Research Article

Implementation of E-Commerce for Andika Jeans with PHP, MySQL, and SDLC for Web-based Applications

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Abstract: The website has information about the product's name, price, and specifications, which aims to make it easier for customers to choose the product they want to buy. This website is exclusively for men's jeans. This men's jeans E-Commerce Website contains information about products for men's needs. *Andika Jeans* previously used conventional methods, where customers had to come to the store to see the product. With these problems, the *Andika Jeans* website was created. The method used in this writing is SWLDC, which has several stages: analysis, design, implementation, and trial. The conclusion that can be drawn from this website is that it aims to get information about the available products so that visitors can easily choose products that meet their needs. This website has been hosted so that customers can access it and can also place and confirm orders. This website has been tested in several browsers and devices, and the results of this website function very well; this website can be accessed via http://widi-system.co/andikajeans/.

Keywords: e-commerce; website; Jeans; Products; SDLC; PHP & MySQL

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1. Introduction

In modern times, information technology makes it easier for everyone to get information in any form. Many entrepreneurs utilize the development of this technology, especially the internet, to display their website because the existence of a website will make it easier for consumers to find information about the existence of products sold in their store. Along with the development of the business world today, e-commerce is necessary to compete and increase business and product sales [13,14]. In the process of using an e-commerce sales website, buying and selling transactions and marketing activities are more efficient. Namely, e-commerce users will get satisfaction and convenience in transactions, reduce costs, and the transaction process will become faster [15,16]. One of the sales businesses that can be done through an e-commerce website is the sale of jeans and pants.

Furthermore, *Andika's Jeans* is a shop that sells various types of jeans located in Bekasi. So far, *Andika's jeans* store sells products in the following way. When a customer wants to buy a product, they must order goods via the WhatsApp chat application without seeing the product and its specifications directly. Alternatively, customers can directly visit the store to order the desired item. This will make the business management process less efficient and customers are not well informed, so customers are hesitant to buy products at the store. Based on these problems, a web-based catalog was created where customers do not have to come directly to the store to see and order products, but order products through a website that can be accessed via a mobile device or computer connected to an internet connection network. This list aims to simplify and improve management efficiency to be more efficient and informative.

The scope of the Andika jeans catalog website design is as follows: 1. Creating a home page, profile, category, and product for the admin to manage products that will be marketed. 2. Creating a catalog with a home page, product page, and about us page for customers. 3. This website was created using the PHP programming language and MySQL database.

Research Objectives This research aims to create a web-based catalog to market Andika jeans products. This is expected to facilitate and help customers see products according to the specifications needed without coming to the store. Research Methods In this paper, the author uses the SDLC (System Development Life Cycle) method. The steps of the SDLC method are as follows: 1. Analysis Stage: The analysis stage is carried out to define the problem and determine the user's needs for developing the website. 2. Design Stage At this design stage, the author aims to make it easier for visitors to see the interface on a simple website, with a database structure and application display design. 3. Implementation Stage: The implementation stage clarifies the stages of making applications, from design to testing and using PHP and MySQL. 4. Test Phase At this stage, namely, doing the functions and features available on the website. From the results of this test, evaluation or improvement can be made according to needs.

2. Theory

2.1 Internet, Information, Data, e-commerce, and key parameters

Internet The Internet (Inter-Network) is the name for a set of computer networks that connect academic, government, commercial, organizational, and individual sites. The Internet provides access to telecommunication services and information resources for millions of users spread throughout the world. The Internet contains all the information needed by users around the world. Information is needed by people to add insight, update knowledge, and as material for opinion. It is not uncommon for information to be used as a basis for making decisions. Anggraeni and Irviani (2017: 13) explain that "information is a set of data or facts that are organized or processed in a certain way so that they have meaning for the recipient". In the process of data transmission, the internet is affected by the data transfer rate (bps) which depends on the device and server used. Data are all facts and figures that can be used as material for compiling information, while information is the result of data processing that is used for a purpose (Arikunto, 2002). In a study, someone will always need data. Through data, one can process it into a reliable source of information. Therefore, data is needed to provide explanations related to certain problems.

Moreover, e-commerce is an online channel that a person can reach through a computer business people in carrying out their business activities [17,18,19,20] and is used by consumers to obtain information using computer assistance, which in the process begins with providing information services to consumers in making choices (Kotler & Armstrong, 2012). The marketplace is one of the ecommerce models, which functions as an intermediary between sellers and buyers. Sellers who trade in the marketplace only need to serve purchases. The platform takes care of all other activities, such as website management. Sites like Shopee and Lazada are two examples of marketplaces. Jeans Pants A type of pants made from a hard and strong material called denim. Jeans are often worn as work clothes. Sometimes, the word jeans is indicated for the blue jeans model created by Jacob W. Davis. Jeans were introduced in the United States by Levi Strauss in 1872. In the late 1800s, mine workers wore jeans; at that time, the material used was derived from tarpaulin fabric. Moreover, in the 1950s, it became a popular fashion for teenagers. During that time, jeans became part of rockabilly fashion for them. In the 2000s, jeans became a popular type of pants and were worn as work clothes and off-duty fashion clothes. Jeans are made in many shapes and colors).

2.2 PHP & MySQL as the main tool for building WEB and Software builders

Furthermore, a database is a collection of interconnected data stored outside the computer and used by certain software to manipulate it (Jogiyanto, 2005). Databases make data storage and management more efficient. An example of a database can be seen in the development of a website. Moreover, according to Azis Schoechul, the website is an information page provided via the internet, so it can be accessed worldwide as long as it is connected to the internet network. A website is also a collection of text, images, sound, and animation components, so it is interesting to visit.

Moreover, PHP, or hypertext preprocessor, is a programming language used to translate the program code base into machine code that can be understood by a server-side computer that is added to HTML (Supono & Putratama, 2018: 1). PHP is a server-

side programming language, so scripts from PHP will be processed on the server. The types of servers that are often used together with PHP include Apache, Nginx, and LiteSpeed. In addition, PHP is also an open-source programming language. Users are free to modify and develop according to their needs. In general, the function of PHP is to be used for website development. Either a static website such as a news site that does not require many features. Alternatively, dynamic websites such as online stores have many supporting features. HTML (HyperText Markup Language) [11,12] is a language that uses certain signs (tags) to express codes that must be interpreted by the browser so that the page can be displayed correctly. In general, HTML manages a series of data and information so that a document can be accessed and displayed on the Internet through web services [8,9,10].

MySQL works using SQL Language (Structure Query Language), which means that MySQL is the world's standard for using databases for data processing. The advantage of MySQL is that it is open source, which means it can be developed again. (Wahyudi, 2017). MySQL falls into the RDBMS (Relational Database Management System) category. Therefore, terms such as rows, columns, and tables are used in MySQL. For example, in MySQL, a database has one or more tables. SQL is a language used to retrieve data in relational or structured databases. MySQL is a database management system that uses SQL as the connecting language between the application software and the database server.

Moreover, According to Purbadian (2016: 1) argues that "XAMPP is an open-source software which is a development of LAMP (Linux, Apache, MySQL, PHP, and Perl)". XAMPP can be used to save budget because it can replace the role of web hosting by saving website files to local hosting so that they can be called via a browser. XAMPP software was developed by a team called Apache Friends in 2002, and it can be obtained for free under the GNU (General Public License) label.

Moreover, Navigation structure is the structure or flow of a program which is a design of relationships and work chains from several different areas and can help organize all elements of making websites". Determining the navigation structure is a page that should be done before creating a website. (Prihatna, 2005:51). Other important parameters are UML. UML is a language that has become a standard in visualizing, designing, and documenting application systems. UML is a standard language for writing software blueprints (architecture). According to Rosa and Shalahuddin (2015: 133), "UML (Unified Modeling Language) is one of the language standards widely used in the industrial world to define requirements, make analysis and design, and describe architecture in object-oriented programming.

Besides UML, there is Blackbox testing. Blackbox testing is used to test web design validation. According to Rosa and Salahuddin (Handayani et al.; Pratama, 2019), "Blackbox testing is testing software in terms of functional specifications without testing the design and program code". Testing is intended to determine whether the functions, inputs, and outputs in terms of software are by the required specifications. Black Box Testing, more commonly known as functional testing, is a software testing method that tests software without knowing the internal structure.

3. Method

3.1 Admin Navigation Structure

Navigation Structure Design At this design stage, the author explains the stages of making web-based applications using the SDLC (System Development Life Cycle) method. The explanation below contains information about the navigation structure used in designing the application. Admin Navigation Structure Design The admin navigation structure describes what is on the admin page. The navigation structure of the system administrator is very important because it relates to information on the network. This admin navigation structure uses a mixed navigation structure of hierarchical navigation structures and linear navigation structures. A login is required to enter the admin menu. There are several menus on this admin menu page, namely, the admin dashboard, profile menu, category menu, product menu, and logout menu. The System Manager navigation tree is shown in Figure 1.

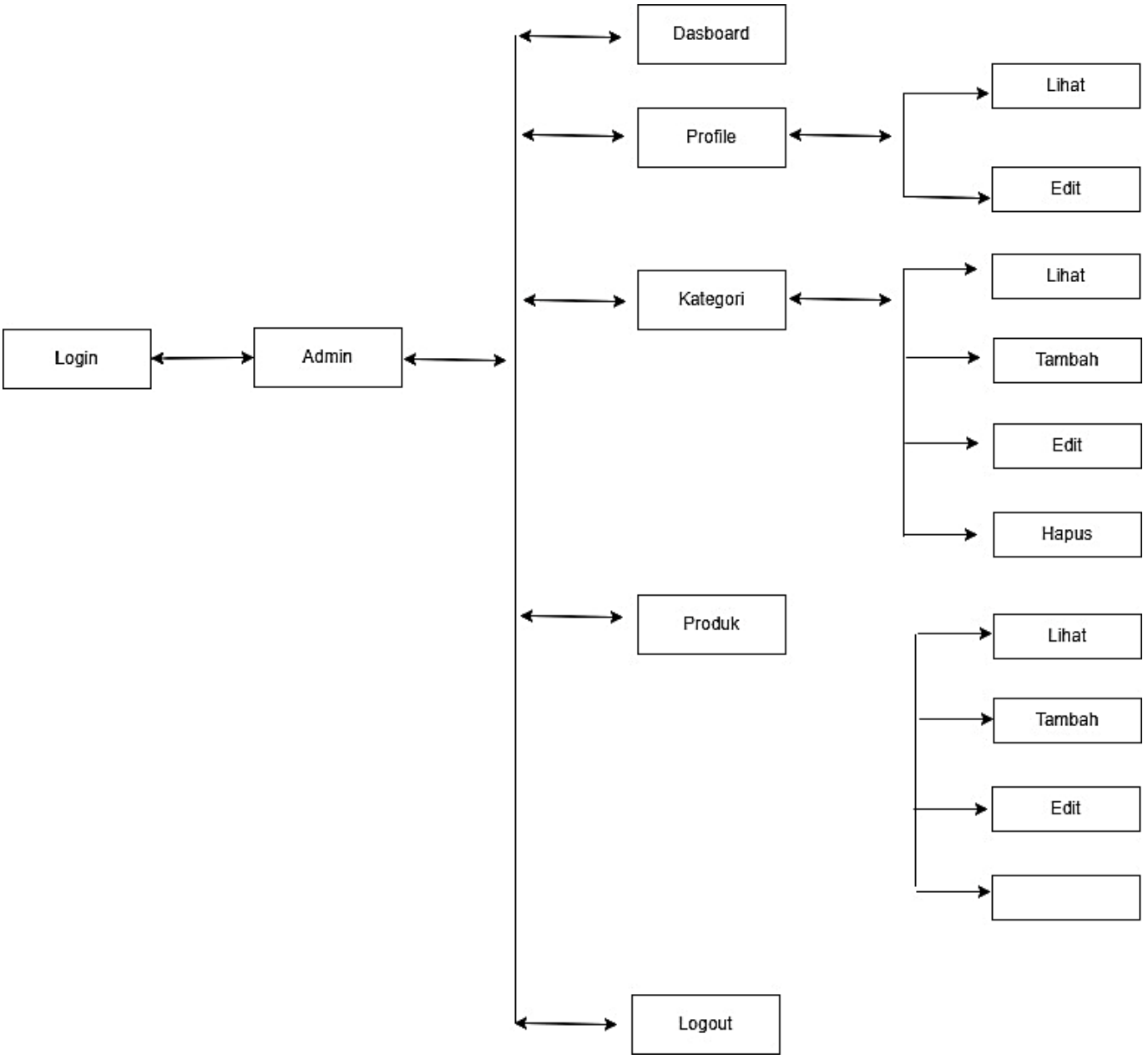

Figure 1. Admin Navigation Structure

3.2 Customers or User Navigation Structure

This user navigation structure uses a mix of hierarchical and linear navigation. The first page is the homepage, and there are six menu options: home, product categories, my cart, order list, register, and log in. After we register and then log in, the shopping history and logout menu will appear. The user navigation structure can be seen in Figure 2.

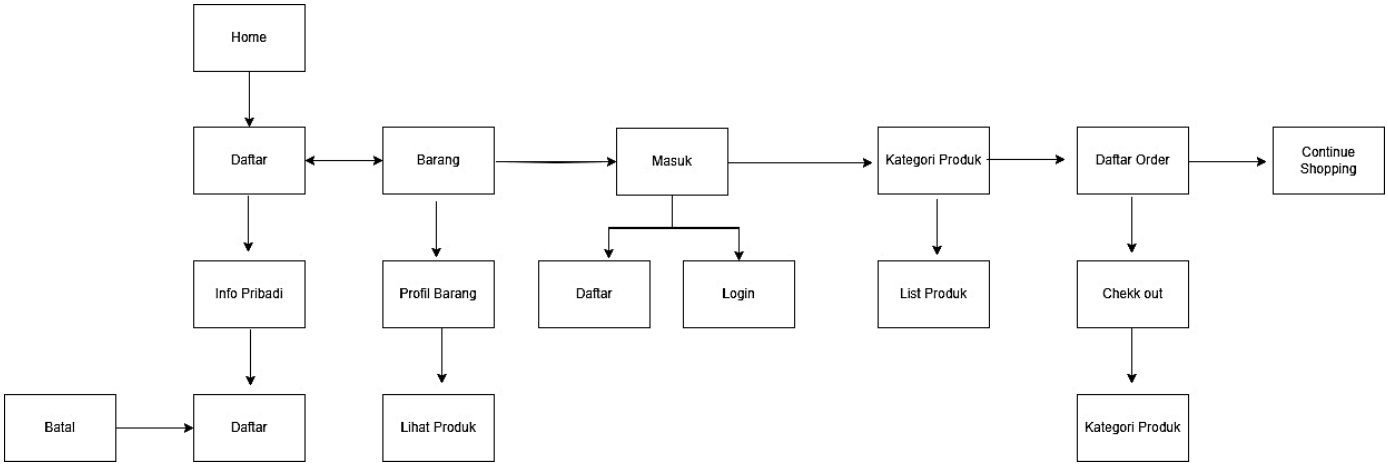

Figure 2. Customer or User Navigation Structure

3.3 Database Design

On this page, the database has a function to accommodate the data that will be entered. Based on this, the a need for the design of the database. For this design, one database is used with the name *Andika Jeans*.

3.4 Admin Table Design

The admin table contains all information related to login. This login table contains the user ID, full name, email, password, telephone number, address, join date, role, and also last login, shown in Table 1.

Table 1. Admin Table Design

Field Name	Data Type	Size	Description
User id	Int	11	AUTO_INCREMENT
Full Name	Varchar	50	-
Email	Varchar	50	-
Password	Varchar	100	-
Phone No.	Varchar	15	-
Address	Varchar	100	-
Join Date	Timestamp	-	-
Role	Varchar	7	-
Last Login	Timestamp	-	-

3.5 Payment Table Design

Table 2. Payment Table Design

Field Name	Data Type	Size	Description
No	**Int**	11	AUTO_INCREMENT
Methods	**Varchar**	25	-
Bank Account	**Varchar**	25	-
Logo	**Text**	-	-
An	**Varchar**	20	-

This payment table, shown in Table 2, contains information about the confirmation information about payments. This table contains the number, method, account number, logo, and also an (on behalf of). Moreover, The product table stores data about products, as shown in Table 3. This table contains product ID, category ID, product name, image, description, rate, before and after price, and date created.

Table 3. Product Table Design

Field Name	Data Type	Size	Description
Id product id	**Int**	11	AUTO-INCREMENT
category id	**Int**	11	-
Product name	**Varchar**	30	-
Image	**Varchar**	100	-
Description	**Varchar**	200	-
Rate	**Int**	11	-
Price before	**Int**	11	-
Price after	**Int**	11	-
Date created	**timestamp**	-	-

3.6 Use Case Diagram Design

In the admin use case diagram, entering the dashboard page requires entering the login page by entering the ID and Password that is already available. After logging in, the admin can see the dashboard or home page, manage products, manage orders, manage stores, manage customer orders, manage the staff section that receives customer orders, and log out. The Customer use case diagram can be seen in Figure 3 and The admin use case diagram can be seen in Figure 4.

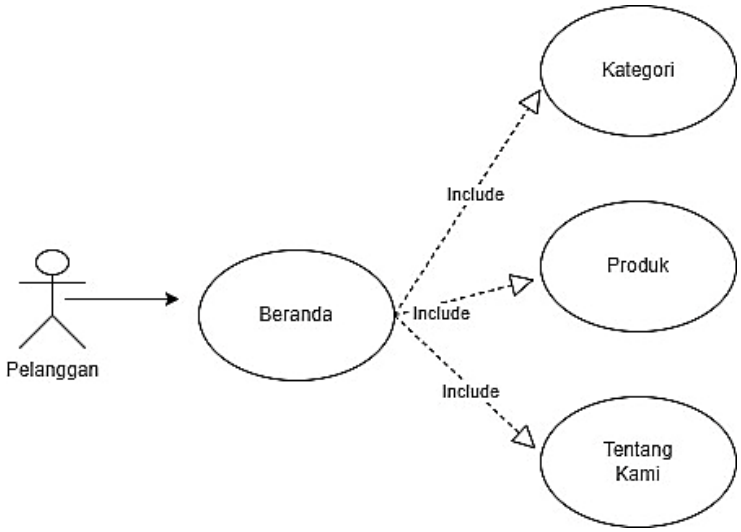

Figure 3. Customer Use Case Diagram

Figure 4. Admin Use Case Diagram

3.7 Activity Diagram of Adding Data as Admin

The processes that occur in a system that will be run explain this activity diagram stage. The components owned by this activity diagram are connected by arrows. In the admin activity diagram, the admin can make changes to data, such as adding data, updating data, and deleting data listed on the admin web page. Activity Diagram of Adding Data as Admin can be seen in Figure 5. Activity Diagram of Update Admin Data can be seen in Figure 6 and Activity Diagram of Delete Admin Data can be seen in Figure 7. while the Activity Diagram of Customer can be seen in Figure 8.

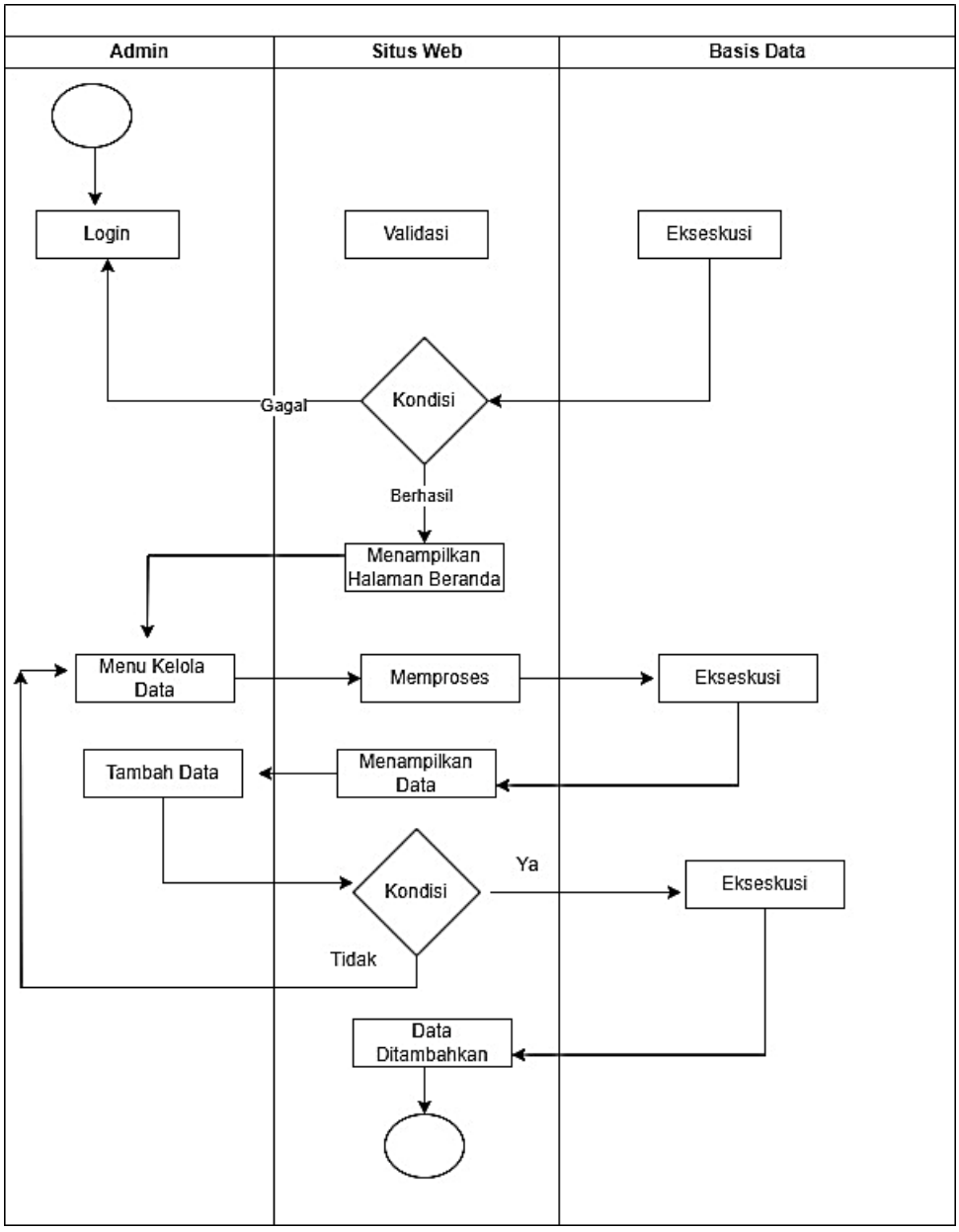

Figure 5. Activity Diagram of Adding Data as Admin

3.8 Activity Diagram Update Data Admin

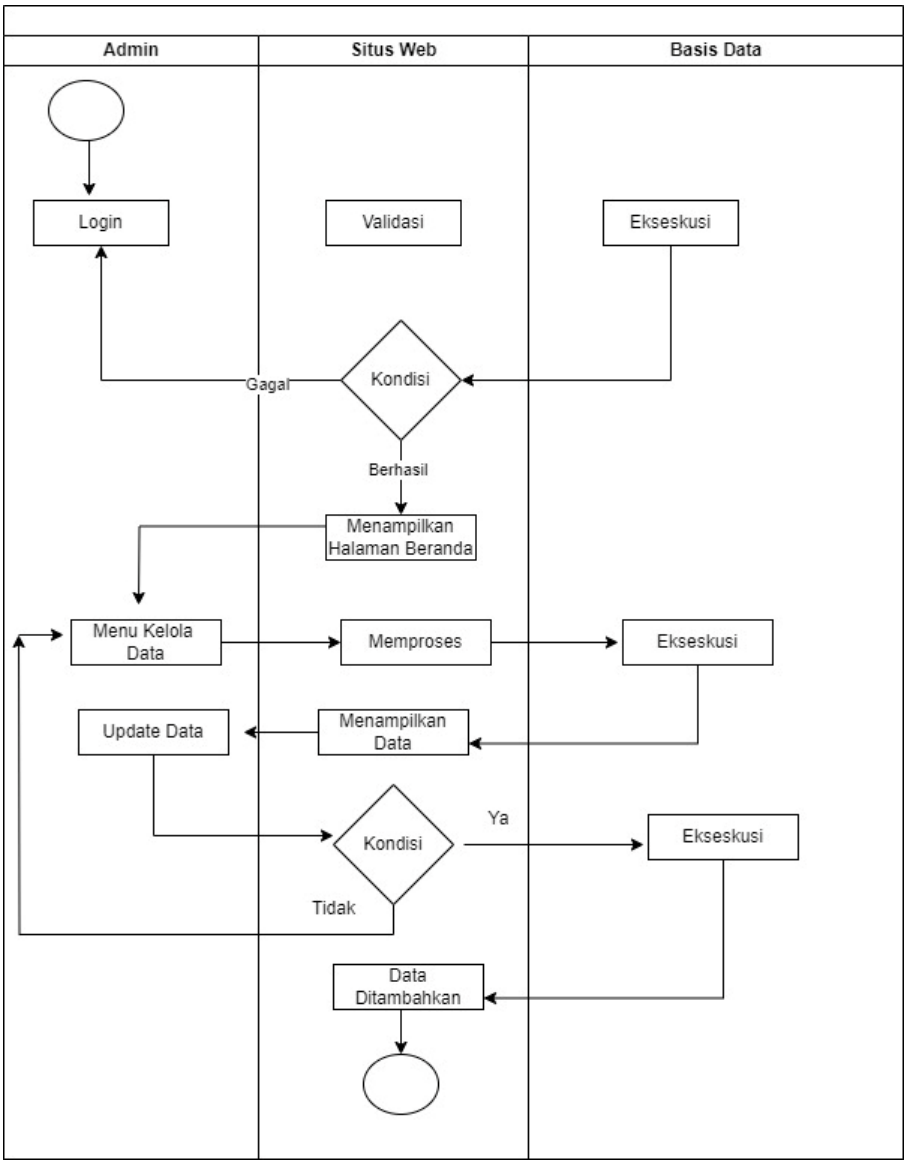

Figure 6. Activity Diagram of Update Data Admin

3.9 Activity Diagram Delete Data as Admin

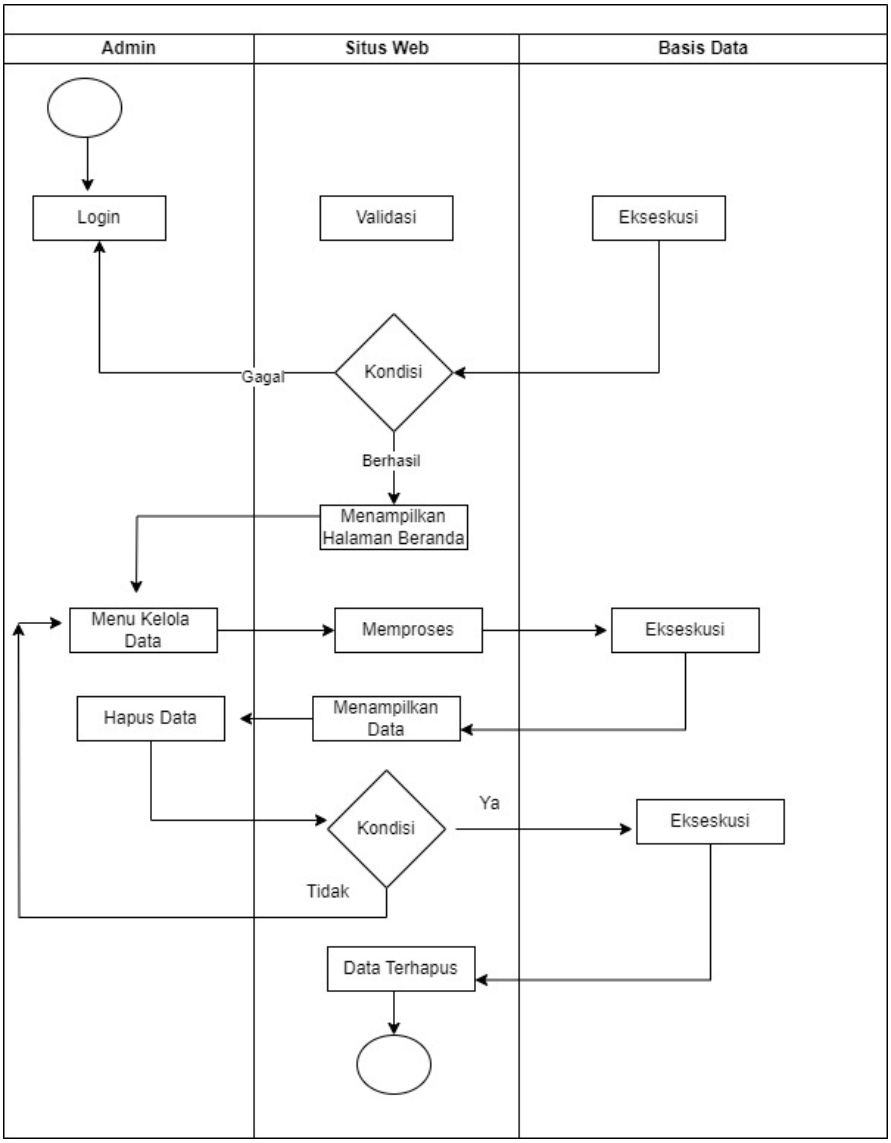

Figure 7. Activity Diagram of Delete Data Admin

3.10Activity Diagram of Customer

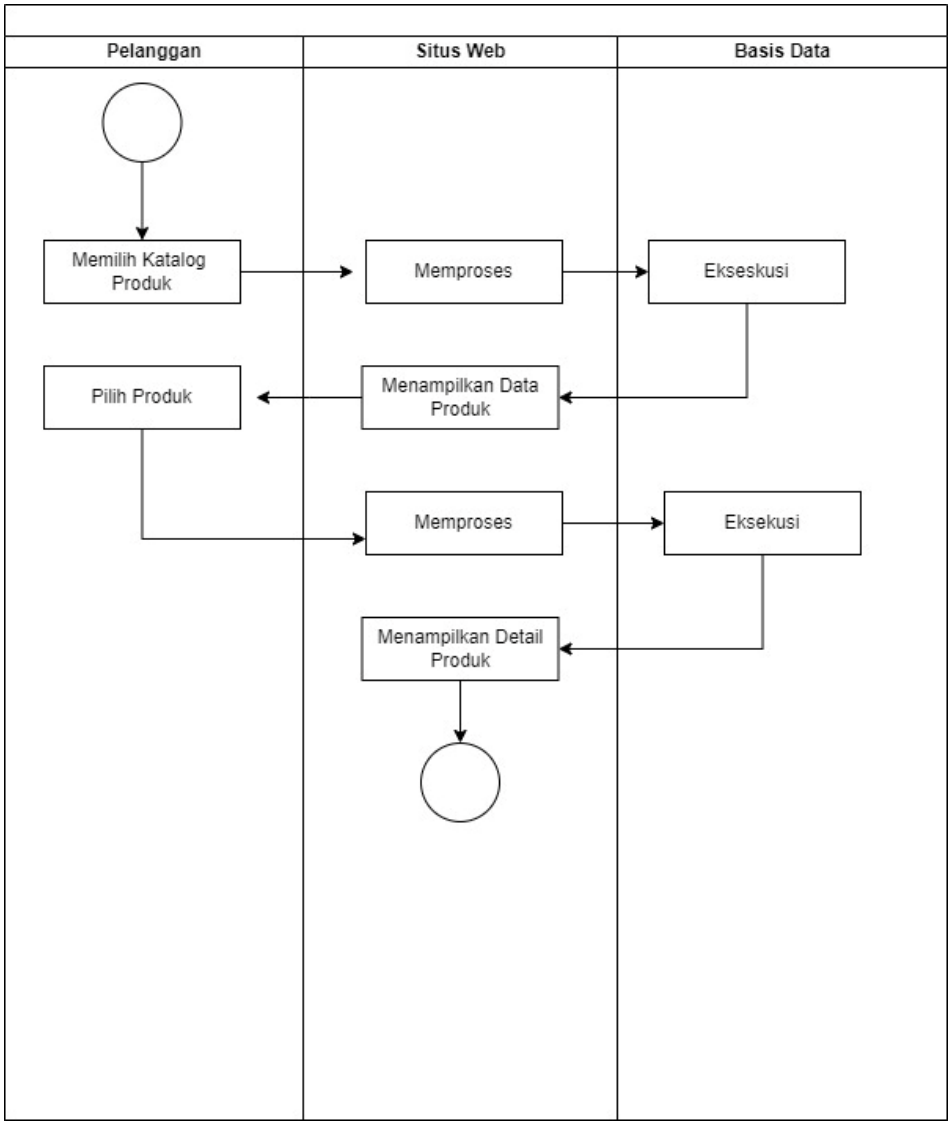

Figure 8. Activity Diagram of Customer

4. Result and Analyzes

On the main page of this catalog, the information provided to customers is displayed, namely about the category of goods and information about the latest products in the store. In this menu, there are product names, product images, and product prices that will help customers with information about the items displayed. Figure 9 shows in detail the Customer Home Page Display

4.1 Home Page Creation (Customer)

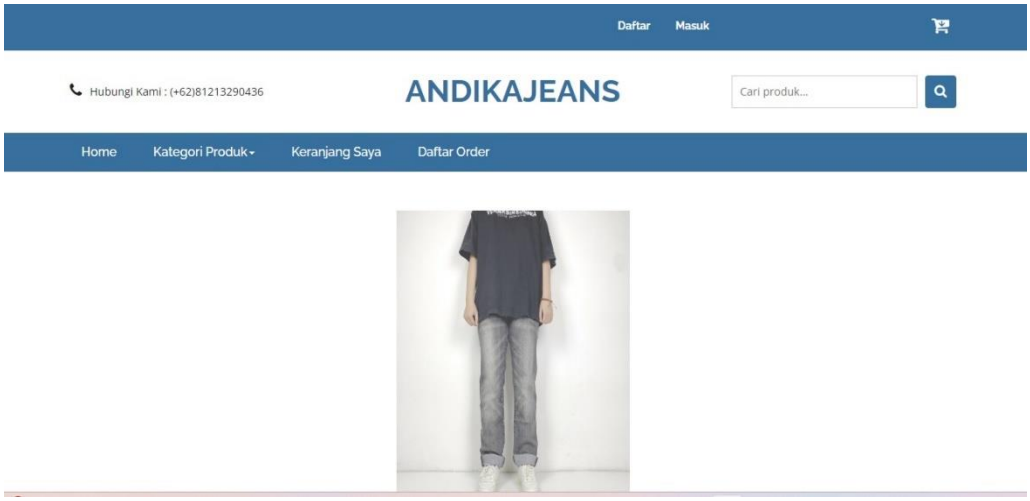

Figure 9. Customer Home Page Display

4.2 Category Page Creation (Customer)

On the category page on this menu, there are product categories that will make it easier for visitors to find products that are being searched or needed. Customer Category Page Display can be seen in Figure 10.

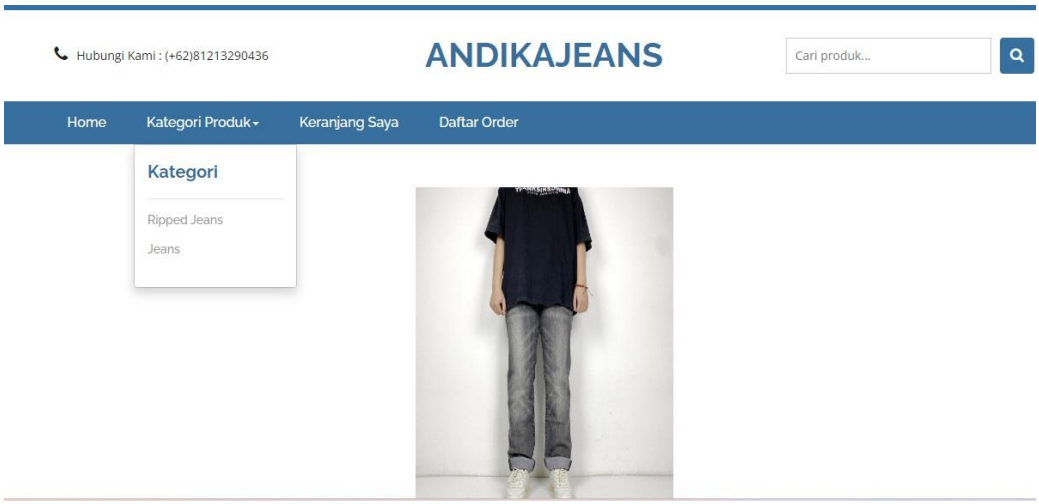

Figure 10. Customer Category Page Display

4.3 Product Page Creation (Customer)

On the product page in this catalog, there is information for customers about all the products provided to customers. In this menu, there is information about the product name, product image, and price of the product so that customers can get information about the item. Customer Product Page Display can be seen in Figure 11.

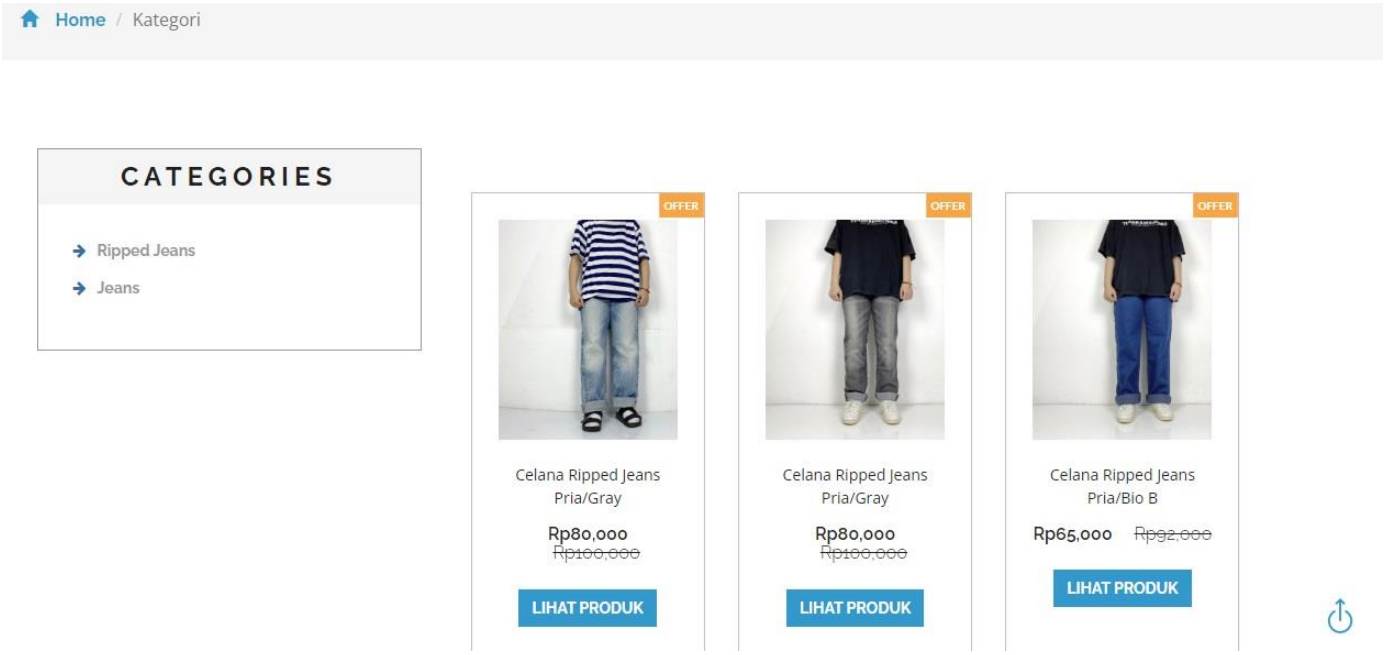

Figure 11. Customer Product Page Display

4.4 Product Detail Page Creation (Customer)

In this product detail menu, there are images, prices, and descriptions of products that can be seen by customers and help customers choose the product to purchase. If the customer has decided which product to buy, then the customer can add the product to the cart. Customer Product Detail Page Display can be seen in Figure 12.

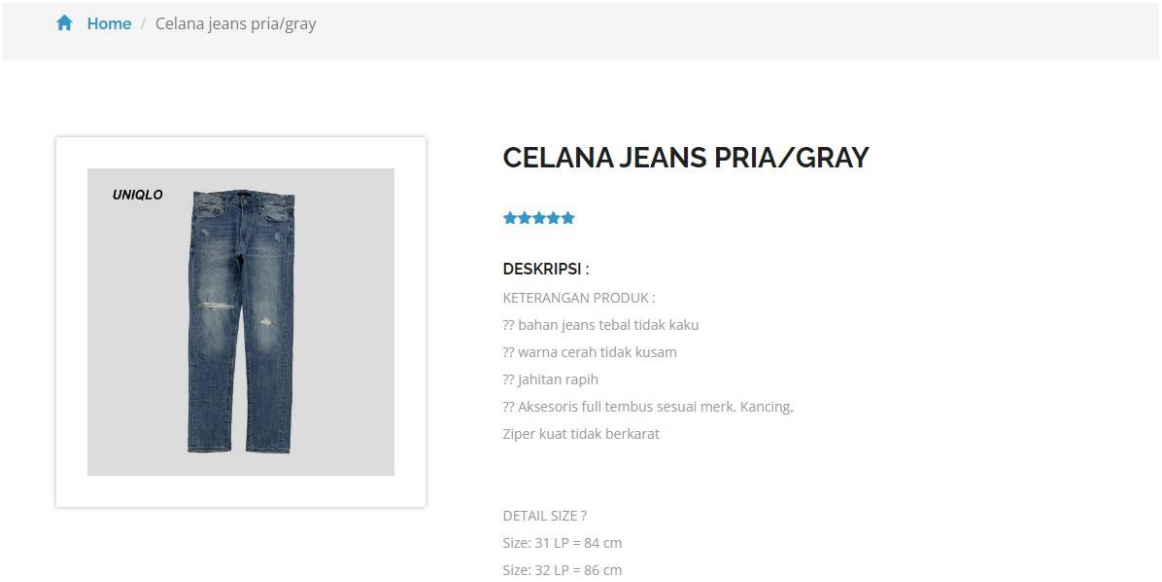

Figure 12. Customer Product Detail Page Display

4.5 About Us Page (Customer)

On the About Us menu, customers can see information about the store and customers can find out the location, email, and telephone number that is available to make it easier for customers to complain about the store. The following is a function to display information about us, address, email, and phone number of the shop. Details, the About Us Page Display, can be seen in Figure 13.

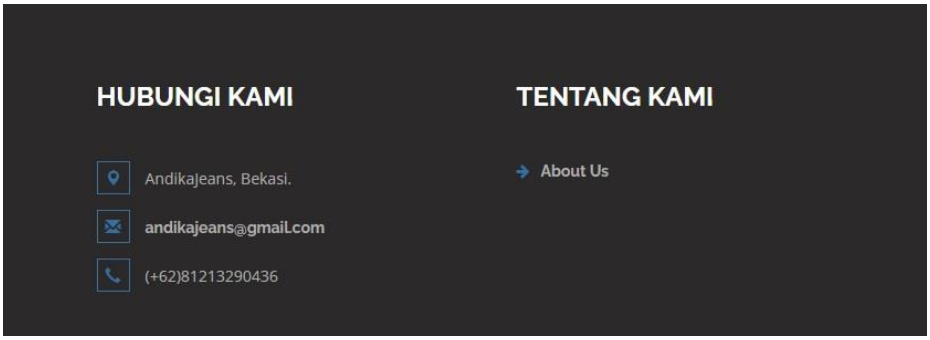

Figure 13. About Us Page Display

4.6 Test Using the BlackBox Testing Method

This test phase is carried out to test the application whether runs well or not. This trial was conducted in several web browsers, namely Google Chrome, and Microsoft Edge. The complete results of this Blackbox test can be seen in Table 4.

Table 4. Blackbox Testing

Tested function	Test procedure	Expected output	Results obtained	Conclusion
Login	Logging in	Enter the application and display the main page	Enter the application and display the main page	**Successful**
Profile	Input and Update	Display profiles that have been updated and old profiles	Can display profiles before and after updates	**Successful**
Categories	Profile, Input, Update, Delete category data	Display category count data	Display category data according to a certain amount	**Successful**
Product	Input, Update, and Delete product data	Display product quantity data	Display product data, according to a certain amount	**Successful**
Logout	Log out of the admin website	Exit the admin website	Exit the website	**Successful**
Index	Displays home, product, and about us menus	Display the main menu of the customer's website	Display the main menu of the customer's website	**Successful**
Categories	Display products according to their category	Display products according to their category	Display products according to category	**Successful**
Product	Display all products on the market	Display all marketed products	Display all marketed products	**Successful**
Product detail	Display product names, prices, and specifications	Display product name, price, and specifications	Display product name, price, and specifications	**Successful**
About us	Display store information and contacts	Display store information and contacts	Display store information and contacts	**Successful**

4.7 Device Testing

In this stage, the test was carried out on two hardware devices including computer devices and mobile devices. On computer devices, two types of browsers are used, including Microsoft Edge and Google Chrome. For Android-based mobile devices, Google Chrome is used as a browser. The results of the trial are described in Table 5.

Table 5. Device Testing

No	Device Name	Browser Name	Results
1.	DELL DESKTOP-8L6L952 Laptop, Intel(R) Core(TM) i5-2430M, CPU @ 2.40GHz, 8 GB RAM, 500 Gb HDD ROM	Microsoft Edge	• Display WEB pages well. • Display web pages according to design. • Can run various features properly.
		Google Chrome	• Display web pages properly. • Display web pages following the design. • Can run various features well.
2.	Smartphone SAMSUNG Galaxy A7 Chipset: Exynos 7885 Versi Android : 10 Ram : 8 Gb ROM: 256 Gb	Google Chrome	• Can display web pages well. • The display is slightly different from the display on computer devices in that the page follows the angle of the phone. • Can run various features well.

5. Conclusion

The conclusion that can be drawn from this trial is that the device can be operated on a computer or a mobile device, and the user can clearly understand the menu of each page. The Andika Jeans website has been completed and hosted using the URL http://widi-system.co/andikajeans/. Customers can access this website. This website will make it easier for users and increase customer interest in Andika jeans. This website's running makes it easier for sellers and buyers to carry out buying and selling activities anywhere and anytime. Andika Jean's website has been tested on two different hardware devices and browsers, and the results show that it works well in appearance and functionality. Based on the results of testing using the Black Box method, this website can run all its features properly without any obstacles from the Admin side and website users.

6. Suggestion

This website is still fairly simple; it is hoped that the next developer can add some features, one of which uses barcode payment methods or merchant services such as Ovo, copay, and funds.

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Author contributions: The author was responsible for building Conceptualization, Methodology, analysis, investigation, data curation, writing—original draft preparation, writing—review and editing, visualization, supervision of project administration, funding acquisition, and has read and agreed to the published version of the manuscript.

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References

1. Anjumi Kholifatu R, Fajar Pradana, Fitra Abdurrachman B. (2020). Pengembangan Sistem Pembelajaran HTML dan CSS dengan Konsep Gamification
2. Astria Firman, Hans F. Wowor, Xaverius Najoan. (2016). Sistem Informasi Perpustakaan Online Berbasis Web. Jurnal, 2.
3. Rahmatika, A. K., Pradana, F., & Bachtiar, F. A. (2020). Pengembangan Sistem Pembelajaran HTML dan CSS dengan Konsep Gamification berbasis Web. Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer, 4(8), 2655–2663. Diambil dari https://j-ptiik.ub.ac.id/index.php/j-ptiik/article/view/7738
4. Bernard Tagger. (2014). Modul Pemrograman Web. Dimulai dari penggunaan HTML sampai Javascript. Modul pembelajaran, 4.
5. Deppi Linda. (2016). Merancang e-katalog Berbasis Website Sebagai Media Informasi pada Badan Perpustakaan Arsip dan Dokumentasi Daerah (BPAD) Lampung. Jurnal Sistem Informasi dan Telematika, 2.
6. Halim Maulana. (2016). Analisis dan Perancangan Sistem Replikasi Database Mysql dengan menggunakan Vmware pada Sistem Operasi Open Source. Jurnal Nasional Informasi dan Teknologi Jaringan, 32.
7. Reni Widyastuti, Wahyu Indrarti, Masyitha Novaliza, Rani. (2020). Rancang Bangun Sistem Informasi Inventory Boneka Berbasis Web. Jurnal PROSISKO, 98.
8. Tintin Chandra. (2020). Perancangan Sistem Informasi Katalog Produk Berbasis Web pada Toko Yakin Jaya Com. Jurnal ilmiah, 37. Diakses dari tanggal 1 Juli 2022, https://ijcoreit.org/index.php/coreit/article/view/199/244
9. Sinlae, F. et.al. 2024. Pelatihan Dalam Desain Website Menggunakan HTML dan CSS. Jurnal Ilmu Multidisplin 3(2):173-183. DOI: 10.38035/jim.v3i2.603
10. Muzakkir, 2023. Pengembangan Media Pembelajaran Web berbasis Html dan Css Untuk Meningkatkan Keterampilan Dasar Pemograman Web Program Studi Teknologi Pendidikan.Vol. 6 No. 01 (2023): REFORM : Jurnal Pendidikan, Sosial, & Budaya, doi: 10.70004/reform.v6i01.117
11. Indah Purnama Sari, I.P., et.al. 2022. Perancangan Sistem Absensi Pegawai Kantoran Secara Online pada Website Berbasis HTML dan CSS. Blend Sains Jurnal Teknik 1(1):8-15, DOI: 10.56211/blendsains.v1i1.66
12. Yustisyia, M.L., et.al.2023. Penerapan Website sebagai Media E-Portofolio berbasis HTML dan CSS. Jurnal Sains Indonesia 4(3):223-234, DOI: 10.59897/jsi.v4i3.136
13. Hasan, Madiha. 2024. Challenges and Opportunities for E-Commerce in Pakistan. Qlantic Journal of Social Sciences. DOI: 10.55737/qjss.999187533
14. K. Okoli, I. Joseph, F. Chijioke, Y. Bekeneva, A. Chijioke and I. Kodondo, "Human-Machine Interaction in E-commerce: a Multi-Faceted Examination of CAPTCHA Effect," 2024 Conference of Young Researchers in Electrical and Electronic Engineering (ElCon), Saint Petersburg, Russian Federation, 2024, pp. 259-263, doi: 10.1109/ElCon61730.2024.10468391.
15. Purba, B. et.al. 2024. E-Commerce: Konsep dan Model Bisnis. Publisher: Yayasan Kita Menulis. ISBN: 978-623-113-502-5
16. Suwarno, B. et. al. 2024. The surprising influence of social commerce service quality on purchase intentions mediated by e-commerce. Indonesian Journal of Electrical Engineering and Computer Science, 36(1):367, DOI: 10.11591/ijeecs.v36.i1.pp367-374
17. Chandratreya, Abhijit. 2024. Blending Influence and E-Commerce: The Rise of Social Commerce Marketing. In book: Reshaping Marketing Science in Wholesaling and Retailing, DOI: 10.4018/979-8-3693-6145-0.ch002
18. Afanasyev, K. et.al. 2024. Approaches to Modelling Marketing Strategies in E-Commerce. Economics ecology socium. DOI: 10.61954/2616-7107/2024.8.3-6
19. G. SriLatha and M. Narendra, "The Applications and Effect of Block Chain on E-Commerce Industry," 2024 Second International Conference on Intelligent Cyber Physical Systems and Internet of Things (ICoICI), Coimbatore, India, 2024, pp. 55-58, doi: 10.1109/ICoICI62503.2024.10696069.
20. A. B. M. T. -U. Islam, M. A. Based, M. M. A. Tahmid, Rafid-Al-Af and M. M. Hasan, "A Novel Model of Prepayment for E-Commerce Business in the Context of Bangladesh," 2024 2nd World Conference on Communication & Computing (WCONF), RAIPUR, India, 2024, pp. 1-5, doi: 10.1109/WCONF61366.2024.10692233.