Null*	*User already has an account*	*1. Navigate to the URL dusdusan.com* *2. Go to the login page* *3. Enter a valid email address* *4. Leave the password field blank* 5. *5. Click the login button*	An error message appears "*Password must be filled*".
	TC_05	*Login Valid*	*User already has an account*	*1. Navigate to the URL dusdusan.com* *2. Go to the login page* *3. Enter a valid email address* *4. Enter a valid password* 5. *Click the login button*	*Successfully logged in to the home page*

Table 2. *Test Scenario Search*

Scenario	*Scenario ID*	*Test Case*	*Pre-Condition*	*Test Step*	*Expected Result*
Search	TC_06	Cari Barang	*Users do not need to log in.*	*1. Navigate to the URL dusdusan.com* *2. Go to the login page* *3. Enter a valid email address* *4. Enter a valid password* *5. Click the login button*	*Search results based on keywords have successfully appeared*
	TC_07	Tambah Produk	*Users must log in first*	*1. Navigate to the URL dusdusan.com* *2. Go to the login page* *3. Enter a valid email address* *4. Enter your password* *5. Click the "Login" button* *6. Select the desired product* *7. Click the "Order" button* *8. Select a shipping method* *9. Select and click the "Send Address" button* *10. Click the "Save" button* *11.Click the "Cart" button*	*User successfully added Product*

Scenario	*Scenario ID*	*Test Case*	*Pre-Condition*	*Test Step*	*Expected Result*
	TC_08	Hapus Produk	*Users must log in first*	*1. Navigate to the URL dusdusan.com* *2. Go to the login page* *3. Enter a valid email address* *4. Enter your password* *5. Click the "Login" button* *6. Click the "Cart" button* *7. Click the barrel icon*	*User successfully deleted product*

Table 3. *Test Scenario Basket*

Scenario	*Scenario ID*	*Test Case*	*Pre-Condition*	*Test Step*	*Expected Result*
				Sampah 8. Klik *button* “Hapus Dari Keranjang”	
	TC_09	*Change address*	*Users must log in first*	*1. Navigate to the URL dusdusan.com* *2. Go to the login page* *3. Enter a valid email address* *4. Enter your password* *5. Click the "Login" button* *6. At the bottom, select the "Cart" menu* *7. Select the products in your cart* *8. Click the "Change" button* *9. In the "Change Address" section, click the "Change Address" button* *10. Select your desired address* 11. *Click the "Cart" button*	*User can change address*

Scenario	*Scenario ID*	*Test Case*	*Pre-Condition*	*Test Step*	*Expected Result*
Basket	TC_10	*Change Shipping Method (Pick Up Yourself)*	*Users must log in first*	1. Navigate to the URL dusdusan.com 2. Go to the login page 3. Enter a valid email address 4. Enter your password 5. Click the "Login" button 6. At the bottom, select the "Cart" menu 7. Select the products in your cart 8. Click the "Edit" button 9. Select and click the "Change Shipping Method" button 10. Select and click the "Pick Up" button, then "Save" 11. Select your province, city/district, and select a reseller/warehouse 12. Click the "Cart" button	*User successfully changed shipping method*
	TC_11	*Check shipping costs*	*Users must log in first*	*1. Navigate to the URL dusdusan.com* *2. Go to the login page* *3. Enter a valid email address* *4. Enter your password* *5. Click the "Login" button* *6. On the homepage, select the desired product* *7. At the bottom, click the "Check Shipping" button*	*Users can see the shipping cost price*

Table 4. *Test Scenario Logout*

Scenario	*Scenario ID*	*Test Case*	*Pre-Condition*	*Test Step*	*Expected Result*
Logout	TC_12	*Logout*	*Users must log in first*	*1. Navigate to the URL dusdusan.com* *2. Go to the login page* *3. Enter a valid email address* *4. Enter your password* *5. Click the "Login" button* *6. At the bottom, select the "Profile" menu* *7. In the upper right corner, click the gear/settings icon* *8. Click the "Exit" button*	*User successfully logged out from dusdusan.com account*

III. RESULTS AND DISCUSSION

Based on the data presented in Table 2, it can be seen that all test cases TC_01 to TC_12 show that the automated testing execution time is faster than manual testing. The average time required in the manual testing process ranges from 5.2 seconds to 29.8 seconds, while for automated testing it ranges from 4.4 seconds to 17.4 seconds.

The most significant time difference occurred in test case TC_10, where manual testing took 29.8 seconds, while automation only required 17.4 seconds. This shows that the more complex the testing process, the more efficient automated testing will be. Meanwhile, in test cases with a relatively short testing duration, such as TC_06, automated testing still shows better performance, although the time difference is not too big.

IV. CONCLUSION

Based on the results of the research, it can be concluded that of the 12 test cases tested, the average execution time using the automated testing method is faster than the manual testing method. Each test case shows a significant time difference, where automated testing consistently produces lower times. Therefore, it can be concluded that the use of automated testing with Katalon Studio is more efficient and effective in accelerating the testing process compared to the manual method.

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