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CHAPTER 1: INTRODUCTION

1.1 **Introduction**

Online shopping has revolutionized the way people purchase clothing, offering a convenient and efficient way to browse and buy products. However, traditional methods of managing inventory, sales, and customer data often fall short, especially for growing businesses. Manual record-keeping is not only error-prone but also time-consuming and unsustainable in the long run. With the increasing number of shoppers turning to online platforms, maintaining records manually becomes inefficient and impractical.

To overcome these challenges, we present DkStore, an online shopping platform specifically designed for selling clothing for men, women, and kids. Built using the powerful MERN stack (MongoDB, Express, React, and Node.js), DkStore provides a modern solution for managing categories such as top wear and bottom wear, as well as seasonal collections like winter wear. Sellers can efficiently list products, track inventory, and monitor sales, while customers enjoy an intuitive shopping experience, browsing and purchasing items seamlessly.

DkStore not only simplifies operations but also reduces dependency on paper-based systems, making the process faster, more reliable, and eco-friendly. By automating inventory tracking and sales management, it minimizes errors and saves time for sellers. For customers, DkStore offers an organized and user-friendly interface, ensuring easy access to a variety of stylish clothing options. This platform demonstrates how technology can enhance the shopping experience, providing a reliable and sustainable solution for the modern retail industry.

1.2 Objectives

- Streamline Inventory and Sales Management: Implement an automated system to
 efficiently track inventory and sales, reducing errors and time spent on manual
 record-keeping.
- 2. Enhance User Experience: Provide a seamless and organized shopping platform for customers to easily browse and purchase clothing across various categories.

1.3 Brief History of E-commerce

The history of e-commerce began over 40 years ago with technologies like Electronic Data Interchange (EDI) and teleshopping in the 1970s. The launch of the World Wide Web in 1991 and browsers like Netscape Navigator in 1994 marked a turning point. Amazon and eBay, founded in 1995, revolutionized online shopping. The dot-com boom in the late 1990s led to rapid growth, followed by a market correction in 2000.

In the mid-2000s, Web 2.0 technologies improved user experience, and mobile commerce surged with the Apple App Store in 2008. The COVID-19 pandemic in 2020 accelerated ecommerce growth. Today, innovations like AI, AR, and social commerce are shaping the future of retail.

1.4 Elements of E-commerce

E-commerce involves eight key elements that work together to create a seamless online shopping experience:

- Online Storefront: A digital platform showcasing products with descriptions, prices, categories, and customer reviews to attract buyers.
- **Shopping Cart Software**: Allows customers to select items, calculate totals, and proceed to secure checkout.
- **Payment Processing**: Handles secure transactions through methods like credit cards and digital wallets.
- Payment Gateway: Connects the website to payment processors, ensuring safe transmission of payment details.
- Infrastructure and Security: Protects customer data with encryption and security measures like two-factor authentication.
- **Inventory Management System**: Tracks and manages stock levels, ensuring timely restocking and efficient order fulfillment.
- **Fulfillment and Shipping**: Covers packing, shipping, and tracking orders to ensure timely delivery and a good customer experience.
- Marketing and Analytics: Uses tools like SEO, social media, and data analysis to attract customers and improve marketing strategies.

1.5 Status of E-commerce in Nepal

E-commerce in Nepal has shown promising growth, albeit with certain challenges:

- **Internet Penetration**: Increasing internet access has opened up opportunities for online businesses to reach a wider audience.
- **Challenges**: Limited online payment options and concerns about online security have hindered the rapid growth of e-commerce.
- Marketplaces: Online marketplaces like Daraz and SastoDeal have gained popularity as platforms for buying and selling various products.
- **Local Innovations**: Local businesses are adopting e-commerce to overcome geographical limitations and explore new markets.
- Government Initiatives: The government of Nepal has taken steps to promote digital transactions and provide an enabling environment for e-commerce growth.
- Logistical Challenges: Addressing issues related to reliable delivery and transportation infrastructure remains crucial.

CHAPTER 2: REQUIREMENT ANALYSIS

2.1 Requirement Analysis

Requirement analysis is an important stage in the development of any ecommerce website. It involves gathering and analyzing the requirements of the website in order to identify the goals, features, and functions that the website should have.

2.1.1 Data Requirement

Data requirement encompass vital information essential for the project's success:

- Product Details: Users should have the ability to view comprehensive product details, including vivid images, informative descriptions, accurate prices, and realtime availability status.
- Customer Information: Customers' convenience is prioritized through the
 provision of a user-friendly interface where they can easily access their personal
 information, such as names, addresses, contact details, and a record of their past
 purchases.
- **Inventory Updates**: Seamless shopping experiences are guaranteed as the system provides real-time updates on available stock, ensuring that customers can trust the accuracy of their order placements.
- Transaction Records: Transparency is maintained by providing users with complete information about their transactions, including payment specifics and the current status of their orders.
- User Analytics: User engagement is improved through the collection of valuable insights, which allow the system to tailor recommendations, optimize user experience, and meet individual preferences.

2.1.2 Customer Requirement:

- **User-Friendly Interface**: To enhance user experience, the interface is designed to be intuitive, enabling users to effortlessly discover products and navigate the platform.
- **Secure Transactions**: Customers' peace of mind is guaranteed through secure payment gateways and robust data protection, safeguarding their sensitive information.
- **Diverse Product Range**: Users benefit from a wide selection of products, ensuring that their diverse preferences and needs are catered too.

- **Responsive Design**: The system's compatibility across various devices ensures that customers can access the platform seamlessly, regardless of their chosen device.
- Personalization: Customers are treated to a personalized shopping journey, as the system utilizes historical data to make recommendations aligned with their preferences.
- **Effortless Checkout**: Minimizing barriers to purchase, the system streamlines the checkout process, reducing cart abandonment rates and facilitating seamless transactions.

2.1.3 Process Requirement:

Efficiency in processes is guaranteed through the following functionalities:

- **User Registration**: New users are empowered to register independently, creating unique user identifiers for future differentiation.
- **Purchase Flow**: Smooth purchasing experiences are enabled for users, offering secure payment gateways and a user-friendly transaction process.
- **Transaction Security**: To safeguard users, the application incorporates a basic authentication mechanism, preventing unauthorized transactions.
- **Item Listing**: Users have a comprehensive view of available items on the site, empowering informed purchasing decisions.
- **Shopping Cart Management**: The system ensures a transparent shopping cart experience, notifying users of cart changes and facilitating straightforward navigation.
- Categorization: Efficient browsing is facilitated through clear and logical product categorization, simplifying user exploration.
- **Navigation**: Intuitive navigation paths guide users seamlessly from the home page to detailed product information and order options.
- **User-Focused Shopping**: Users benefit from easy-to-locate shopping links or buttons, enhancing their overall shopping experience.
- **User and Order Management**: System administrators can efficiently manage user accounts, including user deletion, and track the status of orders.
- Admin Interface: A well-organized web interface empowers administrators to
 effectively oversee and manage various components of the system, ensuring smooth
 operations.

2.2 Use Case Diagram

A use case diagram is a visual representation that depicts the interactions between users (actors) and a system (or systems) to achieve specific goals. It illustrates how users interact with a system to perform tasks or functions, highlighting the relationships between actors and various use cases (actions or services provided by the system). Use case diagrams are used in software development and systems engineering to define and clarify system requirements and functionalities, helping to ensure that the system meets user needs effectively.

Main objective of this project is to make customer satisfaction and gain trust by ensuring easy and simple interface. Features such as about us, login, shop, filter/Category, orders, Cart, checkout, verified payment system are included to show graphic depiction of interactions among different elements in a system.

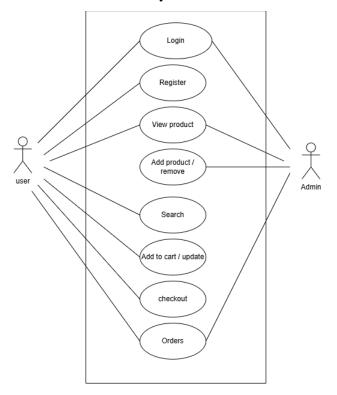


Figure 1: Use Case Diagram

2.3 Data Flow Diagram

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination. DFDs can provide

a focused approached to technical development, in which more research is done up front to get to coding.

2.3.1 Context Level Diagram

A context DFD is used to document the scope of the project of development. A project's scope defines what aspect of the business, an information system or application is supposed to support and how the system being modeled must interact with other systems and the business as a whole.

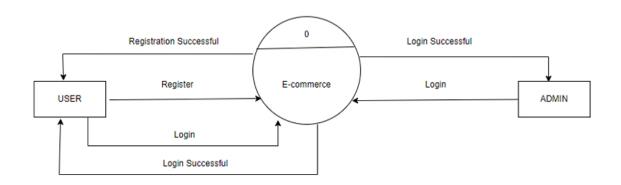


Figure 2: Zero Level DFD

2.3.2 First Level DFD

In the DFD diagram we can see that there are multiple modules like Login/Registration, Manage items, Manage order, account, etc. We can see that the entities interact with them and the database stores the details and provides them whenever it is asked for it.

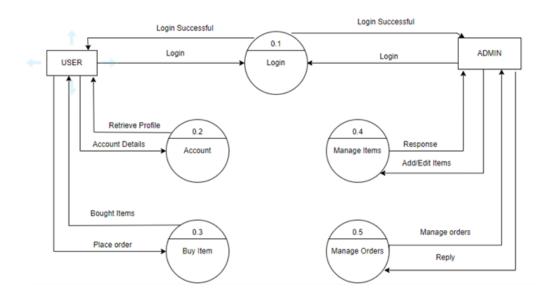


Figure 3: First Level DFD

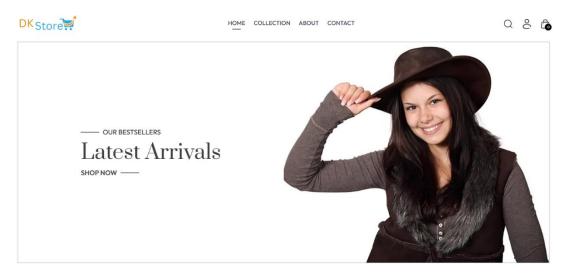
CHAPTER 3: DESIGN

Design in software development refers to an abstract solution that outlines the general approach to solving a problem without focusing on the specific details. It serves as a blueprint, helping to structure and plan the implementation process. By focusing on the overall architecture and functionality in this phase, developers can streamline the coding process, reducing the time needed for implementation and minimizing potential issues.

3.1 Customer Interface

A customer interface is the point of interaction between a customer and a company's services or products, typically through a website, mobile app, or other digital platform. It encompasses all the elements that a customer interacts with, such as the layout, design, navigation, and functionality, as well as the processes for browsing products, making purchases, and accessing customer support. A well-designed customer interface is crucial for providing a seamless, user friendly experience that can enhance customer satisfaction and encourage repeat business.

3.1.1 Home Page



LATEST COLLECTIONS —

Figure 4: Home Page

3.1.2 Shopping Cart

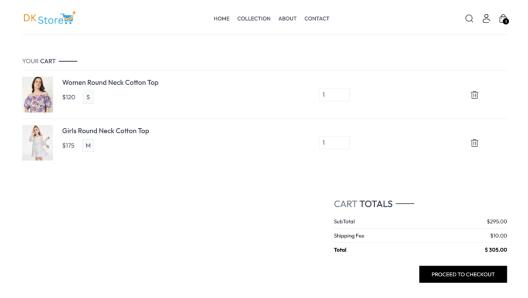


Figure 5: Shopping Cart

3.1.3 Checkout Page with Shipping Information

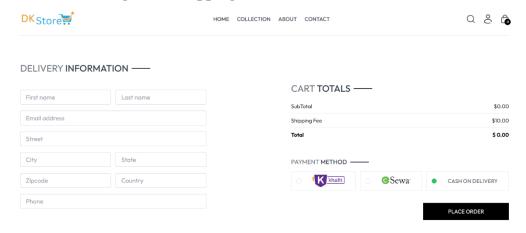


Figure 6: Checkout Page

3.1.4 Login Page



Figure 7: Login Page

3.2 Admin Interface

Admin interface is a page or commonly called dashboard contains details about the products to be added, edited or removed, also various product information.

3.2.1 Admin Login

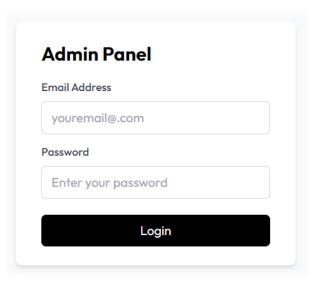


Figure 8: Admin Login

3.2.2 Add Item

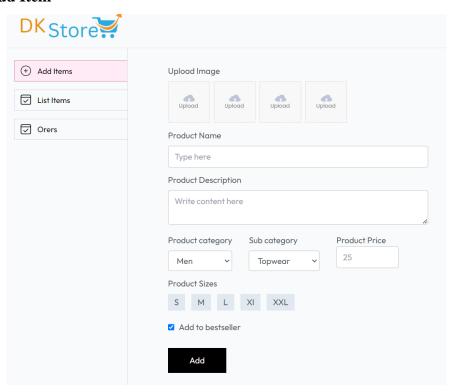


Figure 9: Add Item

3.2.3 List Item

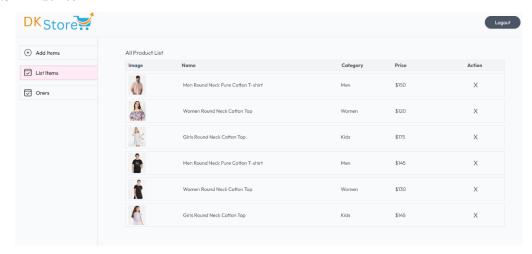


Figure 10: List Item

3.2.4 Orders

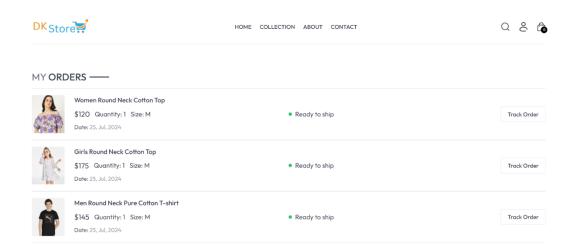


Figure 11: Orders

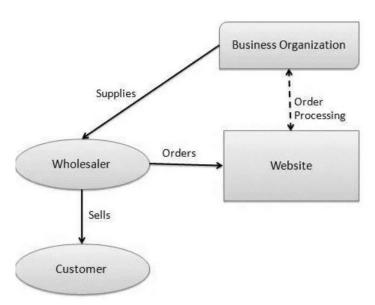
CHAPTER 4: MODELS AND PROCESS

4.1 Models of E-commerce

An ecommerce business model refers to how a business operates to sell goods and services online. There are 6 main types of ecommerce business models, namely Business-to-Government (B2G), Business-to-Business (B2B), Business-to-Consumer (B2C), Consumer-to-Consumer (C2C), Consumer-to-Business (C2B), and Business-to-Business-to-Consumer (B2B2C) [3]. E commerce models offer numerous benefits, including convenience, broader market reach, and cost-efficiency. For businesses, e-commerce enables access to a global customer base, reduces overhead costs associated with physical stores, and provides valuable data insights into consumer behavior. Customers benefit from the convenience of shopping from anywhere, the ability to compare prices easily, and access to a wide variety of products. Additionally, e commerce fosters competition, which can lead to better prices and improved products and services. However, challenges such as cyber-security threats, logistics, and maintaining customer trust must be managed to fully capitalize on the advantages of e-commerce.

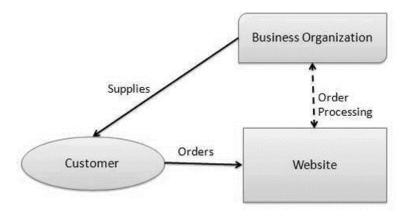
4.1.1 Business-to-Business

The Business-to-Business (B2B) model involves transactions between businesses, such as a manufacturer selling products to a wholesaler or a wholesaler selling to a retailer. B2B transactions often include bulk orders and long-term contracts, focusing on supply chain efficiency and relationship management. The B2B model is characterized by its emphasis on volume, negotiated pricing, and customizability to meet specific business needs.



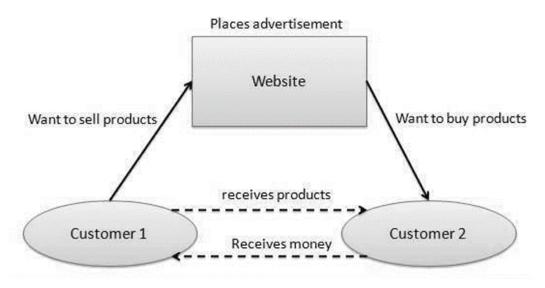
4.1.2 Business-to-Consumer

The Business-to-Consumer (B2C) model refers to the process in which businesses sell products or services directly to individual consumers. This is the most common e-commerce model and encompasses a wide range of online retail activities. B2C transactions typically involve lower volumes per transaction compared to B2B, but they occur more frequently and are driven by consumer demand.



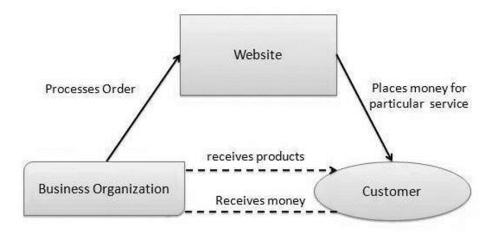
4.1.3 Consumer - to – Consumer

A website following the C2C business model helps consumers to sell their assets like residential property, cars, motorcycles, etc., or rent a room by publishing their information on the website. Website may or may not charge the consumer for its services. Another consumer may opt to buy the product of the first customer by viewing the post/advertisement on the website.



4.1.4 Consumer – to – Business

In this model, a consumer approaches a website showing multiple business organizations for a particular service. The consumer places an estimate of amount he/she wants to spend for a particular service. For example, the comparison of interest rates of personal loan/car loan provided by various banks via websites. A business organization who fulfills the consumer's requirement within the specified budget, approaches the customer and provides its services.



4.1.5 Business - to - Government

B2G model is a variant of B2B model. Such websites are used by governments to trade and exchange information with various business organizations. Such websites are accredited by the government and provide a medium to businesses to submit application forms to the government.



4.1.6 Government - to – Business

Governments use B2G model websites to approach business organizations. Such websites support auctions, tenders, and application submission functionalities.



4.2 E-Commerce Process

E-commerce process is applied in almost every company working in this field. Process of E-Commerce Business includes the following elements:

- Marketing: The purpose of marketing is target to potential buyers, engage them to enter
 your website by using internet advertising, email or creating fairs. In addition,
 businesses should also establish communities (user groups), forums, chats or customer
 surveys through surveys to create the return of customers.
- Customers: Customers are indispensable for e-commerce businesses. However, we also need to distinguish two types of purchases.
- Purchasing between businesses: A buyer is another business that needs to buy.
- Buying goods between customers and businesses: The buyer is usually an individual who pays by credit card and sends home goods.
- Visit Website: As soon as a customer enters the website, a business site is downloaded. Now you can start tracking and creating profiles for this customer. Based on that information, you can target the products that this customer is most interested in.
- View product: Customers see the product on the website if the item is arranged by stall, category for easy search. Once customers are attracted to the items on sale or promotions, this is really a potential customer.
- Add to cart: On the e-commerce website, there is always a shopping cart for customers
 to shop most conveniently and easily. The shopping cart is simply a list of items
 selected by the buyer, quantity, price, attributes (colors, sizes, etc.) and any other
 information related to the order. The shopping cart often provides options to clean the
 basket, delete items, and update quantities.
- Checkout: As soon as the customer has all the items to buy, they will begin the billing process.
- Payment: After calculating the total value of items (including tax and shipping) the buyer will present the payment method.
- For credit cards, there are options to process credit cards offline or online. The online processing on the internet through services is provided by reputable companies.
- Processing orders: If you do not automatically process your credit card, you must first
 process your financial transactions. Standard business rules govern this step, such as
 ordering by phone or mail.

4.3 E-commerce Payment

Electronic payment system is the alternative to the coin or paper-based cash payment system to ease the user to make payment for their purchased goods or services over the network or internet and in absence of the physical presence. The good payment system should satisfy the user's acceptance and merchants in the mass scale.

Currently there are two methods for payment being used in this system which are:

- Cash on Delivery: payment is done through cash once product is delivered.
- E-Wallet: Customer pays for the product digitally through the help of the payment site connecting the bank account. The wallet being used in this project are: Khalti, ESewa.

CHAPTER 5: IMPLEMENTATION AND TESTING

5.1 Implementation

Systems development is the process of defining, designing, testing and implementing a new software application. It can include the internal development of customized systems, the creation of database systems or the acquisition of third party developed software. The tool, hardware and software used in making system are as follow:

5.1.1 Tools Used

The development of the home service platform involved the use of several essential tools and technologies, contributing to the project's success. Key tools used include:

- MERN Stack: MongoDB Atlas/Compass, Express.js, React.js, Node.js and CSS, formed the foundation for the platform's development, enabling efficient server-side processing and creating a dynamic and interactive user interface.
- **IDEs and Code Editors:** Visual Studio Code was used for coding and editing, providing features like syntax highlighting and debugging capabilities.
- **Version Control Systems**: Git and GitHub were employed for effective code management, enabling collaboration and maintaining code integrity.
- **Design Tools**: Tools such as Figma, and diagramming tools like Draw.io, Visio were used to create wireframes, mockups, and system architecture diagrams.
- API Development and Testing: Postman served as an API development and testing tool, facilitating efficient API design, development, and testing.

The utilization of these tools helped streamline the development process, improve collaboration, ensure code quality, and deliver a successful home service platform.

5.2 Testing

The testing is a critical component of the development process for the home service platform system. It involves systematically verifying and validating the system's functionalities, ensuring that they perform as intended and meet the specified requirements.

5.2.1 Unit Testing

Unit testing is a software testing technique focused on assessing individual units or components of a software application in isolation to validate their proper functionality. Its primary objective is to verify that each segment of the software code performs as expected. Usually conducted by developers during the development stage, unit testing aims to ensure

the dependability and precision of the code modules they create. Through meticulous unit testing practices, developers strive to uphold the integrity and quality of the software by identifying and rectifying any potential issues early in the development process.

Admin Login

Table 1: Test case for Admin Login

Test	Scenario	Entered Value	Expected	Actual	Remarks
Cases			Outcome	Outcome	
1	Check	email:	Login	Admin	Pass
	Login with	adminn@gmail.com	Successful	panel	
	valid data	Password:			
		adminn123			
2	Check	Username:	Login	Invalid	Pass
	Login with	Admin	Unsuccessful	credentials	
	Invalid	Password:			
	Data	admin@123			
3	Check	Username:	All the Field	Please	Pass
	login with	Password:	must be	enter	
	field		entered	username	
	empty			and	
				password	

User Registration

Table 2: Test case for User Registration

Test	Scenario	Entered Value	Expected	Actual	Remarks
Cases			Outcome	Outcome	
1	Enter Valid	Name: Dipesh Mahato	Registration	Registration	Pass
	data on	Email:dipesh@gmail.com	Successful	Successful	
	respective	Password: Dipesh123			
	fields				
2	Enter	Name: Surya Mahato	Registration	Invalid	Pass
	Invalid data	Email:suryagmail.com	Unsuccessful	Email	
	on	Password: surya		address	
	respective				
	fields				
3	Check	All field empty	All the Field	All the Field	Pass
	registration		must be	must be	
	with field		entered	entered	
	empty				

User Login

Table 3: Test case for User Login

Test	Scenario	Entered Value	Expected	Actual	Remarks
Cases			Outcome	Outcome	
1	Login with	Email: dipesh@gmail.com	Login	Login	Pass
	Valid Data	Password: Dipesh123	Successful	Successful	
2	Login with	Email: dipes@gmail.com	Login	Invalid	Pass
	Invalid Data	Password: lalbabu111	Unsuccessful	credentials	
3	Login with	Email:	All the Field	Please enter	Pass
	field empty	Password:	must be	phone and	
			entered	password	

5.2.2 System Testing

System Testing rigorously evaluates the integrated software to guarantee its alignment with specified criteria and seamless functionality in practical settings. This testing phase occurs subsequent to unit testing and precedes user acceptance testing, ensuring that the system performs reliably and meets user expectations before final approval.

Table 4: Test Case for Registration

S.N	Test Case	Expected Data	Remarks
1	Registration of User	Register new user	Successful
		in database	
2	On click Register	Register if all the	Successful
		filed are fill	
		correctly	

Table 5: Test case for user profile

S.N	Test Case	Expected Data	Remarks
1	Login	After successful	Successful
		validation go to	
		user dashboard	
2	Add to cart	Cart modified	Successful
3	On click delete	Cart item deleted	Successful

CHAPTER 6: CONCLUSION AND FUTURE RECOMMENDATION

6.1 Conclusion

DkStore is an e-commerce platform designed to simplify the shopping experience by offering a wide range of clothing for men, women, and kids. With categories such as topwear, bottomwear, and winter wear, DkStore allows customers to browse, select, and purchase their preferred outfits from the comfort of their homes.

As a growing platform in the digital marketplace, DkStore is making a significant impact by providing convenient online shopping options, especially in areas where e-commerce is gaining traction. The platform's secure payment methods and home delivery services encourage more people to embrace online shopping.

In conclusion, DkStore aims to develop a user-friendly web application that caters to diverse clothing needs. By offering a seamless and efficient shopping experience, it enhances convenience for customers. Additionally, DkStore helps sellers expand their reach, boosting sales and visibility through its digital platform, creating a mutually beneficial environment for both shoppers and businesses.

6.2 Future Recommendation

To ensure sustained growth and customer satisfaction, DkStore should adopt advanced technologies and expand its services. Key strategies include digital marketing through social media, email campaigns, SEO, and targeted ads to boost visibility. Loyalty programs, personalized promotions, and AI-driven recommendations can enhance customer retention and shopping experiences.

Advanced analytics will help optimize product offerings and inventory management, while chatbots provide instant support. Strengthening security with multi-factor authentication, encryption, and regular audits will protect customer data and build trust. By focusing on innovation and customer needs, DkStore can drive growth and success in the e-commerce space.

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