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E-Commerce With a Progressive Application of Drop Shipping

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Abstract - The fast advancement of information technology, as well as the quick expansion of information interchange, have given rise to new motivations and inventive ideas across society. The community's widespread use of information technology has resulted in significant changes. E-Commerce has now established itself as the commercial trend of the century. People were confined at home, especially during the lockdown, which was ordered to help prevent the spread of covid-19. As a result, they had to buy all of the necessary essentials while they were at home. This enhanced the e-commerce sector as well. So here, an e-commerce web application has been developed. Along with this there has been an additional implementation of drop shipping. Drop shipping is a retail fulfillment method in which a shop does not hold stock of the items it sells. When a shop uses the drop shipping model to sell a product, it buys the item from a third party and has it sent directly to the client. As a result, the seller is relieved of direct product handling. So, this will be beneficial for initial investors as this can be a profitable business for them. Also, an attempt has been made in order to forecast the future sales of the store's products using random forest regression.

Key Words: e-commerce, drop shipping, database, consumer, m-commerce.

INTRODUCTION

Ecommerce (or electronic commerce) is the buying and selling of goods (or services) on the internet[1]. Electronic commerce uses a wide variety of technologies, notably electronic money transfer, supply chain management, Internet marketing, online transaction processing, Electronic Data Interchange (EDI), inventory management systems, and automated data collection systems. The following are the different types of e-commerce platforms:

1. Business-to-Business (B2B): It involves trade between multiple business entities.
2. Business-to-Consumer (B2C): It is trade between the business entity and consumer, where the business entity delivers the consumer's product to the consumer when the product is purchased.
3. Consumer-to-Consumer (C2C): In this business model, a consumer trades with another consumer through digital means.
4. Consumer-to-Business (C2B): This type of e-commerce is very common in crowdsourcing based projects. In crowdsourcing initiatives, this form of e-commerce is especially prevalent. A huge majority of people sell their products and services to businesses that are specifically looking for these services or products.
5. Business-to-Administration (B2A): This part of e-commerce encompasses all transactions conducted online between companies and public administration.
6. Consumer-to-Administration (C2A): The Consumer-to-Administration model encompasses all electronic transactions conducted between individuals and public administration.

According to the analysis of a payment platform called paysafe, over 8,000 shoppers from the US, UK, Canada, Germany, Austria, Italy, and Bulgaria had been surveyed and from this it absolutely was found that overall 42% of the population was way more into online shopping. As a result, drop shippers will leverage this increase in online shopping to focus on a lot of customers.

So, developing an e-commerce website here will be helpful for business to consumer (B2C) means, and implementation of drop shipper as stated in [2] will benefit the initial startups and thereby be a profitable venture. Various retailers had to suffer a loss due to storage issues of the products that were bought from the wholesaler, as they had to pay excessive rent charges for its maintenance. Now, implementation of drop shipping in e-commerce has helped in removing that barrier too.

The remaining part of the paper is structured as follows. In section II the related work has been described. In section III the methodology of the project

has been stated. Section IV explains the proposed system. In section V the results of the analysis are given. Finally Section VI concludes the work.

RELATED WORKS

In [1] the author has described the basic structure of an e-commerce website, how the website initially developed with a front end and back end. Also different pages which are required in a sequence so that the customer or user can easily buy any product. This paper will be helpful for people initially trying to develop an e-commerce web application.

In [2] the author has tried to explain how drop shipping works and also how it is beneficial. Later, also how good it would be if integrated with e-commerce and also how it would impact the customers has also been specified. Also how e-commerce has impacted small and medium enterprises has been specified.

In [3] the website that has been referred to talks about the advantages of using a firebase database over mongo db. This includes the quick updating capacity of the firebase database when there is an addition, removal or change of data.

In [4] the author has tried to make an analysis of the Chinese online shopping website called taobao. In this website, the section of women's clothing sales was analyzed and the author succeeded in predicting the future sales of that one section. Two basic steps have been considered here. 1. Firstly, explore the correlation of consumers' web search behavior and purchase behavior theoretically

In [5] the author has tried to do analysis of sales and forecasting future sales based on the dataset which includes multiple parameters for prediction. Also, different types of analysis are performed which are sales per quarter, unique/repeated users, purchased quantity by users of sales commodity and annual sales. Also, graphical visualizations have been performed for better understanding.

In [6] the author has said about m commerce and how it's able to bring a change in the e commerce sector. Basically mobile commerce (m-commerce) gives more flexibility to users by directly buying products through mobile. Since this is based in India, also mention about government schemes which have direct or indirect impact on m commerce has been mentioned.

METHODOLOGY

Here, our project is basically divided into two parts, front-end and back-end. The front end comprises the visually visible parts such as the home page, admin panel, contact page, shopping cart page. The back end contains the database and its interaction with the front-end.

1: Front End

HTML, CSS and Bootstrap framework have been used for the design of the front end.

1. HTML: HTML (Hyper Text Markup Language) is the Internet's most essential component. It determines how online material is structured and what it means. The term "hypertext" refers to hyperlinks that link online pages inside a single website or between different websites. HTML uses "markup" to annotate text, graphics, and other content for display in a Web browser.
2. CSS: Cascading Style Sheets (CSS) is a stylesheet language that describes how a document is presented.
3. Bootstrap: Bootstrap is a front-end programming framework for building websites and online apps that is free and open source.
4. JavaScript: JavaScript is a compiled programming language that is lightweight, interpreted, or just-in-time compiled programming language with first-class functions.

2: Back End

The Firebase Real-time Database is a cloud-based database with data stored as JSON. Data is synchronized in real time across all clients and is available even if your app is offline. Instead of standard HTTP queries, the Firebase Real-time Database employs data synchronization, which means that every connected device receives an update within milliseconds if data changes. These are the advantages of using firebase as a database.[3]

This web application is built using the MVC architecture. It assists in the division of the web application into three parts: model, view, and controller,

where the model is the backend that contains all of the data logic. This might be the data being transferred between the View and Controller components or any other data related to business logic. The controller is the application's brain, controlling how data is shown. It works as an interface between the Model and View components, processing all business logic and incoming requests, manipulating data using the Model component, and interacting with the Views to generate the final result.

It's much easier to maintain and make adjustments on frontend and backend without interfering with the other this way. The separation of concerns is a benefit of MVC. The program is scalable, manageable, and easy to grow since the frontend and backend are managed in smaller, distinct components.

PROPOSED SYSTEM

Here, in the proposed system a global consumer database has been created where the products that are being added will be directed to a common database as it will be easier for data retrieval. Also this contains two different registrations, drop shipper and wholesaler. For a wholesaler, these are the following data that would be stored during initial registration.

a. E-mail
b. Name

And for the products of the customer, these are the points that will be stored.

a. Category
b. Product Description
c. Product ID
d. Product Image
e. Product Inventory (No.of items left in inventory)
f. Product Name
g. Product Price
h. Product Status

This is how the database keeps track of the products that are in inventory and then would be sold. Now comes the second part that is drop shipping. Drop shipping is a concept, in which a customer purchases a product from a drop shipper, but the drop shipper does not deliver the goods directly to the consumer; instead, the drop shipper contacts the wholesaler to have the product sent to the customer. As a result, the drop shipper does not need to keep all of the items; instead, the wholesaler and the drop shipper agree to pay for the storage of the products, and when a customer contacts, the drop shipper tells the wholesaler the customer's location to which the product must be delivered. This is beneficial for new businesses since you don't have to invest a lot of money and may generate earnings based on your investments.

Here within the project, the wholesaler at first adds the items with the assistance of the 8 parameters indicated above. After including the item, as seen in figure4, the item gets added to the database. After that the wholesaler should include 4 distinctive parameters within the settings. It incorporates the least no.of products that must be bought by the drop shipper at a time from the wholesaler (refer to figure6). In conjunction with this, there are three other parameters which are 2 days capacity, 1 month capacity, 3 months capacity which characterizes the payment for the capacity of the items bought by the drop shipper.

For the drop shipper’s part, the drop shipper buys the products that are in the inventory. Now, to check which product to buy for earning better profits, the drop shipper can check out the product page which provides the description along with its storage cost and sales prediction. Here, future sales prediction of the available products have been made based on two different parameters

a. Time
b. Type

The future sales prediction has been conducted on all the products. Also an analysis of prediction of future sales on particular products as in [4] can be done or for all the products available on the store [5] as in this case can be done.

For the time parameter of the dataset, no.of products sold in one day has been added. Now based on these, random forest regressor algorithm has been applied which helps to predict the future sales (refer to figure3) for

a. 1 day
b. 1 week
c. 1 month

Now, the drop shipper has to check the prediction of a particular product along with the amount to be paid for

its storage and based on this, drop shipper can invest in the products.

Now comes another application in the project that is heroku. Heroku is a cloud platform as a service (PaaS) supporting several programming languages. It is used here for deploying web apps. As mentioned in [6] this helps in the growth of e-commerce with the help of m commerce as anyone having a mobile phone can buy any product from anywhere. As of 2021, there are almost 6.37 billion smartphone users worldwide, accounting for around 80.69 percent of the global population. When compared to 2016, the population of smartphone users was 3.66 billion, or roughly 49.40 percent of the world's population. Because of the dramatic increase in smartphone users throughout the world, the number of e-commerce users may have increased as well. As a result, if e-commerce can be accessed via mobile devices, it will aid in the expansion of the e-commerce industry.

Customers can click on the store and directly buy the product.

Below is the architecture of the project representing the working of the project.

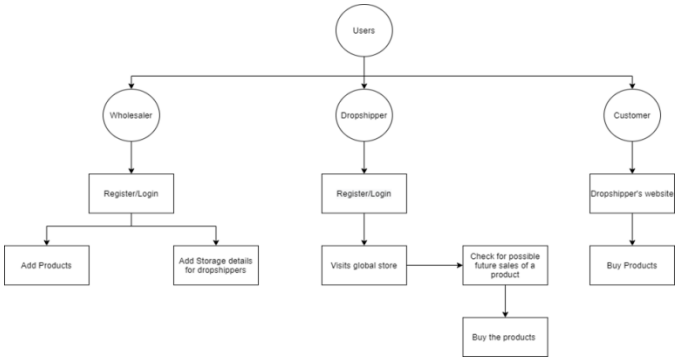

Fig-1: Flow Diagram of E commerce with a progressive application of drop shipping

RESULTS

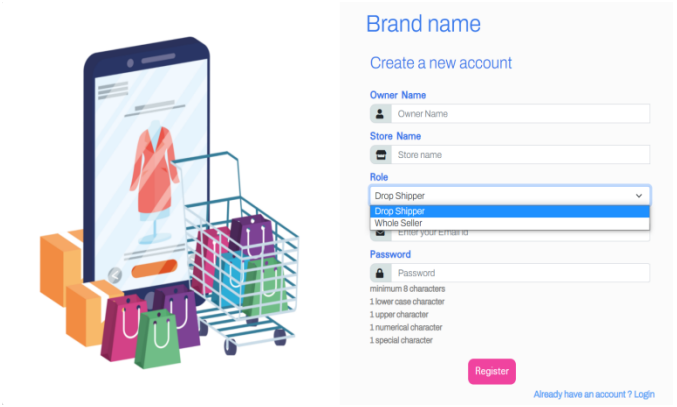

Fig-2: Registration of drop shipper and wholesaler

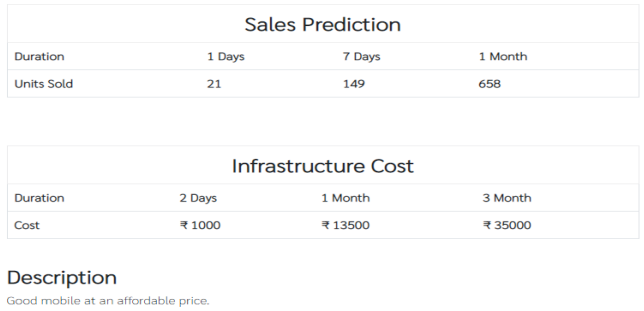

Fig-3: Sales prediction and Infrastructure cost

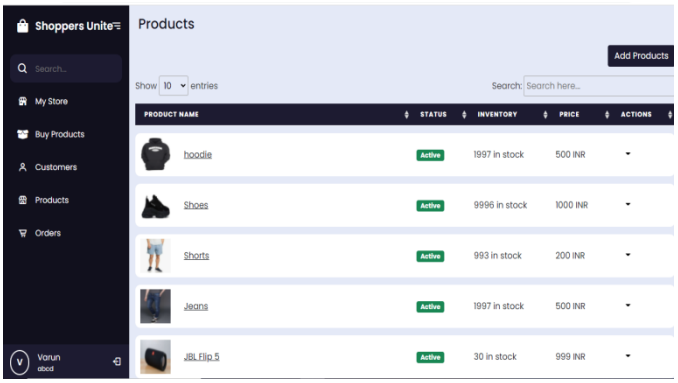

Fig-4: Wholesaler's page

Fig-5: List of Customer's purchased products

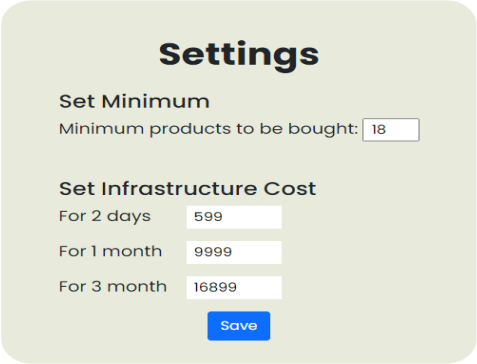

Fig-6: Wholesaler setting the infrastructure cost and minimum products to be bought.

CONCLUSION

So, the project's goal was to develop an e-commerce website and a better solution that would assist in achieving higher profits while also creating jobs for startups.

Drop shipping is considered as a worthwhile investment for new businesses. This aids in the removal of the obstacle that a retailer must overcome.

Companies attempt to forecast future product sales in order to determine which product is in more demand and profit appropriately. Implementing future sales prediction here will assist the drop shipper in determining which product is the best to invest in based on previous sales.

Our future work will consist of applying each client's analysis based on their purchasing patterns, as well as market basket analysis, which will help us obtain higher profits.

REFERENCES

[1] Ullah, S. E., Alauddin, T., & Zaman, H. U. (2016, January). Developing an E-commerce website. In *2016 International Conference on Microelectronics, Computing and Communications (MicroCom)* (pp. 1-4). IEEE.

[2] Dimitrov, I., & Koprinkova-Noncheva, N. (2020, October). E-commerce, as a Modulating Possibility for Application of the Drop-shipping Model. In *2020 III International Conference on High Technology for Sustainable Development (HiTech)* (pp. 1-3). IEEE.

[3] Firebase Vs MongoDB: Battle of the best databases for 2021 retrieved from, https://www.thirdrocktechkno.com/blog/firebase-vs-mongodb-battle-of-the-best-databases-for-2021/

[4] Wei, D., Geng, P., Ying, L., & Shuaipeng, L. (2014, May). A prediction study on e-commerce sales based on structure time series model and web search data. In *The 26th Chinese Control and Decision Conference (2014 CCDC)* (pp. 5346-5351). IEEE.

[5] Kulshrestha, S., & Saini, M. L. (2020, December). Study for the Prediction of E-Commerce Business Market Growth using Machine Learning Algorithm. In *2020 5th IEEE International Conference on Recent Advances and Innovations in Engineering (ICRAIE)* (pp. 1-6). IEEE.

[6] Chopra, R. K., Gupta, V., & Chauhan, D. S. (2014, November). M-commerce in India: Status & perspectives of key stakeholders. In *2014 International Conference on Science Engineering and Management Research (ICSEMR)* (pp. 1-4). IEEE.