

METHODS

Implementation of decentralized techniques in e-commerce website

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After the coronavirus pandemic struck in 2020, administrative agencies around the globe imposed strict lockdowns in every sector. The biggest of them was imposed in India. The only things allowed were the essential services like medical and grocery. But due to the sudden panic of the unknown disease, there was a huge rush to buy and stockpile items. Long queues and crowds were developed, which may have led to rapid transmission of the virus. We, as a team, tried to find a solution by putting their shops online so that they could take orders remotely and distribute them without the risk of long queues and infection. Gromore Shoppe was developed to make these small local shops online. Retail owners can now catalogue their products on the web and take orders from the locality. They can process them quickly and distribute them with minimal risk of contact. This solution will first introduce them to the web and its benefits and make them sufficient enough so that they can even expand easily and effectively.

Keywords: e-commerce, react.js, node.js, herokuapp, B2C commerce

Introduction

In this rapidly developing world, the internet and information technology are emerging as solutions to every kind of problem. As the pandemic started to expand, millions of ventures that were not connected to the digital world suffered major losses. It forced them to bring their products and services online in order to survive. Gromore Shoppe also introduces a similar kind of solution to the local retail owners who are suffering from losses and a risk of spreading the coronavirus.

Gromore Shoppe is a web application that provides an interface for the shop owners to bring their products online, take orders, and distribute them without disturbing COVID protocols. Retailers can now expand their business very easily and in a cost-effective manner. The web app helps them to manage their products in a similar way that they would use them offline. This approach will reduce the cost of product management, and save resources and be applied in distribution and logistics.

Consumers, who are at home, however, can use the same interface as they would on any other shopping site, but this time they can buy from their local shops and retailers. This will increase the trust of the consumers and will lead to more satisfaction in the process of buying stuff.

The idea of this web application comes as the primary solution to the problems that just emerged with the lockdown. People were panicked about the unknown disease; they started to buy emergency supplies. This created long queues in the shops that were not taking care of protocols. Also, with an extensive rush, shop owners were not able to manage them. All this sometimes creates large tensions between security personnel and civilians. To tackle this situation, we suggested bringing the shops online, which can be easily manageable and profitable at the same time.

Literature review

In India, there are around 13.8 million traditional family run neighborhood businesses and an organized retail sector with

a share of less than 10%. All organized brick-and-mortar establishments and internet shopping sites are included in the organized sector. Despite the growth of the B2C e-commerce business in India, the majority of Indians still prefer to purchase items at their local brick-and-mortar stores because they enjoy touching and feeling the items and negotiating discounts over-the-counter before purchasing. Enter the new coronavirus that causes the extremely contagious coronavirus illness (COVID-19), which has affected over 4 lakh individuals globally. Because it spreads mostly through contact with an infected person (when they cough or sneeze) or by touching a surface that has the virus on it, staying at home is the best method to protect yourself. This has boosted worldwide internet shopping usage, causing the retail industry and local shops in India to shrink.

The retail industry in India is among the fastest-growing sectors in the world. The contribution of e-retail in the Indian market is not at par when compared to other developing economies. Despite this, the Indian e-commerce industry has grown rapidly in recent years, from around \$14 billion in revenue in 2014 to more than \$50 billion in 2018. This is because of the augmentation of the telecom industry, which in turn has offered internet accessibility to the youth of the country. As online shopping has brought convenience in terms of time and place, it is becoming popular among the youth and has started threatening the traditional brick-and-mortar retail business.

Experimental work

The development of the project started with the basic idea to make shopping website framework and then integrate the product listing and cataloguing capabilities. Every normal website which sells products these days has a similar

implementation with different design techniques. We also used the same approach to initialize the development.

Another major issue was to select the technologies and applications on which the web application was to be made. For the ease of development, we decided to use the best technologies that we are capable to handle. Then we finalized React and Node as the backbone of the project and Google’s Firebase to serve as a database web service. The reason why we choose those was the lightweights and extensive features provided by them.

React.js is an open-source frontend library developed by Facebook, which provide user friendly website environment. It is been used by various famous content-based websites like Netflix. Node.js is also an open-source framework for backend software development. It allows implementing web API’s and host servers with high scalability and less maintenance. These two React and Node happens to be the best combination for the website development.

For the purposes of database management and web hosting, we used Google’s Firebase and an open site for development hosting, Herokuapp. Both these services are highly popular in their fields among new developers as their operations are easy and free of cost up to a certain limit of usage.

We started the development after deciding on the development applications. At first, we shaped the front or home page of the website according to the general trend of shopping sites. There is a scrollable home page with dynamic content about the product available along with its details and prices. We also implemented several carousels in-between them for the latest deals and upcoming offers. After that, when we finished, the next step was to implement our own idea for a vendor-centric application as represented in **Figure 1**.

Now was the time to convert a normal site implementation into the Gromore Shoppe. To achieve that, we have created

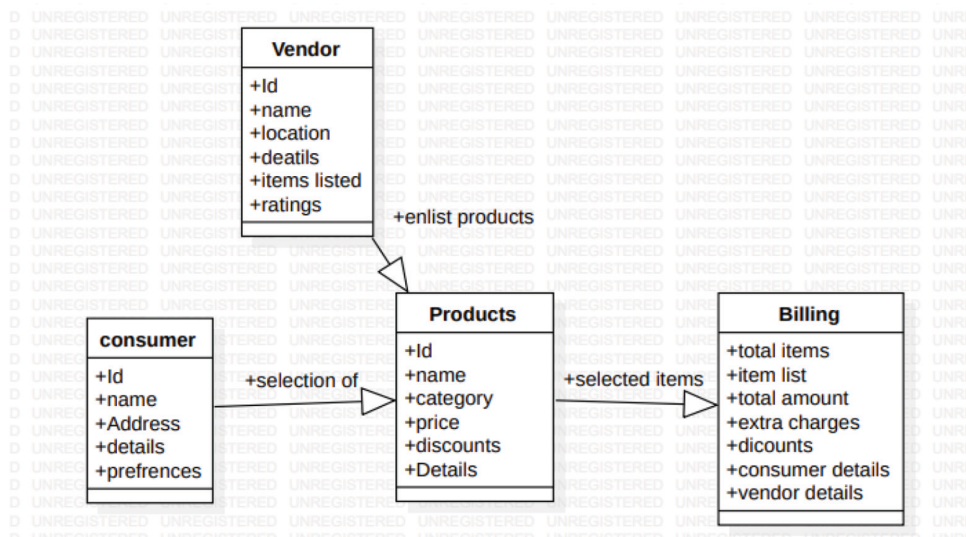


FIGURE 1 | Block diagram of development phase in a vender-centric application.

a user interface for the retailers and vendors so that they can catalogue their products on the application. The arrangement was simple; we created an interface especially for them. So, whenever they get verified by us after registering on the portal, they can directly list the products on the website and manage orders.

This methodology makes sure that the vendor feels the website is an online extension of their business and feels free to engage in web operations and to grow their business. They can add products, details, and images. They can update the prices and give additional offers and deals. It also makes sure that any new person who wants to start a fresh business directly and only online can also register themselves and make use of the services very easily.

Result

After a months-long development process, we hosted the web application on Herokuapp to implement further operations and additional testing and bug fixing. When all that was done, we deployed the application.

The website, Gromore Shoppe, was successfully implemented as we had thought. It provided all the features we initially decided on. The Gromore Shoppe has the capabilities to empower the end user and our prime target, the local retail owners and businesses. They can now easily switch to online and can get rid of the hassle of product and order management with minimal resources used.

It also provides the consumers of the products the choice of buying local stuff with quality, which ultimately supported the Indian campaign of “Vocal for Local” to empower the local products and services over foreign goods of the same type.

Conclusion and Future Scope

We are living in the age of the digital workplace, where everything is supposed to have an online interface. But still, in developing countries, there are millions of businesses that are not connected to the cyber world. Gromore Shoppe and other related platforms can provide these businesses a start-up to expand their reach and can have global sales and revenue.

Gromore Shoppe, as an individual and may be a platform alone, believes in the scope of advancements. With the use of AI and machine learning, the interface can be more interactive in the future. As the number of users increases, we may set up a centralized system to offer greater services to the consumers.

These kinds of retail platforms also give rise to businesses who are thinking of joining the web, but with the lack of technology and funding, they are not able to go for it. This is a kind of ready-to-use shop for both consumers and vendors, making it a one-stop solution to the basic needs of online product operations with sales and purchases.

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