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A Hybrid Model of B2B and B2C Multivendor E-commerce Platform: An Efficient Web Approach

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ABSTRACT: Online shopping is a type of electronic commerce that enables customers to make direct purchases from sellers using a computer browser and the internet. Customers find a product of interest by going to the retailer's website directly or by utilizing a shopping search engine to look up alternative vendors. Shopping search engines show the availability and price of the same goods at several e-retailers. Customers will be able to shop online starting in 2022 utilizing a variety of computers and gadgets, including desktop and laptop computers, tablets, cellphones, and speakers. Business-to-consumer (B2C) online shopping is the act of purchasing goods or services from an online store in a manner physically similar to visiting a traditional "bricks-and-mortar" store or shopping mall. Business-to-business (B2B) online purchasing is the process of setting up an online store to allow businesses to purchase from other businesses. A typical online store enables the user to explore the selection of goods and services offered by the business, examine pictures or photographs of the goods, and access details such as prices, features, and specs. Customers can typically utilize "search" options in online retailers to locate particular models, brands, or products. Online clients must have access to the Internet and a legitimate payment mechanism, such as a credit card, a debit card with Interact functionality, or a service like PayPal, in order to execute a transaction. The e-tailer typically ships physical goods to the buyer, like paperback books or clothing, while for digital goods, like software or digital audio music, they typically send the file via the Internet. Alibaba, Amazon, Flipkart, Walmart, Zalando, Target, and eBay are the biggest of these online commerce companies.

Keywords:E-commerce, Multivendor, B2B, B2C, Marketplace, Websites

I. INTRODUCTION

A platform for online sales by third parties is a multi-vendor portal or website. Simply said, it is a huge store that houses numerous small stores managed by independent sellers. Multivendor websites, where different vendors are permitted to register on a same platform with the same shopping cart and sell their goods, include e-commerce websites like Amazon or eBay. We have designed a multivendor website that can handle both B2B and B2C transactions. Multi-vendor online shopping The owners of each tiny business on a website's mall-like layout are responsible for managing their respective establishments. These little shops over here on multi-vendor e-commerce websites are the shops of the vendors, and the website is in charge of managing orders, shipping, and taking payments [1].

Online shopping is a type of electronic commerce that enables customers to make direct purchases from sellers using a computer browser and the Internet. Customers identify a product of interest by going to the retailer's website directly or looking through alternative vendors using a shopping search engine, which shows the availability and price of the same goods at various e-retailers, The act of purchasing products and services online via vendors who operate websites is known as online shopping. Customers purchase a range of goods from internet retailers [2].

An increasing number of enterprises are finding their development field in the Internet as a result of its rapid growth. Electronic marketplaces and

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commerce represent a brand-new era in business, one with plenty of potential advantages but also some challenges [3].

In the study literature in different domains, the word "intermediary," sometimes known as "middleman" or "broker," denotes the entry of a new company into the value chain that links buyers and suppliers, either as a provider of a brand-new service or as a rival to other intermediaries already in place [4].

II. LITERATURE REVIEW

A multi-vendor marketplace enables the sellers to showcase their goods by establishing a dedicated storefront. The dealers can manage stock, item increases, coordinations, and other tasks from their end. The commercial center's owner may receive a commission on the sale of each item or through other income age models. Numerous businesses in a variety of sectors, including banking, education, commerce, and tourism, among others, have enhanced their services by incorporating new technologies into their methods for delivering services [5].

Bailey et al. [6] underline the necessity of intermediaries in online markets. They note that aggregators for one-stop shopping windows, trust providers, information exchange facilitators, and information filtering brokers are still necessary in IT-mediated markets.

The majority of the intermediaries appear in the B2B dimension of the electronic commerce described in Bakos et al. [7]. Baron et. al [8] propose a web-based intermediary site to facilitate SMEs entrance in the virtual business area, but also to near them to the endusers. According to this, there are two dimensions in the proposed business model supported by the intermediary.

The end product is a B2B/B2C hybrid model [9] whose primary goal is to give SMEs a unified platform that executes the services required for the establishment of an ecommerce strategy.

From the above articles there are some challenges are found according to market range, costing and selling strategy etc. This paper will addressed those challenges and fills up those gaps. Thus, the remainder of the paper is organized as follows: Section 3 overviews the work flow and methodology of the proposed e-commerce architecture. Section 4 describes the design diagram and tools of the proposed system. Section 5 shows the implementation process of this system and Finally Section 6 concludes the work.

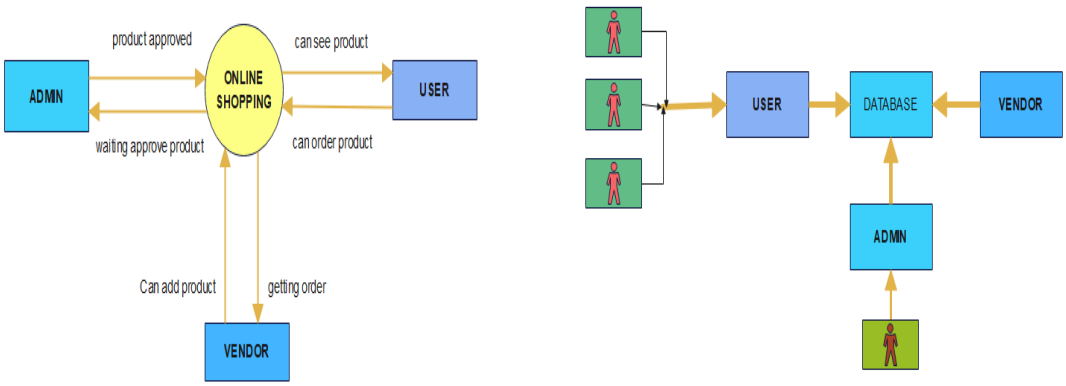
III. WORK FLOW AND METHODOLOGY

3.1 Proposed System Model

The commercial relationship on a marketplace involves a number of jobs directly:

1. The administrator, who is typically the marketplace owner or his representative, controls how buyers and sellers interact on the marketplace and plays a key role in deciding how the platform is developed.
2. Sellers, also known as vendors, are companies that offer products and services. They may use their physical store and a marketplace as their primary traffic sources, or they may choose not to have a website at all.
3. Users or clients who make purchases or request services through marketplaces are considered buyers.

Orders placed by buyers are sent through the marketplace's internal delivery service after being processed by merchants or the marketplace itself. If a seller is in charge of the delivery, in this instance, the seller makes the delivery themselves. Proposed System model of this work is described in Fig. 3.1(a).



(a) Proposed model on purchasing (b) Proposed model on database interaction

Fig. 3.1 Overview of the proposed system model

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The sale of the seller's products and services generates revenue for them. Fees, which can be up to 25% depending on the marketplace's policies and the products it sells, are how the administrator of the marketplace makes money. Proposed System model with database interaction in shown in Fig. 3.1(b).

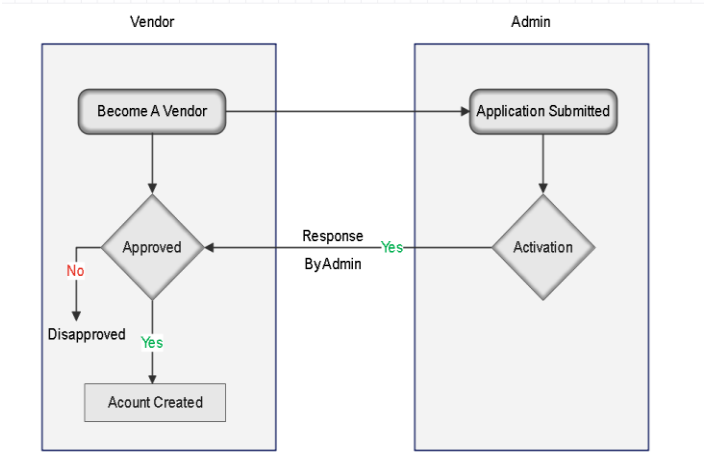

Fig. 3.2 Vendor addingmethod

3.2 Vendor Adding Method

Anyone can register as a vendor by clicking the link to the registration page. Through the store page, an existing client can also register as a seller. The store name serves as the seller's display name and brand identity after becoming a vendor. On the shop page and the see product details page, the public name will be utilized.Every new vendor must be approved or rejected by the administrator. However, through the admin panel, the admin has the power to reject a vendor at any time. In Fig. 3.2 the vendor addingmethod is depicted.

3.3 Login Authorization

According to their group settings and membership options, each Approved Vendor can manage their profile, items, coupons, orders, and many other aspects of their business using an account panel called the Vendor Panel. The Admin and User can also manage their accounts through account panels. The Login Authorization is shown in Fig. 3.3.

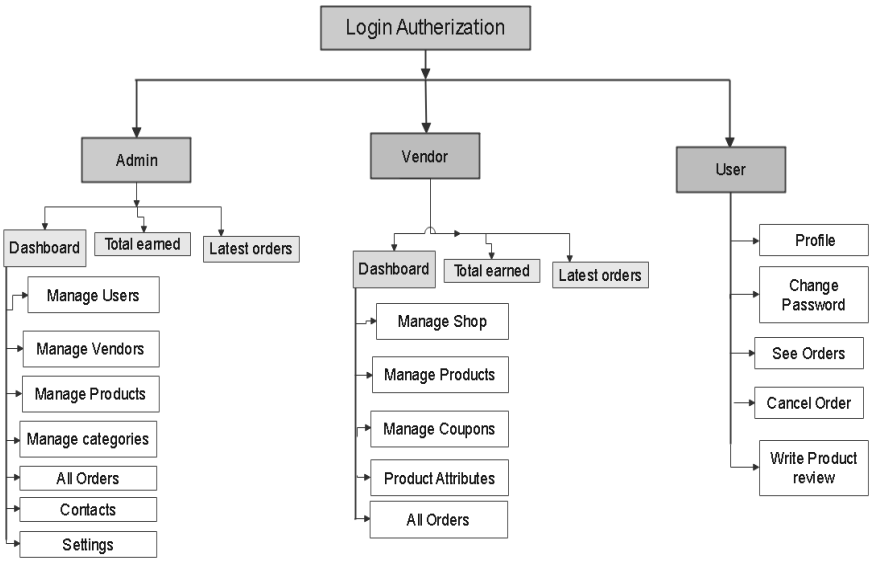

Fig. 3.3Login Authorization

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3.4 Order Life Cycle

The Multi-Vendor Marketplace is a function that enables several vendors to band together and sell their goods on the online marketplace. Any consumer is permitted to order products from many merchants in a single order. Any cart may be linked to products from many vendors.

Assuming that there are three dealers One product from each of Vendors A, B, and C has been added by a customer to their shopping basket. Now, if the customer made an order for these Vendor's products, only one order, like order 1000009, would ultimately be placed. In this instance, the administrator will see a single order along with the name of the vendor who carries the ordered product. Furthermore, each vendor will only see one order for his products. The Order Life Cycle is shown in Fig. 3.4

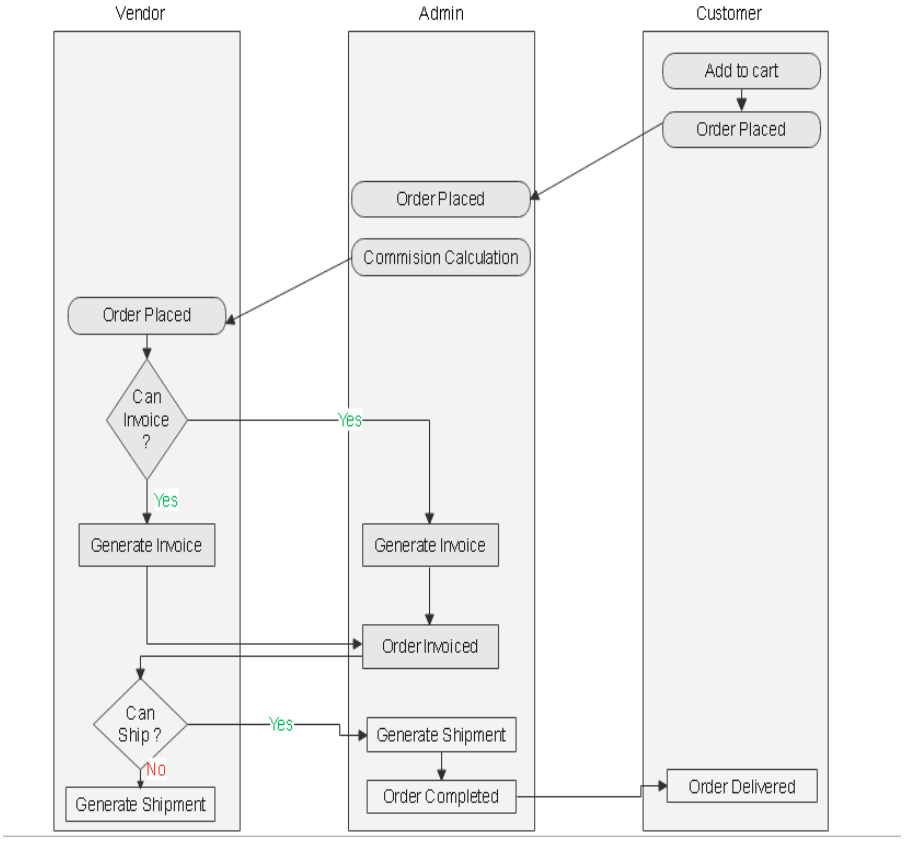

Fig. 3.4 Order Life Cycle

IV. DESIGN DIAGRAM AND TOOLS

4.1 Entity Relationship (E-R) Diagram

An Entity Relationship (ER) Diagram is a form of flowchart that shows the relationships between "entities" like people, things, or concepts within a system. ER Diagrams are most frequently used in the disciplines of software engineering, business information systems, education, and research to build or troubleshoot relational databases. They are sometimes referred to as ERDs or ER Models, and they use a predetermined collection of symbols, such as rectangles, diamonds, ovals, and connecting lines, to show how entities, relationships, and their attributes are interconnected. The E-R diagram of proposed model is shown in Fig. 4.1.

4.2 Use-Case Diagram

The business procedures carried out by the system are depicted in a use case diagram. Writing use cases typically involves business analysts and domain experts. When it is necessary to record a system's needs, use cases are developed. One sort of element in a use case diagram represents the business roles, and the other type represents the business processes.

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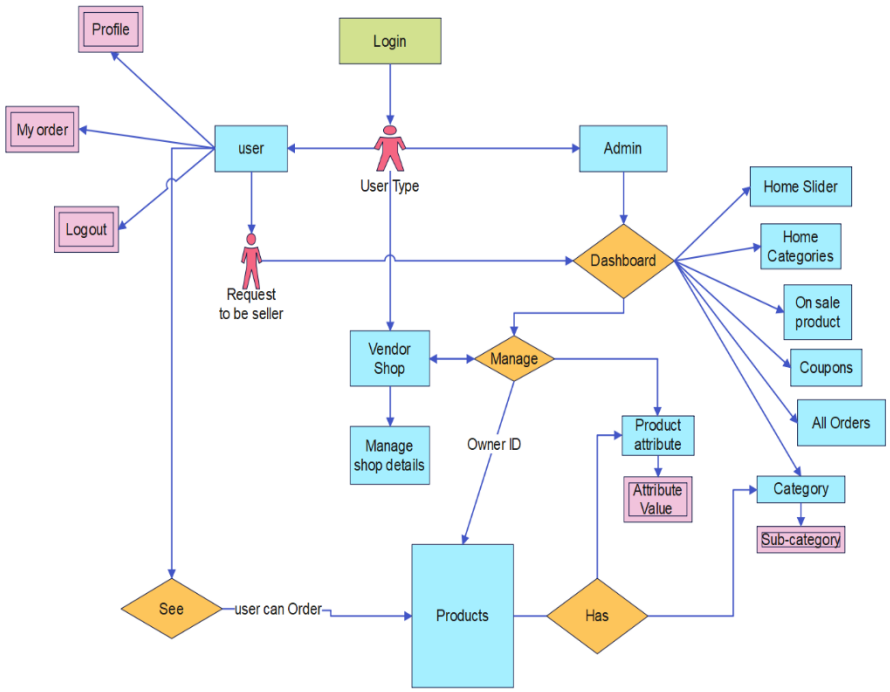

Fig. 4.1E-R diagram of the proposed model

A use case diagram is relatively straightforward in nature.There are three types of use-case diagram in this proposed model: Admin, User and Vendor. Fig. 4.2 depicts the use case diagram of proposed model.

4.3 Design Tools

4.3.1 Hardware Setup

Hardware Requirement: Hardware requirements depending on the machine and operating system. Below given the hardware requirements for the PHP application:

Hardware - RYZEN 7/Intel Core i5
Speed - 2.6 GHz
RAM - 2 GB
Hard Disk - 500 GB

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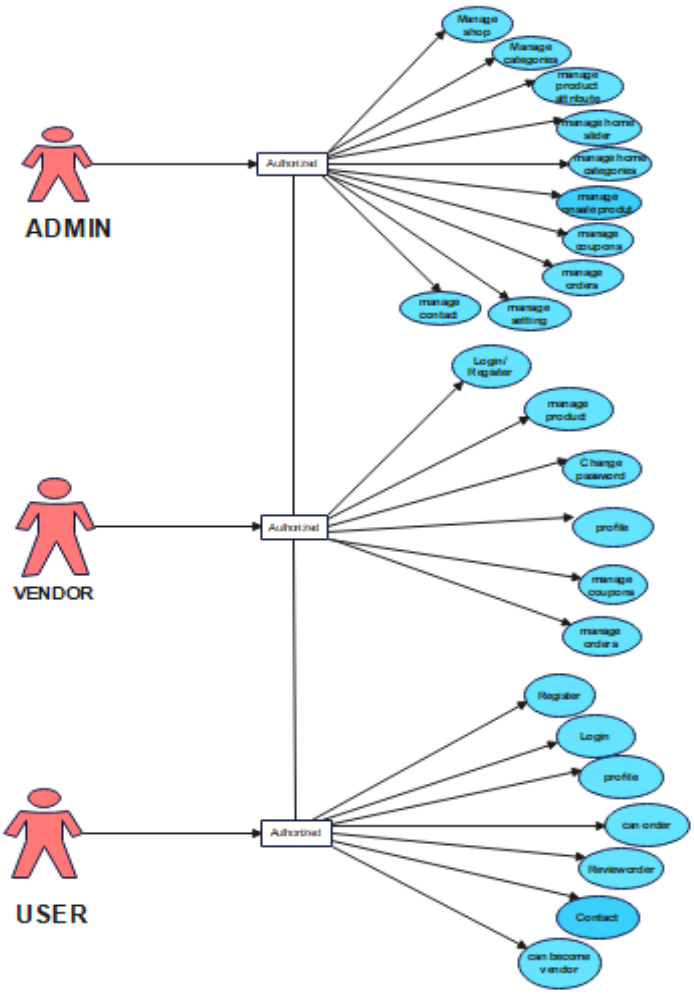

Fig. 4.2 Use-case diagram of the proposed model

4.3.2 Software Setup

Software Requirements: Software requirements depending on the Application. Following are the Software requirements for this application:

Operating System -Windows/Linux
Technology - PHP, Laravel Framework
Web Technologies - Html, JavaScript, CSS, Bootstrap, JQuary,
Text Editor -Visual Studio code
Web Server -XAMPP
Database - My SQL

V. IMPLEMENTATION

5.1. User Interface Display

In Fig. 5.1, The primary menu appears to provide both the general public and customers a variety of categories and subcategories to choose from. This view displays a menu with a list of categories from various providers. The graphic additionally describes the appearance of the products that are automatically shown with filters for price, brand, color, kind, and gender.

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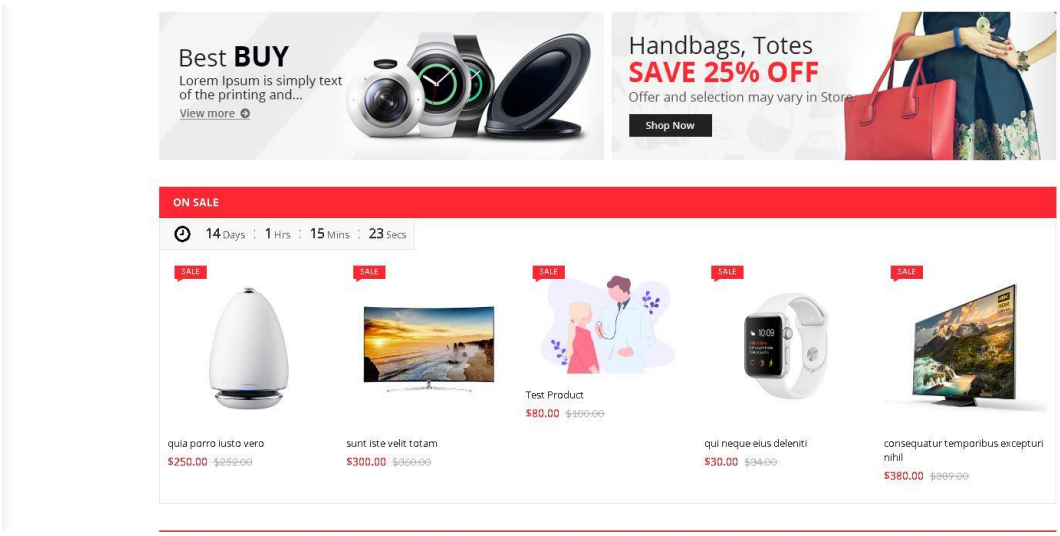
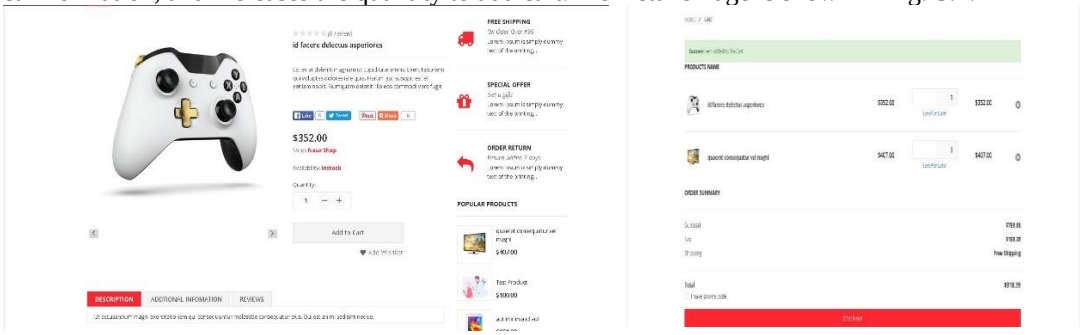


Fig. 5.1 User interface display

5.2 User Shopping Details

when a visitor/user clicks one product image, it will take him/her to the details page to see more about product information, and increases the quantity to add cart.The Details Page is shown in Fig. 5.2.



(a) Product details (b) Product cart

(c) Payment details (d) Order placing

Fig. 5.2 User shopping details

5.3 Admin Dashboard

This is the Admin Dashboard Page, when admin wants to login, he/she can log in by using the email and password. It will redirect the admin to the home page of the site. And then by clicking dashboard it will redirect admin dashboard.The Admin Dashboard is shown in Fig. 5.3.

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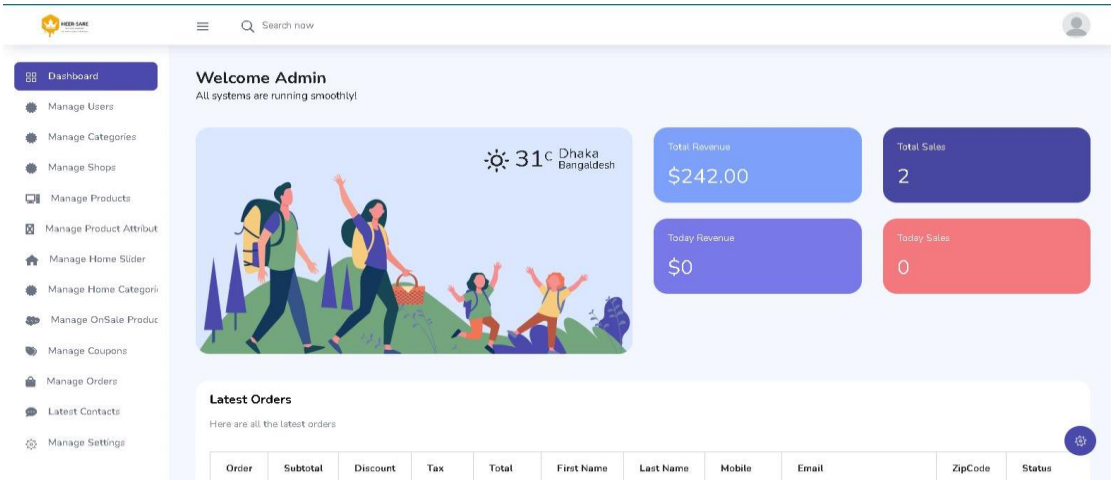

Fig. 5.3 Admin dashboard

5.4Vendor Managing Details

Here a vendor shop can add new products as many as he wants, but there is limitation that the product didn't automatically appears from home page or user can't see vendor products until the admin make it approval or rejected as the below figure shows as if it approved or not. The Vendor Shop Products is shown in Fig. 5.4.

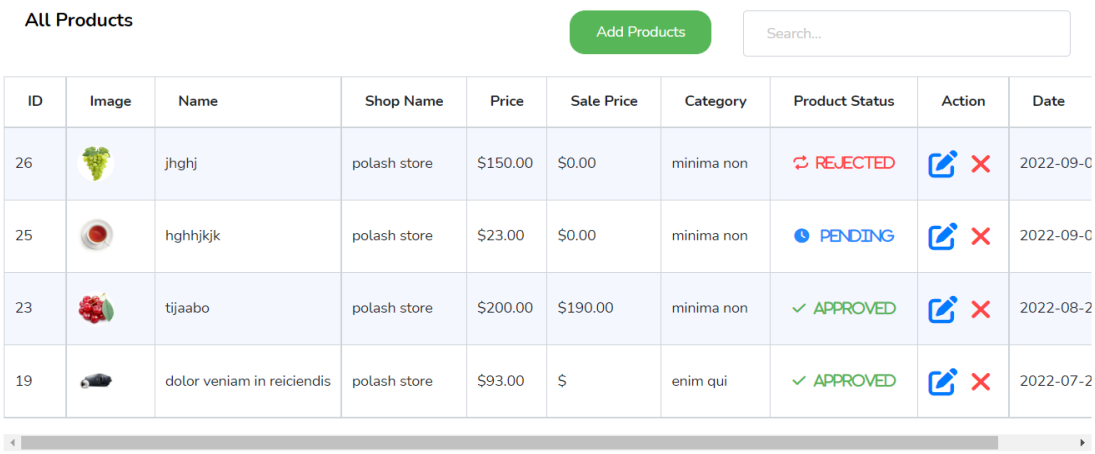

Fig. 5.4 Vendor managing details

VI. CONCLUSION

A multivendor e-commerce business model has been outlined in this essay. The approach aims to make it easier for small and medium-sized businesses to participate in online markets and electronic commerce opportunities.This suggests that an intermediary is a key component of the commerce architecture. The middleman connects these businesses with the end users. The intermediary takes the initiative to create a multi-vendor catalogue that includes the goods produced by the businesses in order to do that. Additionally, the intermediary implements all e-services for acquiring products. The overall business model is a mix of the two most popular e-commerce dimensions or models: a B2B model between Entrepreneurs and the middleman and a B2C model between the intermediary and end users.As the closing point of this essay, we want to emphasize that one of the most intriguing aspects of the suggested model is the decrease in Businesses' reliance on outside parties, which enables small businesses to compete in the global online market with a moderate investment.

REFERENCES

[1]. I.Bhattachariya, "Multi-Vendor Ecommerce Website for Selling IT Services," vol. 5, no. 7, pp. 268–272, 2016.

[2]. García, F. J., Borrego, I., Hernández, M.J., Gil, A.: An E-Commerce Model for Small andMedium Enterprises. In Proceedings of ICEIS'2002, 2002 – The Fourth Conference onEnterprise InformationSystems. M. Piattini, J. Filipe and J. Braz editors. (Ciudad Real,Spain, 3-6 April 2002). Vol. I, Pages 1035-1041. ICEIS Press.

[3]. Maes, P., Guttman, R. H., Moukas, A.: Agents that Buy and Sell. Communications of theACM, Vol. 42, N. 3 (1999) 81-91.

[4]. Chircu, A. M., Kauffman, R. J.: Strategies for Internet Middlemen in the Intermediation /Disintermediation / Reintermediation Cycle. Electronic Markets – The InternationalJournal of Electronic Commerce and Business Media, Vol. 9, N.2 (1999) 109-117

[5]. A. Prastyawan, A. Suryono, M. Soeaidy, and K. Muluk, "Revitalization of Traditional Markets into a Modern Market in the Perspective of Local Governance Theory (Studies on Revitalization Wonokromo Market in Surabaya)," Int. J. Humanit. Soc. Sci., vol. 20, Sep. 2015.

[6]. Bailey, J. Bakos, Y.: An Exploratory Study of Emerging Role of ElectronicIntermediaries. International Journal of Electronic Commerce, Vol. 1, N. 3 (1997) 7-20.

[7]. Bakos Y.: A Strategic Analysis of Electronic Marketplace. MIS Quarterly, Vol. 15, N. 4(1991) 295-310

[8]. Baron, J. P., Shaw, M. J., Bailey, A. D. Jr.: Web-based E-catalog Systems in B2BProcurement. Communications of the ACM, Vol. 43, N. 5 (2000) 93-100.

[9]. Malone, T. W., Yates, J., Benjamin, R. I.: Electronic Markets and Electronic Hierarchies.Communications of the ACM, Vol. 30, N. 6 (1987) 484-497.