

Received : June 30, 2022
Accepted : July 07, 2022
Published : September 30, 2022

Conference on Business, Social Sciences and Technology
<https://journal.uib.ac.id/index.php/conescintech>

Design and Development of Fashion E-Commerce Using the WDLC Model With the Scrum Method

Muhammad Ardiansyah¹, Jumilliono Pratama²

Email of author correspondence : muhammad.ardiansyah@uib.edu, 1831090.jumilliono@uib.edu

^{1,2} Faculty of Computer Science, Universitas Internasional Batam, Batam, Indonesia

Abstract

Through the internet, all can be connected to each other. Internet can be used with various benefits, especially as a means to do business. One activity that can be used as an example is the fashion business. By utilizing internet technology which is integrated into the fashion business business system, hereinafter referred to as e-commerce is the activity of buying and selling goods or transmitting funds/data through electronic networks, especially the internet through websites. To establish a business system with e-commerce website integration that can be used effectively and efficiently, and can be improved from time to time. There is a need for the right method to build it, namely the Scrum method with the WDLC (Web Development Life Cycle) model. The result of this scientific project is the establishment of an effective and efficient fashion e-commerce website.

Keywords: Internet, E-Commerce, Fashion, Scrum, Web Development Life Cycle.

Introduction

As time develops, the sophistication of technology is increasing rapidly. One kind of technology that almost everyone uses is the internet. Internet is a large network that capable of connecting computers. Internet is very useful and has a positive impact if it's used correctly and according to the rules (Irawan, 2018). Internet can be used for various benefits, especially as a means for learning, entertainment, and doing business. Through the internet, everything can be connected, which is making into a new business opportunity, namely e-commerce. The presence of a digital business-based business has become a business trend among the general public. Many businesses have experienced ups and downs in their operations, eventually unable to compete with bigger competitors (Hendarsyah, 2019). Today's era, the millennial generation lives in the industrial revolution 4.0 which the digital technology grows and develops into the center of all activities such as working, studying, shopping, and entertainment. The industrial revolution 4.0 has both directly and indirectly influenced various industrial fields to develop through technology and the internet, one of it is in the economy (Choandi & Timothy, 2019). Which means, the main activity of all economic activities have already involved in information technology itself. By going through technology, buying and selling activities between sellers and buyers, exchanging information and transaction are beginning to change. In general, the definition of e-commerce (electronic commerce) is the activity of buying and selling goods/services or transmitting funds/data through electronic networks, especially the internet. According to a survey conducted by APJJI at the end of 2017, that the internet is most widely accessed by people aged 13 to 34 (Irawan, 2018). In Indonesia, the growth of e-commerce is considered very fast, especially in the last 4 years, the growth has reached 500 percent, this results also proved by Google research and included in the e-Conomy SEA 2018 report which shows that Indonesian e-commerce transactions have reached US\$ 27 billion or equivalent. with IDR 391 trillion (Hendarsyah, 2019). With the development of information technology, this makes

conventional transactions possible to be carried out electronically. Websites are used instead of offline stores. The website provides various functions such as product storefront, order, and stock inventory to carry out its main function as e-commerce. To establish an e-commerce that can be used effectively and efficiently, also can be improved from time to time. It required a method to be applied for the e-commerce design. Which is the Web Development Life Cycle model with the SCRUM method. The SCRUM method is considered to be able to produce a high quality project as desired (Hadji et al., 2019). The SCRUM method is one of choices in WDLC model that capable of adapting to changes that occur in application development (Masood et al., 2020).

Literature Review

E-commerce (electronic commerce) is the activity of buying and selling goods/services or transmitting funds/data through electronic networks, especially the internet. E-commerce is one of the main solution to integrate a business into technology settlement by providing service online. One of the reason why e-commerce should be considered as the best choice for a business is because internet possible to connect everything and everywhere. Which means by using e-commerce through internet, a business could be possible to provide it's services anytime and anywhere. At the same time, customers also have benefits of accessing every possible kind of offers that's been provided from the whole world. Beside from the main objective of e-commerce, information is an essential thing that played the biggest part in the internet. For the business, they could obtain a whole data, which if it's processed into certain pattern, they could have valuable informations provided to increase profits by providing necessary needs of the market. Especially for fashion business that sells various types of clothing. Fashion has become a part of people's daily lives. The convenience offered by e-commerce is certainly very influential on the community, especially for those who are busy with their work do not have much time to visit the store. With the advent of e-commerce, it will help many people, both for the buyers, sellers, and other parties. WDLC (Web Development Life Cycle) is one of the consideration to implement this model because of it's very own purpose to build solely on the internet development, which one of them is e-commerce. WDLC consist of the process by: Planning, Analysis, Design, Development, Testing, and Maintenance. At the same time to use SCRUM method and combining it for the project implementation could improve the effectivity and efficiency of developing the project. SCRUM process consist of: product backlog, sprint planning, sprint backlog, daily SCRUM, sprint retrospective, and increment.

Research Methods

1. WDLC (Web Development Life Cycle) Model

The WDLC model is an advanced development version of the SDLC (System Development Life Cycle) model (Wijayanto Aripadono & Rivaldy Hisham, 2022). The model that is going to be used in developing the fashion business e-commerce website is the Web Development Life Cycle (WDLC) model. For more details, it will be displayed in Figure 1 as follows:



Figure 1. WDLC (Web Development Life Cycle) Model

a. Planning

The planning stage is the first stage in WDLC model to create a fashion business e-commerce website planning concept, one of the part is the identification of goals and usage needs.

b. Analysis

The second stage is the analysis in WDLC model. This stage's purpose is to make a detailed specification of the resources and other technical requirements to develop an e-commerce website planning concept that has been prepared previously.

c. Design

The third stage is the design stage. Developing a website design concept that has been prepared based on detailed analysis into the mockup results that display website design can be seen and can interact with the buttons and basic features.

d. Development

After completing the design stage, the next step is to develop the results of the design into an application that can be operated, including data storage activities.

e. Testing

From the results of the website development, a trial will be carried out on the website to ensure that the goals and needs have been met. After that, the website will be launched to the internet so that it can be used.

f. Maintenance

The last stage is the maintenance stage. At this stage the project will receive feedbacks from users/visitors about the website that has been developed so that it can be used as reference material to improve and maintain the quality of the website.

2. SCRUM Method

The SCRUM methodology is included in agile software development. SCRUM is considered to be able to produce good quality software according to the user desires, it can be used in large and small projects, and easy to adopt changes (Hadji et al., 2019). The SCRUM method can increase the effectiveness and efficiency of business and costs in working projects (Wijayanto Aripadono & Rivaldy Hisham, 2022).



Figure 2. SCRUM Method

a. Product Backlog

This stage's goal is to detail all the requirements needed to work on the planned project facilities. All of the detailed requirements will be presented into their respective core sections.

b. Sprint Planning

This stage is needed to organize all the details of the process into parts that need to be completed in the sprint.

c. Sprint Backlog

At this stage, all processes in the sprint part that are being worked on and have been completed will be detailed.

d. Daily SCRUM

At this stage, a review will be carried out for all executed results in order to discover whether the work has been in line with the project objectives.

e. Sprint Retrospective

At this stage, the project's result during the sprint period will be presented to get feedback that can be used as suggestions and opinions to improve the quality of work.

f. Increment

This stage is the last stage in the SCRUM method. The work will be re-examined and completed at the end of the sprint.

Results and Discussion

1. Planning

The first stage is to create a product backlog, sprint planning, and sprint backlog. The following is a list of features that can be seen in the table:

Table 1. Details of product backlog, sprint planning, and sprint backlog

ID	Backlog	Story	Demo	Task	Time (Days)
1	Admin login	As an admin can login into the system	<ul style="list-style-type: none"> - Click login on account - Enter username and password - Login successful 	Create login database	0.5
				Create login design page	0.5
				Develop login design page into code	0.5
				Perform testing for login page	0.5

Table 1. Continuation

ID	Backlog	Story	Demo	Task	Time (Days)
1	Admin login	As an admin can login into the system	<ul style="list-style-type: none"> - Click login on account - Enter username and password - Login successful 	Create login database	0.5
				Create login design page	0.5
				Develop login design page into code	0.5
				Perform testing for login page	0.5
2	Dashboard management	As an admin can manage the dashboard	<ul style="list-style-type: none"> - Can see summary of customer percentage, orders, number of products, and categories - Add an image on the main page - View daily order list 	Create database for customer, product, category, and order attribute	0.5
				Create dashboard design page	1
				Develop dashboard design page into code	3
				Perform testing for dashboard page	0.5
3	Category data management	As an admin can manage the category data	<ul style="list-style-type: none"> - Added category name, description, image, and status - Change category description and status - Delete category 	Create category design page	0.5
				Develop category design page into code	2
				Perform testing for category page	0.5
4	Product data management	As an admin can manage the product data	<ul style="list-style-type: none"> - Add product name, price, description, image, status, category, stock quantity, and discount - Change product name, price, description, image, status, category, stock quantity, and discount - Delete product 	Create product design page	0.5
				Develop product design page into code	2
				Perform testing for product page	0.5

5	Order data management	As an admin can manage the order data	<ul style="list-style-type: none"> - Can see the list of order details - Can filter based on orders that have not been processed, are being processed, are being shipped, have arrived at their destination, or are canceled - Can use the search feature by entering the order ID number - Can change order status - Can delete orders 	Create order design page	0.5
				Develop order design page into code	4
				Perform testing for order page	0.5
6	Registration	As a customer can register an account	<ul style="list-style-type: none"> - Click registration to display the registration page - Enter name, email, password, and confirm password - The data has saved and accounts can be used 	Create registration design page	0.5
				Develop registration design page into code	1
				Perform testing for registration page	0.5
7	Customer login	As a customer can login into the system	<ul style="list-style-type: none"> - Click login on account - Enter username and password - Login successful 	Create login design page	0.5
				Develop login design page into code	1
				Perform testing for login page	0.5
8	Main page display	As a customer can access into the main page	<ul style="list-style-type: none"> - Can see the product display displayed on the main page - Can filter, search, or select product categories - Can open wishlist, account and cart features 	Create main page design	0.5
				Develop main page design into code	6
				Perform testing for main page	0.5

Table 1. Continuation

9	Catalog page display	As a customer can view the catalog page	<ul style="list-style-type: none"> - Can see a product from the image and description - Can determine the number of stock products to add to the cart - Can add products to wishlist - Can provide reviews on products 	Create catalog design page	0.5
				Develop catalog design page into code	4
				Perform testing for catalog page	0.5
10	Wishlist page display	As a customer can view the wishlist page	<ul style="list-style-type: none"> - Can see the details of the products entered into the wishlist - Can press one of the products to go to the product page - Can remove products from wishlist 	Create wishlist design page	0.5
				Develop wishlist design page into code	2
				Perform testing for wishlist page	0.5
11	Account page display	As a customer can view and manage the account page	<ul style="list-style-type: none"> - Can see a list of orders that have been made - Can see personal data in the form of name, email, and phone number - Can go back to wishlist page - Can change password - Can log out the account 	Create account design page	0.5
				Develop account design page into code	6
				Perform testing for account page	0.5
12	Cart page display	As a customer can view the catalogs in cart page	<ul style="list-style-type: none"> - Can see the list of products added to the cart - Continue shopping to checkout stage 	Create cart design page	0.5
				Develop cart design page into code	2
				Perform testing for cart page	0.5
13	Checkout page display	As a customer can fill the data required	<ul style="list-style-type: none"> - Can see a detailed list of products to be ordered - Fill in data in the form of address, phone 	Create checkout design page	0.5
				Develop checkout design page into code	2

for payment and
delivery

number, and account card number to
make payments

Perform testing for checkout page

0.5

2. Analysis

The second stage is to detail all the resources and technical requirements to realize the first stage that has been made, which are as follows:

a. Program Language

The programming language that used to develop the project is React.js language. The reason for using this language is its superiority in user interface design and coding stability. At the same time, React.js also has the advantage of faster processing times.

b. Database

The database used as a data storage for this project is MongoDB Compass. The main advantage of using this database is that MongoDB uses the JavaScript programming language as its operation. In addition, the data storage system no longer uses tables, instead structured documents, namely JSON. So that the processing time required is also faster.

c. Framework

The framework used to support the React.js programming language is Node.js. If the frontend advantage over JavaScript is React.js, then the backend is Node.js. Another reason for choosing this language is because of the main advantage of Node.js being able to handle a very large number of connections simultaneously.

d. Code Editor

The Code Editor that will be used to write code is Visual Studio Code. Besides being free, this application was developed directly by the Microsoft company which is still being developed until now.

3. Design and Development

a. Main Page

The first page that will appear immediately is the main page. Which contains the Brando.id brand name, main panel, search feature, and catalog.



Figure 3. Brando.id Main Page

b. Registration Page

On the register page, users are asked to register by filling in their name, email, password, and confirm password.



Figure 4. Brando.id Registration Page

c. Login Page

After the account registered on the registration page, users will then enter their username and password in order to have full access as an e-commerce customer. Except for admins, it will automatically log in with administrator status with an account that has been specifically given. In another words, the admin account cannot be registered normally like the account registration described on the registration page.



Figure 5. Brando.id Login Page

d. Catalog Page

After successfully logging in, the user will return to the main page. Users can view the entire catalog list provided in the e-commerce, or for more details on a product by clicking on the catalog image.



Figure 6. Brando.id Catalog Page

e. Wishlist Page

If the user wants to add the catalog to his personal favorite list, there is a wishlist feature provided with a heart icon that can be clicked to add the catalog to the wishlist which can be viewed on a separate page.



Figure 7. Brando.id Wishlist Page

f. Cart Page

If the user wants to add the catalog to the list of items to be purchased later, the user can take the Cart feature which can be found on the catalog page by pressing the "add to cart" button to add the shopping list.



Figure 8. Brando.id Cart Page

g. Checkout Page

On the checkout page, the user will be presented with a list of shopping items that have been added to the cart previously to confirm if it is according to what the user wants. Then the user is asked to enter the shipping address, phone number, and payment card number.



Figure 9. Brando.id Checkout Page

h. Account Page

On the account page, users can see a list of orders that have been placed previously along with the order status in the "My Orders" section.



Figure 10. Brando.id My Orders Page

Users also can view personal data in the "My Accounts" section.



Figure 11. Brando.id My Accounts Page

And can change the password in "Settings".



Figure 12. Brando.id Settings Page

While "My Wishlist" is a feature to redirect users back to the wishlist page and "Logout" is to log out of the account that is currently being used by the user.

i. Admin Panel Page

j. The admin panel page is a page where the admin manages catalog data in e-commerce with dashboard components, categories, products, and orders. The dashboard page is a page where the admin can see a summary of informations provided to be monitored at any time.



Figure 13. Brando.id Dashboard Page

Then the category page is the page to add the product category to the catalog.



Figure 14. Brando.id Category Page

Next, the product page is the page to add product catalog.



Figure 15. Brando.id Product Page

And lastly is the order page, where a list of all incoming orders will be displayed here.



Figure 16. Brando.id Order Page

4. Testing and Maintenance

The testing stage is carried out by the project developer himself by testing out all interactions of the process of using e-commerce with the aim of finding an error in the system that has been developed. If there is an error, the project developer will correct the error and the quality of the system will continue to be improved over time.

Conclusions

By implementing an e-commerce project development system entitled "Design and Development of Fashion E-Commerce Using the WDLC Model With the Scrum Method", the required work process can be completed in a faster and more effective than it should be. To deal with problems that will arise in the future regarding e-commerce technical errors can be immediately resolved by maintaining a system that combines the WDLC model with the SCRUM method. The presence of e-commerce capable for sellers and buyers to make buying and selling transactions of goods according to their respective interests easier. Where as sellers can display their product

offerings with a variety of information that has been provided. Meanwhile, buyers can see product offers with prices up to the payment stage directly anywhere and anytime without the need to spend more time to get that information. To improve the quality of e-commerce that has been developed, it is necessary to reconsider in terms of account security, which possible to add an OTP (One Time Password) feature and payment variations other than account cards, because currently there is digital wallet facility coming around.

References

- Choandi, M., & Timothy. (2019). Kantor Digital Kreatif Startup. *Jurnal Stupa Sains, Teknologi, Urban, Perancangan, Arsitektur*, 1(2), 1519–1532.
- Hadji, S., Taufik, M., & Mulyono, S. (2019). Implementasi Metode Scrum pada Pengembangan Aplikasi Delivery Order Berbasis Website (Studi Kasus pada Rumah Makan Lombok Idjo Semarang). *Konferensi Ilmiah Mahasiswa Unissula (KIMU) 2*, 32–43.
- Hendarsyah, D. (2019). *E-Commerce di Era Industri 4.0 dan Society 5.0* (Vol. 8, Issue 2).
<https://ejournal.stiesyariahbengkalis.ac.id/index.php/iqtishaduna>
- Irawan, A. (2018). Aktivitas Anak-Anak dan Pemuda dalam Penggunaan Internet. *Cybersecurity Dan Forensik Digital*, 1(2), 50–56.
- Masood, Z., Hoda, R., & Blincoe, K. (2020). *Real World Scrum A Grounded Theory of Variations in Practice*.
- Wijayanto Aripadono, H., & Rivaldy Hisham, M. (2022). *Perancangan dan Pengembangan Web Marketplace Kebutuhan Rumah Tangga Menggunakan Model WDLC dengan Metode Scrum*.