Kathmandu BernHardt College

A CASE STUDY REPORT ON

Aquatic (Online Aquarium Store)

Submitted to

Department of CSIT

Kathmandu BernHardt College

Submitted by

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Finally, I would like to express my sincere gratitude to Tribhuvan University, which provided us with a platform to hone our skills.

ABSTRACT

Aquatic is your go-to online shop for all things aquarium-related. Whether you're a newbie or a seasoned aquarist, we've got you covered with a wide range of high-quality aquarium supplies. From tanks and filtration systems to a stunning variety of aquatic flora and fauna, we have carefully curated products to meet your needs. Our commitment to eco-friendly options and responsible sourcing ensures that you can create a beautiful underwater world while preserving aquatic ecosystems.

At Aquatic, customer satisfaction is paramount. Our knowledgeable specialists are here to assist you with expert advice, making your aquatic journey enjoyable and educational. We aim to empower you with information and provide a user-friendly online platform. By choosing Aquatic, you not only enhance your aquatic setup but also contribute to the well-being of aquatic environments. Join us in turning your aquatic dreams into reality.

Experience the magic of aquatic life with Aquatic – Your Aquarium Supply Haven. Whether you're starting a new project or upgrading your existing setup, we are your trusted partner. Explore our extensive product range, access educational resources, and embrace the joy of nurturing aquatic life responsibly. Dive into a community of passionate aquarists and discover the beauty, tranquility, and wonder of underwater worlds with Aquatic.

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CHAPTER ONE INTRODUCTION

1.1 INTRODUCTION

The demand for E-commerce applications has been increasing at a rapid pace after digitalization and proper use of internet facilities have been achieved. Documentation on the **'Aquatic (Aquarium Store)"** for **'General Aquarium Sales'** has been prepared. This case study report is concerned to avoid the complexity of human tasks. In an online aquarium sales system, we can avoid the difficulty to maintain the details and bill payments. An efficient aquarium sales system can provide the required information for the searched aquarium and fishes. There is no exact portal for sales of different aquarium, fish, plants , and this system is to enable the customers to search for the aquarium only reducing confusion and complexity.

E-commerce has been increasing in recent years at a rapid pace, and it has helped the general public to do many of their tasks through online media. The main problem was "Whether the aquarium is available in the store or not?", "Visit another store?". These are a few of the problems that a customer must face. Viewing the device in digital media and ordering it after looking at its specifications and price is a feature that has been made possible through this system.

1.2 PROBLEM DEFINITION

E-commerce has been increasing in recent years at a rapid pace, and it has helped the general public to do many of their tasks through online media. The main problem was "Whether the aquarium products is available in the store or not?", "Visit another store?". These are a few of the problems that a customer must face. Viewing the products in digital media and ordering it after looking at its specifications and price is a feature that has been made possible through this system. Online buying of aquarium products has been made easier with the introduction of E-commerce.

1.3 OBJECTIVES

The objectives of this case study are:

- To study and analyze the adopted system of the business.

- To design a system for the sales of aquarium products only.

- To create a better system as a replacement, if required, and provide suggestions.

- To build a user-friendly application.

- To provide proper billing facilities.

1.4 SCOPE AND LIMITATIONS

The component of project planning that involves identifying and recording a list of precise project goals, deliverables, activities, expenses, and deadlines is known as the project scope. A scope statement or terms of reference is the documentation of a project's scope. The scope of the project is an efficient method of buying aquarium products. Other aquarium products can also be added to the items that can be sold by the E-commerce website. Some of the scopes are:

1. The growth of e-commerce.

2. Simple aquarium products selection.

3. Effective sales of aquarium products.

Some of the Limitations are:

1. Students with no prior expertise in this discipline carried out the analysis.

2. Due to their intricacy, some processes are described theoretically rather than practically.

3. Some details of the case study remain confidential because it was conducted for educational purposes rather than for profit.

1.5 BRIEF HISTORY OF E-COMMERCE

E-commerce began as a standard for the transmission of business documents between suppliers and their business clients, such as orders or invoices. Those beginnings may be traced back to the Berlin blockade and the airlift of 1948-1949 when products were ordered mostly by telex. Various businesses refined that method over the next few decades until the first universal standard was issued in 1975. The resulting computer-to-computer electronic data exchange (EDI) standard is sufficiently adaptable to handle the majority of basic electronic commercial transactions.

With the widespread use of the Internet, as well as the development of the World Wide Web in 1991 and the first browser for accessing it in 1993, the majority of e-commerce switched to the Internet. With the global proliferation of smartphones and the availability of fast broadband Internet connections, e-commerce has shifted to mobile devices, which also include tablets, laptops, and wearable gadgets like watches. E-commerce has had a significant impact on everyday living as well as how businesses and governments work. Commerce takes to happen in electronic marketplaces (or marketspaces) and supply chains that operate on the Internet-Web. Large e-malls (such as Amazon), consumer-to-consumer auction platforms (such as eBay), multichannel stores (such as L.L. Bean), and millions of e-retailers are examples of consumer-oriented marketplaces. Alibaba and other businesses have built massive business-to-business marketplaces. As a form of settlement, electronic currencies (or cryptocurrencies) such as Bitcoin came into play.

Initially, E-Commerce was started in our nation so that Nepalis living abroad could send presents to loved ones in Nepal. People living outside of Nepal were offered the option to send gifts to their loved ones in Nepal. This is how the notion of E-Commerce began in Nepal. The goal of virtual stores in Nepal was simply to raise awareness of E-Commerce among the general public.

1.6 ELEMENT OF E-COMMERCE

The success or failure of a business, particularly an e-commerce firm, is determined by careful planning and execution. Ecommerce is the process of enabling commercial transactions between sellers and buyers via the use of internet-enabled computers. The difficulties connected with the building and sustaining an e-commerce business are entirely dependent on what the store owner intends to include on their web pages. Some websites may be basic, but others may be crammed with competitive multipurpose functions. The ability to provide a smooth user experience while also having great website functioning is an essential component of every e-commerce shop.

Whether it is traditional commerce or e-commerce or successful business model, must address the following key elements:

1. Value Proposition:

It outlines how a company's product or service satisfies customers' needs. Successful e-commerce value propositions from the customer's perspective include managing product delivery, lowering the cost of manufacturing search, and personalizing and customizing product offerings. Example: Amazon vs. traditional retail while purchasing a book.

2. Revenue Model:

The revenue model of a company outlines how it will create sales, earnings, and a higher rate of return on capital spent. Profits alone won't qualify a business as "successful," as it also needs to outperform competing investments in terms of returns.

3. Market Opportunity:

The phrase "market opportunity" refers to the planned market space of the business as well as the overall possible financial prospects that are present for the

business in that market space. It is determined by the possibility for profit in each of the niche sectors where we intend to compete.

4. Competitive Environment:

The other companies selling comparable items and competing in the same market sector are referred to as a firm's competitors. Normally, businesses face both direct and indirect rivals. Companies that sell very similar goods and services and operate in the same market category are considered direct competitors. Companies that compete indirectly may operate in diverse industries since their goods can be used to replace one another's.

5. Competitive Advantage:

A company has a competitive edge if it can manufacture a better product and/or promote it for less money than most, if not all, of its rivals.

6. Market Strategy:

Any business idea that is not effectively promoted to potential clients fails. Marketing refers to all of the activities we carry out to advertise our business' goods and services to prospective clients.

7. Organizational Development:

The strategy outlines how the business will structure the work that needs to be done. Functional departments including production, shipping, marketing, customer support, and finance are typically used to organize the work.

8. Management team:

A solid management group provides a model with immediate market expertise, experience carrying out business strategies, and credibility with outside investors. A

strong management team might not be able to fix a flawed business model, but they ought to be able to alter it and restructure the company as circumstances demand.

The types of revenue models are:

1. Advertising Model:

   According to this business model, a company that provides content, services, or products also acts as a platform for advertisements and charges advertisers' fees. Google, for example, generates a sizable portion of its revenue from display and video advertising.

2. Subscription Model:

   For access to part or all of its offerings, a corporation that provides content or services must charge a membership fee. One service that charges subscription fees for streaming videos is Netflix.

3. Transaction Fee Model:

   In this arrangement, a business is compensated for facilitating or carrying out a transaction. For instance, eBay offers an auction market space and, if the seller is successful in selling the item, earns a tiny transaction fee from the seller.

4. Sales Model:

   In this model, a business offers products, information, or sale services. An illustration is Amazon.

5. Affiliate Model:

   In the context of advertising, affiliate marketing refers to the practice of paying outside publications to direct customers to a company's goods and services. Affiliate marketing is one of the major marketing models that ain being used at present time.

1.7 STATUS OF E-COMMERCE IN NEPAL

Initially, E-Commerce was started in our nation so that Nepalis living abroad could send presents to loved ones in Nepal. People living outside of Nepal were offered the option to send gifts to their loved ones in Nepal. This is how the notion of E-Commerce began in Nepal.

Nepal has experienced rapid growth in internet business. However, the situation has not improved to the extent that it should have. There is no formal registration for ECommerce businesses, which has resulted in the proliferation of Online Stores in Nepal. Similarly, the proprietor of an online business lacks sufficient knowledge of how ECommerce works, as well as new technology and techniques for promoting your company through an online platform. Many people have found it easy to begin E-Commerce; yet, this does not imply that there are no good internet enterprises in Nepal. There are some. For example, Daraz online, Sastodeal, Munchha.com, URBAN GIRL, and so on. An approach called a **Facebook store** is also seen as very popular in Nepal, where products are sold through a Facebook page, rather than a website.

Some of the leading e-commerce platforms are:

1. **Daraz:** Daraz, a fashion shop, was created in Pakistan in 2012 by a German Venture Capital Company, Rocket Internet. However, in 2015, Daraz began functioning with a broad marketplace strategy and business model, which meant that Daraz was now selling more than only fashion products online. Daraz began operations in Nepal after the Daraz Group bought Kaymu, a South Asian consumer-to-consumer online marketplace.

Figure 1: Logo of Daraz

2. **HamroBazar:** Another well-known online retailer is HamroBazar. Because it is built on the consumer-to-consumer (C2C) business model, we can both buy and sell goods. It makes it possible for people and businesses to post a huge variety of new or used goods online.

Figure 2: Logo of HamroBazar

3. **SastoDeal:** Sastodeal is also one of Nepal's biggest online shopping websites providing varieties of services. Sastodeal offers cash on the delivery facility with delivery service to major cities in Nepal.

Figure 3: Logo of Sastodeal

CHAPTER TWO REQUIREMENT ANALYSIS

2.1 REQUIREMENT ANALYSIS

The requirement definition is the consequence of the end of the analytical work. Establishing a complete information description, a thorough functional and behavioral description, an indication of performance demands and design restrictions, and appropriate validation criteria allows for the refining of the function and performance requirement analysis. The firm was visited numerous times, and each time, various questions were posed to the administration and personnel. Following the visits, the following requirement analysis was performed:

2.1.1 Data Requirements

The data requirements analysis method takes a top-down approach that prioritizes business-driven demands; thus, the analysis ensures that the identified requirements are relevant and attainable. The process includes data search and evaluation in the context of expressly qualified business data consumer requirements. Following the identification of data needs, candidate data sources are identified, and their quality is evaluated using the data quality assessment process.

The steps of the data needs analysis process are as follows:

- Recognizing business scenarios

- Interviews with stakeholders

- Bringing together expectations and requirements

- Creating source-to-destination mappings

2.1.2 Customer Requirements

Customer segmentation, or grouping customers based on common characteristics, enables eCommerce businesses to provide relevant, timely promotions to their users.

Customer need analysis is a fundamental foundation for studying customer behavior and interaction. It consists of three forms of analysis, each of which provides additional information on customers.

1. Retail e-commerce browsing habit

The most significant part of contemporary eCommerce is analyzing user browsing activity. It focuses on tracking and comprehending every element of a customer's on-site activity. The more information an online retailer knows about a customer, the better it can offer them.

2. Retail E-Commerce Customer Purchase Behavior

Customer purchase behavior is the most important part of customer preference data. On an online store, one looks at too many items of interest and browses indefinitely before purchasing and spending money on the item desired. This delivers more up-to-date information regarding client behavior. Using the customer's buying history. Many more products of a similar sort can be made available to them.

3. Email Monitoring

Email, the earliest of the current digital marketing methods, remains the most effective. Email marketing accounts for around one-fourth of all retail income. This is why it is critical to maintaining track of a customer's behavioral information. Observing and optimizing data is an efficient technique to examine it.

- How many emails have been sent to a certain customer?
- How many emails have been opened?
- How many emails were opened and clicked on?
- Did any of your emails result in a sale?

2.1.3 Process Requirement

Because there are confusing requirements, the spiral process model will be used to design and create the website for this project. The spiral model is one of the most prominent Software Development Life Cycle models for risk management. It seems to be a spiral with multiple loops in its diagrammatic form. The precise number of spiral loops is uncertain and varies from project to project. Each spiral loop is referred to as a Phase in the software development process. The project manager can change the number of phases required to build the product based on the project risks. Because the project manager chooses the number of stages dynamically, the project manager plays a significant role in developing a product utilizing the spiral model.

2.1.4 Functional Requirements

Functional requirements in software and system engineering specify the essential operations that a system must carry out. Functional requirements are product features or functions those developers must implement to enable users to accomplish their tasks. So, it's important to make them clear both for the development team and the stakeholders. There are numerous aspects of functional requirements to consider while purchasing and selling mobile devices. Some of them are as follows:

1. Registration

2. Login

3. Search Products

4. Payment

5. Logout

6. Add devices for sale

7. Edit the device availability (Admin side)

8. Edit the order

We now provide an overview and detailed description of all the functional needs.

1. Registration

A consumer has to be registered to purchase a mobile device. Orders cannot be placed by unregistered users. Access to the ordering system is restricted to the legitimate user.

2. Login

Only by submitting the correct login information for buying a gadget can a customer access the system.

3. Search Products

The system will contain a search feature that allows users to look for the products they want and check all of their details and availability.

4. Payment

There are several secure invoicing options available to customers, who can pay with a debit or credit card. Third parties like PayPal and others will supply the security.

5. Logout

The consumer will log out after making a payment or browsing the digital gadgets.

6. Add devices for sale

The system must have a feature that allows administrators to add devices for sale as well as their specifications. The name, serial number, business name, and price of the item are all provided. The device for sale shall be input into the system along with the available discounts and offers.

7. Edit the device availability (Admin side)

The availability of the devices can be defined by the admin for the website.

8. Edit the order

The system will have a feature such that the authentic user can edit their order details. There is no limit to how much the customer can edit their order. The order details can be edited by moving to the cart section. The products which the customer has selected can be edited or even deleted from the cart.

2.1.5 Non-Functional Requirements

There are several software requirements specifications contained in the non-functional requirements of the Online Mobile Sales System, which includes many processes, such as

- Security
- Performance
- Maintainability
- Reliability
- Availability
- Portability
- Accessibility

Security

- Any client that uses the system must have a Login ID and password.
- In all transactions involving private client information, the system employs SSL
- After a period of inactivity, the system must automatically log out all customers.
- The system should not leave any cookies revealing the user's password on the customer's machine.
- Only authorized administrators should have access to the system's back-end servers. Before being delivered across unsecured links like the internet, sensitive data will be encrypted.

Performance:

- Initial loading of the product will take some time, depending on the speed of the internet connection and the media source.

- The client's or customer's hardware components will determine performance.

Maintainability:

- Back-Up: The system offers efficiency for data back-up.

- Errors: The system will track every mistake as well as keep a log of it.

Reliability:

- The dependability of the individual components determines the reliability of the program as a whole.

- The database backup, which is regularly updated to reflect the most current changes, is the primary tenet of the system's dependability.

Availability:

- A substitute page will be displayed in the event of a hardware failure or database corruption.

- In addition, in the event of a hardware failure or database corruption, the administrator should obtain database backups from the server and store them before restarting the service.

Portability:

- The end-user portion is completely portable, thus any device running any web browser should be able to utilize the system's functionality, including any current or upcoming hardware platform. The system must function on PCs, laptops, PDAs, and other devices...

Accessibility:

- The system will function as a web-based application and be accessed using a web browser.

2.2 USE CASE DIAGRAM

A use case diagram is a graphical representation of how a user could interact with a technology. A use case diagram depicts the numerous use cases and user types that exist in the system and is frequently supplemented by other types of diagrams. The use cases are denoted by circles or ellipses. The performers are frequently depicted as stick figures.
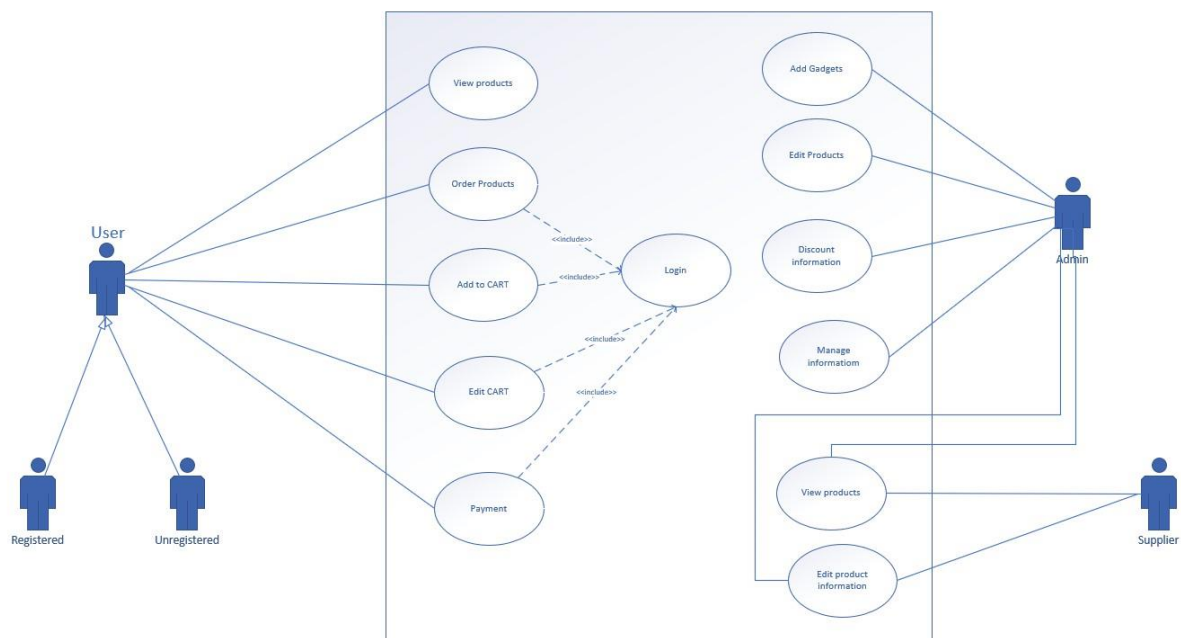
Figure 4: Use case diagram showing both admin and user activity

The use case diagram shows the use cases used by the admin, supplier, and user. The user has again been generalized into a registered user or an unregistered user. The user must be registered to purchase the products and get payment methods. Admin has the simple task of interacting with the supplier to update the gadgets on the website. Other use case diagrams have also been used focusing on the user and the admin separately to ensure proper ease of understanding.

2.2.1 Use Case Diagram Administrative Management System
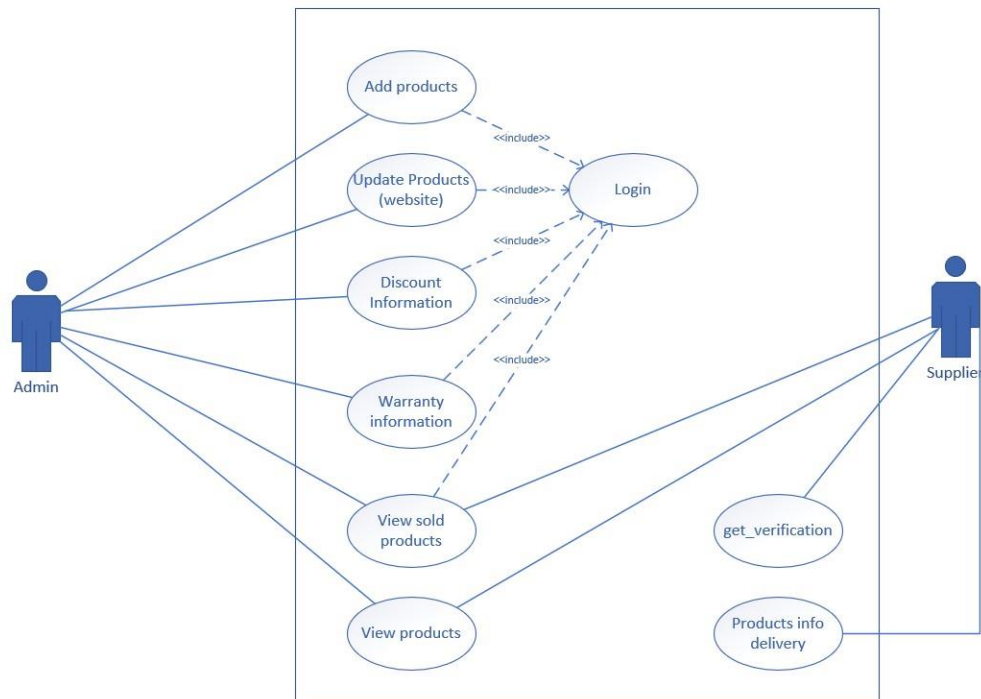
Figure 5: Use Case diagram of Administrative Management System

2.2.2 Use Case Diagram for Customer
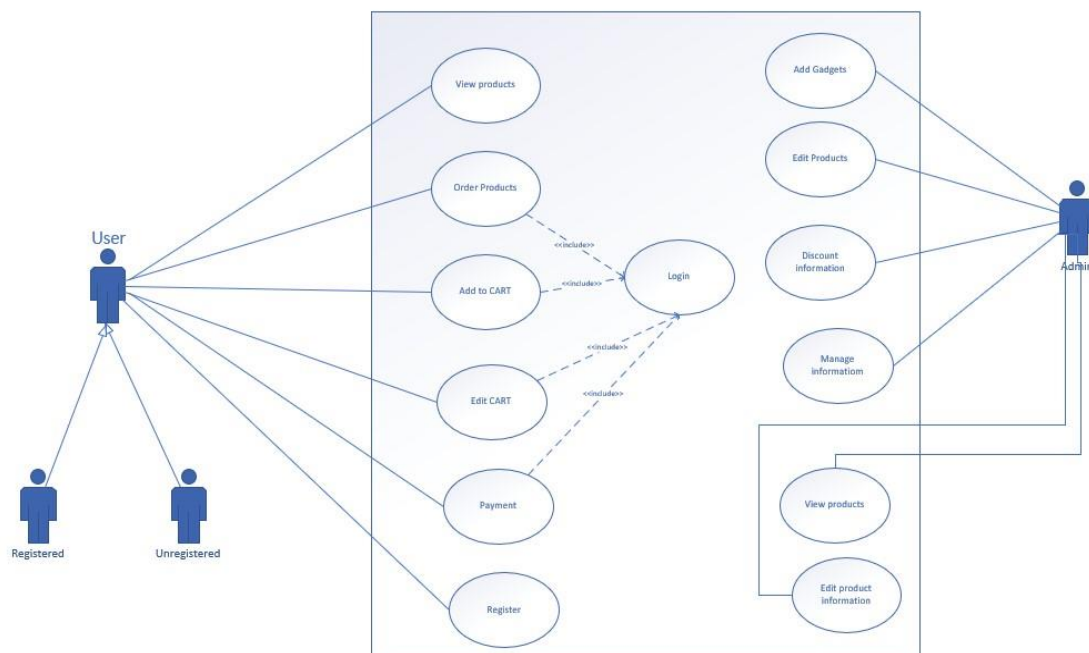
Figure 6: Use Case Diagram for Customer Interface

The Use case diagram for the admin interface and the Customer interface is provided so that

the system can be understood easily.

2.3 DATA FLOW DIAGRAM

A data flow diagram (DFD) depicts the information flow for any process or system. It shows data inputs, outputs, storage sites, and the pathways between each destination using predetermined symbols such as rectangles, circles, and arrows, as well as brief text labels. Data flowcharts can range from simple, even hand-drawn, process overviews to detailed, multi-level DFDs that delve progressively deeper into how data is processed. They can be used to simulate an existing system or to examine an existing one. A DFD, like all the greatest diagrams and charts, can frequently graphically "express" things that are difficult to describe in words, and they work for both technical and non-technical audiences, from developers to CEO.

2.3.1 Context Level Diagram
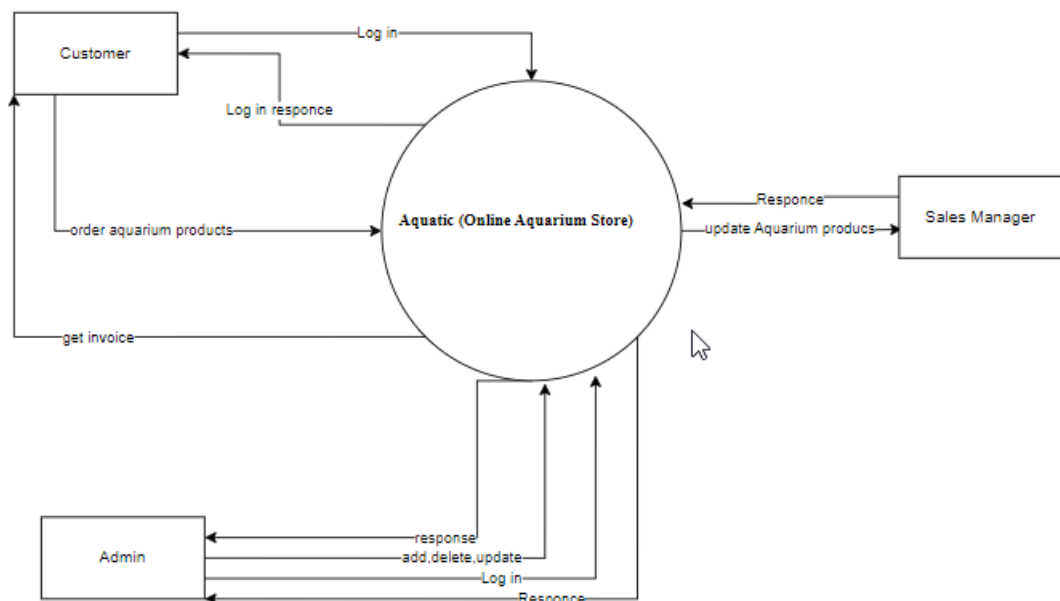
Figure 7: DFD of Aquatic (online aquarium store)

DFD Level 0 is called a Context Diagram. It provides a high-level perspective of the entire system or process being evaluated or modeled. It is intended to provide an overview of the system as a single high-level process with its relationships to external entities.

2.3.2 First Level DFD

DFD Level 1 gives a more complete breakdown of Context Level Diagram components. As you break down the high-level process of the Context Diagram into its subprocesses, you will emphasize the system's essential functions.
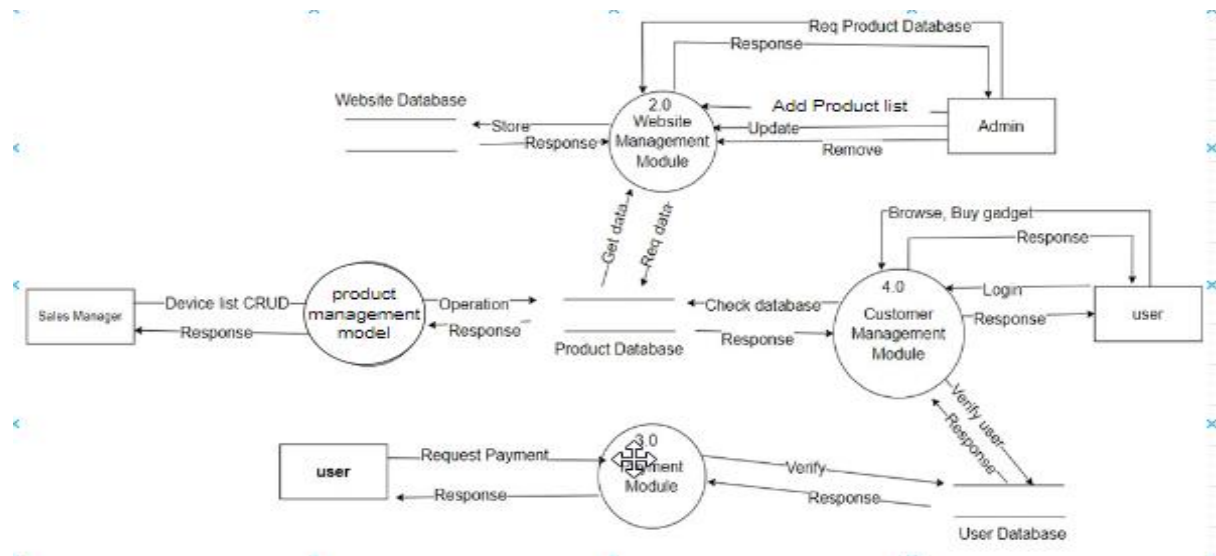
Figure 8: Level 1 DFD of Aquatic

The context diagram is split into numerous bubbles/processes in 1-level DFD. At this level, we emphasize the system's essential functions and divide the high-level process of 0level DFD into subprocesses.

In the above level 1 DFD we can see different entities namely the Sales manager, user, and admin. The different modules or processes are also displayed such that the interaction between different entities or the database is depicted clearly. The different processes are given for the different interactions. Level 1 DFDs continue to provide a basic overview, but they go into greater detail than a context diagram. The single process node from the context diagram is divided into sub-processes in level 1 DFD. As more processes are added, the diagram will require more data flows and data storage to connect them.

2.4 FEASIBILITY STUDY

A feasibility study is an examination of how efficiently a project can be completed while portraying the factors that impact it. Before investing a significant amount of time and money in an endeavor, project managers use practicality to determine the potential positive and bad outcomes. A feasibility study investigates the viability of an idea, project, or even a new business. The goal of a feasibility study is to focus on potential challenges that may arise if the project is undertaken and to determine whether the project should be pursued or not after all significant aspects have been considered. It helps businesses to decide all of the necessary components for a successful operation. A feasibility analysis differentiates strategic concerns and nearly all business-related challenges, while also providing solutions to lessen them. The many feasibility studies undertaken on this project are detailed as follows:

i. Operational feasibility

The primary question of operational feasibility is whether the system will be used once it is built and deployed. Because the system being constructed would primarily benefit the organization, there has been no opposition from potential users that may jeopardize the application's advantages. Given this, the management, or owner, in this case, has been completely supportive of the notion for the creation of this project. The existing business practice is fairly conventional in the sense that much of the work is done manually and is not heavily digital. The creation and deployment of this technology will significantly improve the organization's workflow. Keeping in mind that early engagement of potential users decreases the likelihood of resistance to the new system, we have updated the users about the modifications made and new features introduced to the system to avoid future disagreements. The system's installation makes the system's processes more dependent and significantly decreases the operation time of various tasks in the company. However, the redesign process and the transition from manual to digital is not a one-day event. All product information as

well as accounting data should be moved to the new system. We feel the suggested method would be extremely beneficial to the organization.

ii.   Technical feasibility

Technical feasibility evaluates the present resources (such as hardware and software) and technology necessary to meet user needs in software within the time and budget constraints. The software development team determines if existing resources and technology can be enhanced or added to the product to meet stated user requirements. For this feasibility study, we investigated the entire system's capabilities and determined whether or not everything was feasible utilizing various sorts of frontend and backend jobs. Because the organization already possessed all of the system's hardware needs, no new hardware expenditures were incurred. The organization's current computer system also contains the most recent software upgrades necessary to run the system. However, to connect to the server, an application named XAMPP server was added to the system.

iii) Economic feasibility

It assesses if the needed software can provide financial advantages for a company. Because the company already has all of the necessary hardware, the deployment of this system incurs no hardware costs and is entirely comprised of software development costs. There is no additional staff required for the system, and the expense of maintaining the system is minimal if any problems emerge. This is a very crucial issue to consider while designing a project, thus we picked the technology with the lowest potential cost factor in mind. Overall, we anticipate that the advantages the organization would gain from the proposed system will more than offset the startup expenditures and, eventually, the system's operating costs.

CHAPTER THREE
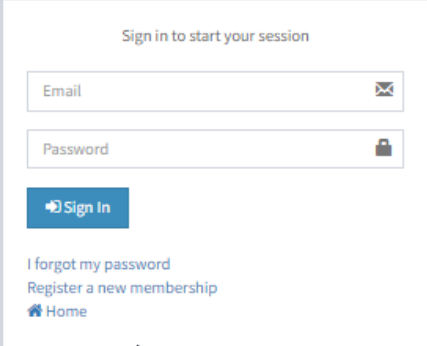
SYSTEMDESIGN

3.1 CUSTOMER INTERFACE

3.1.1 Home Page
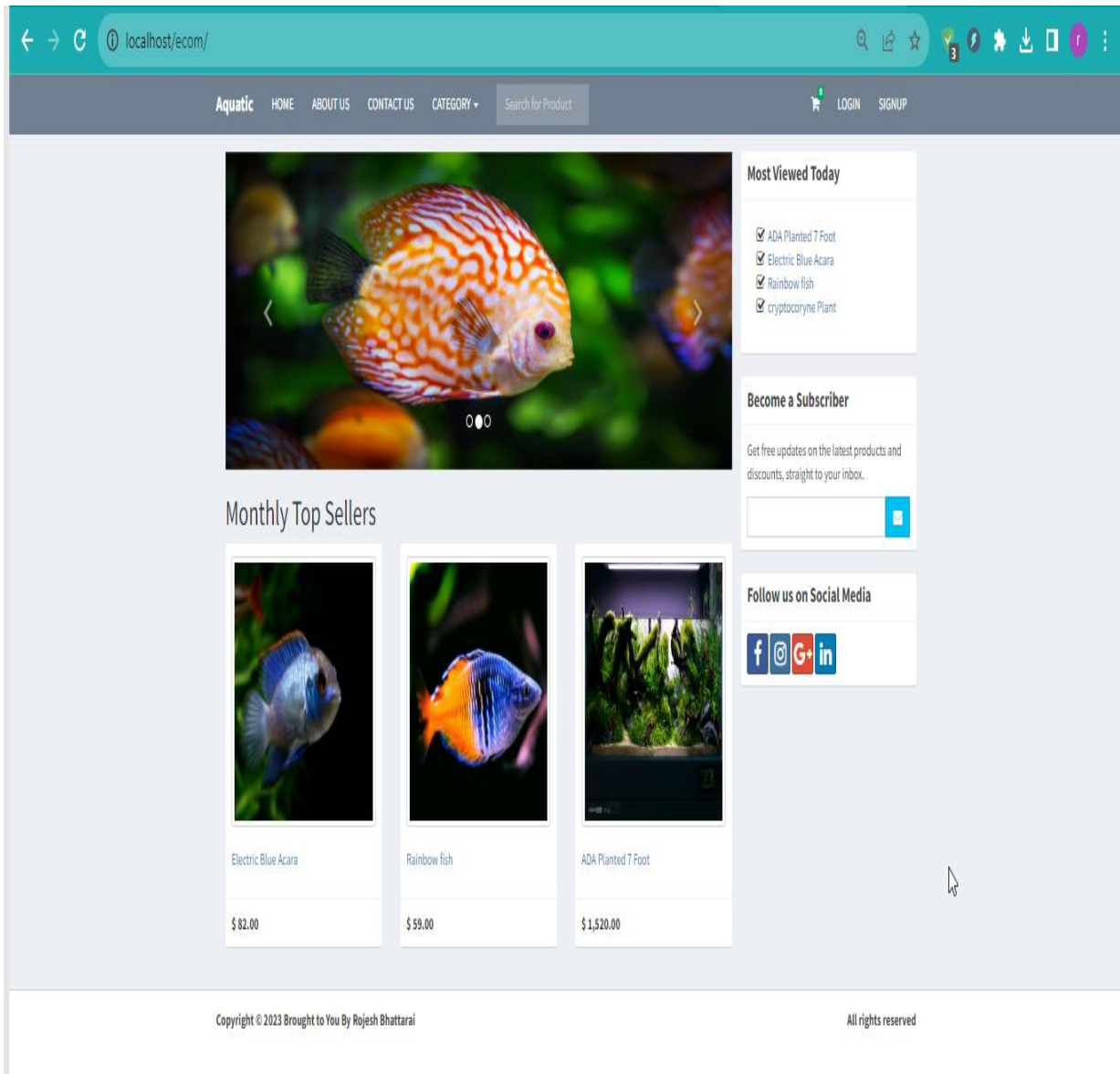
3.1.2 Customer Login and Registration Page

Sign in to start your session
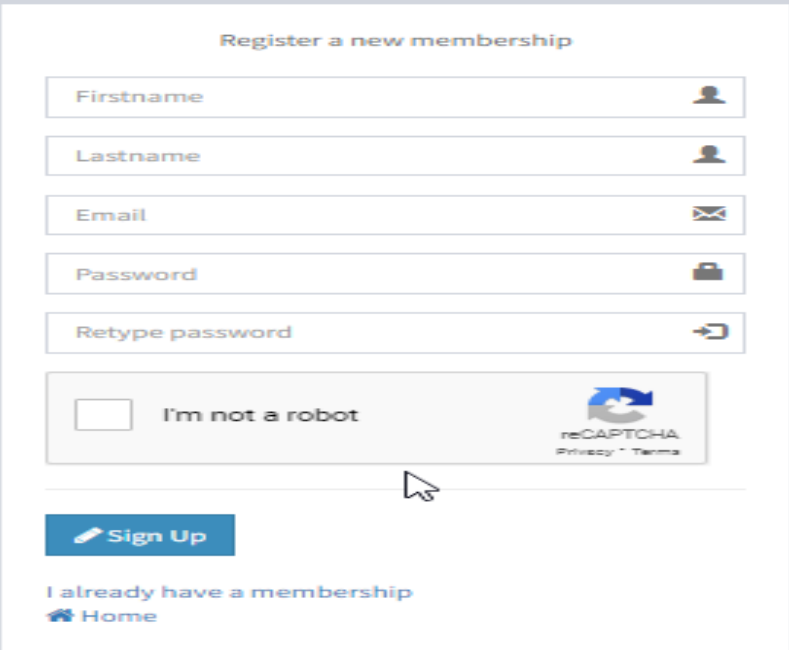
Email

Password

Sign In

I forgot my password
Register a new membership
Home

Register a new membership

Firstname

Lastname

Email

Password

Retype password

I'm not a robot — reCAPTCHA
Privacy - Terms

Sign Up

I already have a membership
Home

3.1.3 Add to cart page

3.1.4 Select Payment Method

3.2 ADMIN INTERFACE

3.2.1 Admin Login
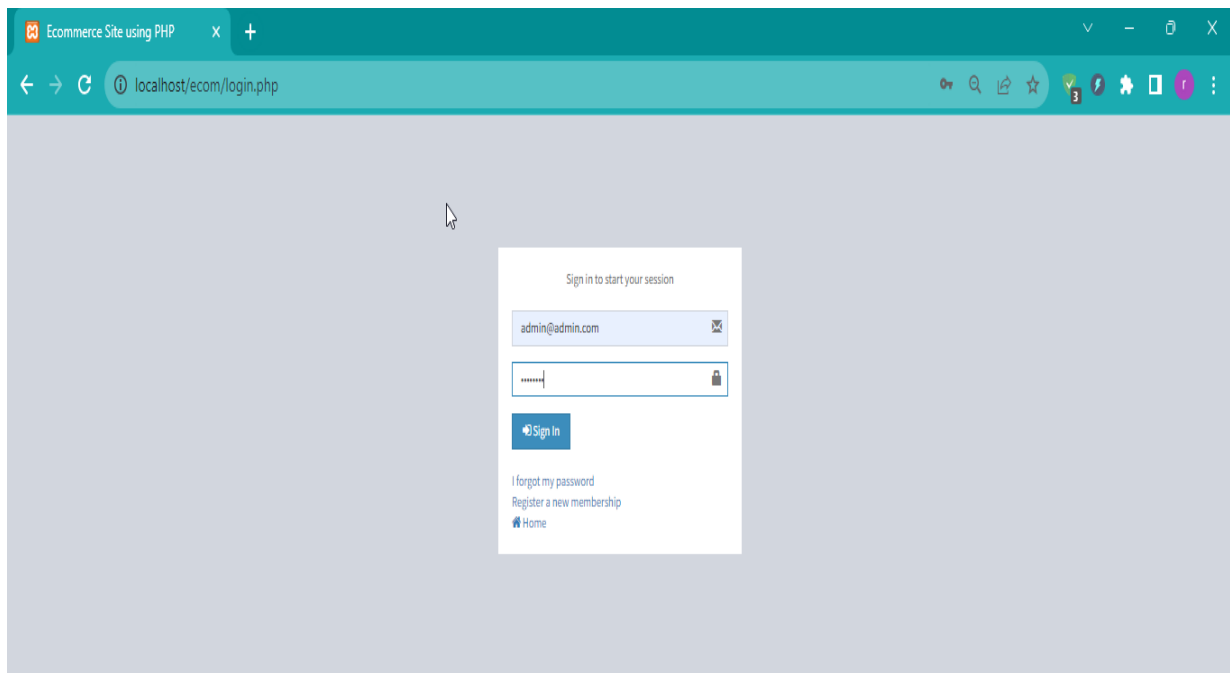
3.2.2 Admin Home Page

3.2.3 Add Category

3.2.4 Manage Products

CHAPTER FOUR MODEL AND PROCESS

4.1 MODELS OF E-COMMERCE

Ecommerce is a business concept that enables companies and customers to buy and sell goods through the internet. Ecommerce business models come in a wide variety, and it's now simpler than ever for innovative founders to use them to bring their ideas to life. The different types of E-Commerce models are:

- Business-to-Business (B2B)

    According to the B2B business model, a website sells its goods to an intermediary buyer who then distributes them to the ultimate consumer. For instance, a wholesaler may order a product from a company's website and then sell it to the ultimate consumer when they visit one of the retailer's retail locations after getting the consignment.

- Business - to - Consumer (B2C)

    The B2C business concept involves selling goods directly to customers through websites. The items shown on the website can be viewed by customers. The client can pick a product and order it. The business organization will then ship the product(s) to the consumer after receiving a notification from the website through email. B2C encompasses both products and services.

- Consumer - to - Consumer (C2C)

    A C2C business model website assists customers in selling their assets such as residential property, vehicles, motorbikes, and so on, or renting a room by publishing their information on the internet. The customer may or may not be charged for the website's services. By reading the post/advertisement on the internet, another consumer may decide to purchase the initial customer's merchandise.

- Consumer-to-Business (C2B)

In this paradigm, a consumer visits a website that displays numerous business organizations offering a specific service. The customer estimates how much he or she wants to pay for a specific service. For example, websites may be used to compare the interest rates on personal loans and vehicle loans offered by various institutions. A corporate entity that approaches the client and offers its services after fulfilling the consumer's requirements within the stipulated budget. Business-to-Government (B2G). The competitive advantage of the C2B eCommerce business is in pricing for goods and services.

- Government-to-Business (G2B)

Government approaches commercial groups using B2G model websites. These websites provide auction, tender, and application submission functionality.

1. Government - to - Citizen (G2C)

Governments employ G2C model websites to reach out to citizens in general. These websites facilitate auctions of automobiles, machinery, and other items. This type of website also offers services such as birth, marriage, and death certificate registration. The primary goal of G2C websites is to lower the average time required to fulfill public requests for various government services.

2. Business-to-Government (B2G)

The B2G model is a subset of the B2B model. Governments utilize such websites to trade and exchange information with various corporate entities. These websites are approved by the government and allow businesses to submit application forms to the government. This approach is dependent on successful government contract bidding. Typically, a government agency would issue a request for proposal (RFP), and eCommerce enterprises will be required to compete on these contracts.

4.2 E-COMMERCE MODEL OF THE PROJECT

Our project adheres to the B2C e-commerce paradigm. B2C is an abbreviation for Business to Consumer. B2C e-commerce refers to a commercial exchange between a company and a customer, sometimes known as business-to-business transactions. The word was largely used to describe the method of direct selling items to clients, which included mall shopping, infomercials, pay-per-view, and dining out.

E-commerce was developed in the late 1990s. Many businesses realized the benefits of direct sales to clients on the Market and increased Internet usage. However, in today's Internet-driven world, B2C has evolved into a completely new market form known as eCommerce, which refers to online transactions between buyers and sellers on this platform. There are already over 100,000 B2C e-commerce enterprises in the United States alone. The benefits of E-Commerce are as follows:

1. *Global Reach*

    B2C e-commerce can be operated globally. Even small companies that operate from home can sell to consumers across the globe.

2. *Reduced Cost*

    Operating through a website will reduce costs since fewer physical resources and staffing would be required.

3. *More customer profile data*

    You'll get more details about your clients as you move your company online and more opportunities to specifically approach them.

4. *Enhanced customer experience*

    Digitization in the transaction will enable real cross-channel experience for buyers and easier product delivery will improve customer experience.
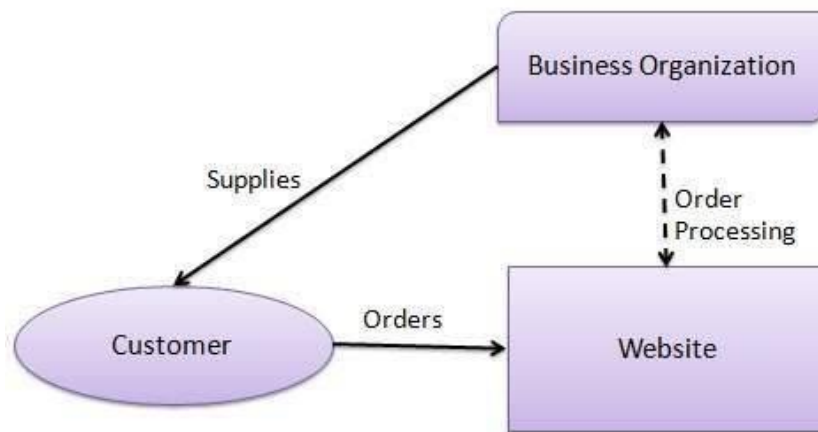
Figure 9: B2C Business Model

The practice of selling items and services directly between a business and customers who are the end-users of its products or services is referred to as business-to-consumer (B2C). The majority of businesses that sell directly to customers are classified as B2C.

4.3 E-COMMERCE PROCESS

E-commerce encompasses all aspects of online purchasing, selling, and transaction processing. eCommerce transactions are carried out via specialized websites that accept payment for goods. There are a lot of moving pieces in an online firm. Ecommerce has been an essential part of our everyday life, and with the recent Corona crisis, every shop has considered venturing into e-commerce at least once. However, even a side project including e-commerce may be highly profitable nowadays.

Every e-commerce firm has unique demands that must be met. The eCommerce process flow outlines all of the stages and functions that go into running an eCommerce website. eCommerce functions in many ways similar to traditional brick-and-mortar retailers, but online. There is what the client sees, and then there are places that are exclusively accessible to personnel. Furthermore, eCommerce allows firms to generate money even when they are not online. As a result, it aids in the maintenance of a work-life balance.

Figure 10: E-Commerce Process cycle

The goal of marketing is to target potential consumers and get them to visit your website via online advertising, email, or fairs. Furthermore, firms could build communities (user groups), forums, chats, or customer surveys through surveys to encourage client retention.

1. Customers

   Customers are essential to e-commerce enterprises. Customers enquire about the products they require or are searching for. However, we must distinguish between two sorts of purchases:

   - Business-to-firm purchasing: A buyer is another business that needs to purchase.

   - Purchasing products between customers and businesses: The buyer is often an individual who pays with a credit card and receives things at home.

2. View Website

   A company site is downloaded as soon as a consumer reaches the website. You may now begin tracking and profiling this consumer. You may then target the goods that this consumer is most interested in based on that information. This is the first and most significant stage in web e-commerce.

3. View Product

   Customers will view the goods on the internet if it is organized by stall and category for simple searching. Consumers who are drawn to the things on sale or promotions are considered potential customers.

4. Add to cart

   There is always a shopping cart on the e-commerce website for clients to shop simply and easily. The shopping cart is a list of goods chosen by the buyer, number, price, characteristics (colors, sizes, etc.), and any other order information. The shopping cart frequently includes options for cleaning the basket, deleting products, and updating amounts.

5. Check out

   Once the consumer has completed the shopping list, the charging procedure will begin. In the purchasing model between customers and companies, customers often submit information such as shipping and billing addresses. Customers can also provide information about greetings, gift bundles, and other dependent services.

6. Transport Fee

   Shipping charges can be as simple as charging the entire amount or as complex as collecting a price for each item purchased and corresponding with the section to which the products must be transported. International orders, on the other hand,

maybe more difficult to process. It may then be linked to a supplier, allowing it to follow products in transit. The shipping fee depends on how much distance is needed to be covered for the parcel to reach the customer.

7. Payment

The buyer will provide the payment option after calculating the total worth of the products (including tax and delivery). For transactions, the following choices will be available:

- Customers and corporations often pay by credit card or after delivery.
- All choices, including orders, bids, guarantees, and so on, must be available across businesses.
- There are choices for processing credit cards offline or online. Reputable firms offer online processing via services on the internet.

8. Receipt

Following the completion of the order, it may be essential to issue the buyer a receipt. The receipt might be a list related to the order in a business-to-business ecommerce scenario. For consumers, the receipt might be a screen printing of the order or a list emailed to the buyer. This method is readily mechanized in both circumstances.

9. Processing orders

The customer must first process his/her financial transactions if he/she doesn't automatically process credit cards. This stage is governed by customary business practices, including placing an order via phone or mail. Customers might be given options to get information about order progress, inventory, or item supply.

10. Order fulfillment

It must be completed as soon as a legitimate order is received. This might be the most difficult business stage. Making an inventory may be tough if you purchase online. There may be issues with the order fulfillment service system if purchased through the service system.

11. Shipping

Shipping items to clients is the final stage in the e-commerce process. Customers can be updated on the status of their orders. In this situation, it may incorporate many carriers, such as UPS or FedEx, to allow consumers to track their goods.

4.4 E-COMMERCE PAYMENT PROCESS

There are two payment methods used in this project. They are:

i.   Cash on delivery: Consumers can pay for a product in cash once it is delivered.

ii.   Bank/Wallet transfer: Consumers can pay for the product digitally through the site by connecting the bank account or any e-wallet account like e-sewa.

4.5 E-COMMERCE SELLING PROCESS

The business owner who is in charge of the site will add the product that needs to be sold on the site in the respective category. To garner the attention of users toward the product, the admin can feature the product on the home page. Lastly, once the product is added to the cart of the user and payment is done it is sold.

CHAPTER FIVE IMPLEMENTATION AND TESTING

5.1 IMPLEMENTATION

Systems development is the process of conceiving, creating, testing, and implementing a new software application or program. Three important systems development strategies have been employed to tackle system challenges: SDLC (Systems Development Life Process), JAD (Joint Application Development), and RAD are system advancement techniques (Quick Application Development).

i. Tools

Database: MySQL

Backend: JavaScript, PHP *Frontend*:

HTML, CSS, Bootstrap

ii. Development Method

During the system's development, we picked the spiral development technique. The Spiral Model is a hybrid of the waterfall and iterative models. Each phase in the spiral model begins with a design goal and concludes with the client assessing the progress. We began with a limited set of criteria and worked through each development process for those needs. The team-built functionality for the extra demand in everincreasing spirals until the program was fully completed.

This approach is used for the following reasons:

i.   Later on, further features or adjustments might be included.

ii.   Because the prototype is built in small pieces, cost estimating becomes simple. iii. The development process is quick, and features are introduced systematically. iv. There is always room for client input

5.2 TESTING

       System testing is the process of validating the entire and fully integrated software product. A system test is used to examine the end-to-end system requirements.

       Typically, the software is just one component of a broader computer-based system. Finally, the program is linked to other software/hardware systems. System testing is described as a sequence of tests designed only to exercise the entire computer-based system.

       A test run of the system was performed before putting the new system into operation to eliminate bugs. It is a critical stage in the development of a successful system. After codifying the entire system's software, a test plan should be designed and conducted on a specified set of test data. By performing all these tests, the different bugs can be found, and debugging can be done easily.

The output of the test run should match the expected results.

5.2.1 TEST CASE REPORT

Case 1

Test ID	Test Case Description	Test Steps	Test Data
1	Checking Performance	1. Fetch Data 2. Insert Data 3. Page Load Time	-
2	Admin, Customer Login Verification	1. Enter the username 2. Enter the password	Email: admin@admin.com Password: password
3	Customer Registration	1. Enter the First Name 2. Enter the Last Name 3. Enter the Email 4. Enter the Password	First Name : Rakshya Last Name: Dangol Email: dangolrakshya2gmail.com Password: password
4	Billing Process	1. Fetch Data 2. Insert data 3. Calculate the total amount	-

Expected Result	Actual Result	Result (P/F)
Fetching time less than 10s Inserting time less than 5s Page load time less than 3s	As expected,	P
The login should be successful	As expected,	P
Registration	As Expected.	P
The calculations must be accurate.	As Expected	P

Case 2

Test ID	Test Case Description	Test Steps	Test Data
1	Checking Performance	4. Fetch Data 5. Insert Data 6. Page Load Time	-
2	Admin, Customer Login Verification	1. Enter the username 2. Enter the password	Email: admin@admin.com Password: password
3	Customer Registration	5. Enter the First Name 6. Enter the Last Name 7. Enter the Email 8. Enter the Password	First Name : Rojesh Last Name: Bhattarai Email: rojshbhatt@gmail.com Password: password
4	Billing Process	4. Fetch Data 5. Insert data 6. Calculate the total amount	-

Expected Result	Actual Result	Result (P/F)
Fetching time less than 10s Inserting time less than 5s Page load time less than 3s	As expected,	P
The login should be successful	As expected,	P
Registration	As Expected.	P
The calculations must be accurate.	As Expected	P

Case 3

Add data to the website from the admin panel

Test ID	Test Case Description	Test Steps	Test Data
1	Admin, Login Verification	1. Enter the username 2. Enter the password	Username: admin@admin.com Password: password
2	Add Category	1. Enter category name 2. Click Submit.	Category name: Plants

Expected Result	Actual Result	Result (P/F)
The login should be successful	As expected,	P
The addition should be successful.	As expected,	P

Case 3.1

Test ID	Test Case Description	Test Steps	Test Data
1	Admin, Login Verification	1. Enter the username 2. Enter the password	Username: admin@admin.com Password: password
2	Add Category	1. Enter category name 2. Click Submit.	Category name: Salt Water

Expected Result	Actual Result	Result (P/F)
The login should be successful	As expected,	P
The addition should be successful.	As expected,	P

CHAPTER SIX SYSTEM INSTALLATION AND MAINTENANCE

6.1 SYSTEM INSTALLATION

This is the phase in which the system analyst evaluated the changeover strategy that should be employed to transition from the existing manual system to the newly built computerized system. After careful consideration, the analyst determined that the parallel changeover approach was the best fit for the system. Parallel conversion is the process of operating the old and new systems concurrently. When the same results can be obtained over time, the new system is implemented and the old one is decommissioned. One advantage of operating both systems concurrently is the ability to compare new data to old data to detect problems in processing in the new system.

The biggest drawbacks are the costs of running two systems at the same time, as well as the pressure on the staff to almost double their workload during conversion. The following are the reasons for using parallel processing:

1. It is feasible to fix any loading difficulties without interrupting hotel transactions because the manual system will still be in place to carry out hotel activities smoothly.

2. Allows staff to learn and adapt to the new system.

3. Reduces the risk to management in the event of a technical glitch or breakdown since the manual method will remain in place while the analyst solves the technological glitch.

6.2 SYSTEM MAINTENANCE

System maintenance is a continuous operation that includes eliminating program and design flaws, updating documentation and test data, and upgrading user support. For the sake of convenience, maintenance may be divided into three categories:

1. *Corrective Maintenance*: This sort of maintenance is correcting faults from a program that may have snuck into the system as a result of defective design or incorrect assumptions. Thus, processing or performance faults are rectified during corrective maintenance.

2. *Adaptive Maintenance*: Adaptive maintenance involves changing program functions to allow the information system to meet the user's information demands. This form of maintenance may be required as a result of organizational changes such as:

    a. Modifications to organizational processes;

    b. Modifications to organizational objectives, aims, policies, and so on.

    c. Formal changes;

    d. Managers' information needs to change.

    e. Modifications to system controls and security requirements, etc.

3. *Perfective Maintenance*: Perfective maintenance means adding new programs or modifying existing programs to enhance the performance of the information system. This type of maintenance is undertaken to respond to users' additional needs which may be due to changes within or outside of the organization. Outside changes are primarily environmental changes, which may in the absence of system maintenance, render the information system ineffective and inefficient. These environmental changes include:

    i. Modifications to governmental regulations, legislation, etc.
    ii. Economic and competitive circumstances, as well as iii.

    Innovative technology.

The assessment process outcomes assist the company in determining whether or not its information systems are successful and efficient. Organizations should create suitable

change management standards and processes to guarantee alerts do not interrupt operations or impair a system's functionality or security. Routine adjustments are less complicated than big changes and can typically be made during the normal course of business. Procedures for requesting, reviewing, authorizing, testing, installing, and documenting software modifications should be included in routine change controls. Keeping accurate, up-to-date inventories of hardware and software is a vital component of any change management procedures. To guarantee accurate system inventories, management should meticulously document any alterations. Management should use an oversight committee to coordinate all technological developments and delegate responsibility for software patch management programs to the relevant party.

CONCLUSION

Point of Sale (POS) software is widely used in the retail industry. It has transformed the manual business system into a computerized system. The primary purpose of this paper is to create point-of-sale software that will be utilized in the mobile store for acquiring and selling, as well as creating all essential reports. Using this program reduces human errors and paperwork. Even the system is faster than it has ever been. To execute the software properly, any operating system can be used. MySQL is also employed as the database to store the data in this case. Because this program is web-based, an authorized user can access it from anywhere in the globe.

This project focuses on the development and implementation of a web-based mobile sales management system for the online purchase and sale of mobile devices. The system would include user registration and payment information. The system would have a cart where the user could enter all of the products he or she wanted to purchase.

REQUIREMENTS

Our system recommendations include:

i. Password-protecting the system to keep unauthorized users out.

ii. Keeping a backup of the data in the system to avoid data loss in the future. iii.

The system may be integrated online so that clients can buy online.

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