

# E-SHOP USING MERN STACK

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## Abstract—

Electronic commerce refers to the use of computer networks for commercial purposes. A person may use all of the advantages of the Internet while sitting in front of a computer to buy or sell stuff. Compared to conventional commerce, which requires a person to physically go get items, e-commerce has made it easier for consumers to save time and perform less physical labour. E-commerce has come a long way since its start in the early 1990s. The industry's growth has been slowed down by security issues. Safety is the present issue that e-trade is experiencing, however there may yet be some improvements made in this area. The primary advantage of e-commerce over traditional trade is that consumers can research online stores, assess pricing, and place purchases from the comfort of their homes using a computer. To increase the use of e-commerce in developing countries and provide regional companies better access to global markets, business-to-business e-commerce is employed. E-trade development is crucial for a developing nation. The study's approach shows how important e-commerce is for business in developing countries. For start-ups, small enterprises, and entrepreneurs, e-commerce has also been a key platform for the promotion and display of their products.

*Keywords—customer, online purchasing, and e-commerce.*

## I. INTRODUCTION

The California Electronic Commerce Act, which was introduced by the late Committee Chairwoman Gwen Moore (D-L.A.) and passed in 1984, was the first piece of legislation to use the term, according to Dr. Robert Jacobson, Principal Consultant to the Utilities & Commerce Committee of the California State Assembly. E-trade started out as a general way for suppliers and their corporate clients to exchange business documents like orders or invoices. These trace back to the airlift and blockade of Berlin in 1948–1949, when a system for placing orders for goods—typically via telex—was employed. Several businesses built on that technology during the ensuing years, and the first general was appointed in 1975. The electronic data interchange (EDI) standard that was developed as a result is flexible enough to enable the majority of simple electronic business transactions.



## II. INTRODUCTION TO TECH STACK

During the development of online applications, a certain set of JavaScript-based technologies are used, and this group is referred to as "MERN." It is designed with the goal of easing the development process as much as is practical. MERN includes the following open-source components:

- MongoDB
- Express JS
- React JS/ Redux
- Node JS

The development of a web application requires each and every one of these components. Each of them provides programmers with a comprehensive framework to work inside. For instance, the back-end web framework Express JS, the database system MongoDB, the front-end framework react, and the back-end runtime environment Node JS are all examples.

So let's look more closely at each of these components:

### 1. MongoDB

If you are unfamiliar with MongoDB, it is a cross-platform, open-source, cost-free document-oriented database solution. The fact that it is classified as a Nosql database application suggests that the query language is JSON-based and that the data is kept as flexible documents. This indicates that both the quantity of the material and the number of fields in the documents tend to change. The organisation of the data as a whole leaves it open to change throughout time.

MongoDB is a well-known solution that is flexible and always easy to scale. The Apache License and the GNU Affero General Public License are both used to share this specific database system, which was developed by Mongo DB Inc.

### 2. Express JS

This application is also open-source and cost nothing. It is categorised as a Node.js web application framework and is released under the MIT licence. Express JS was created primarily for building APIs and online apps.

By using this MERN component instead of writing the full web server's Node.js code by hand, developers may speed up the coding process. The best feature of this framework is that developers do not have to continually write the same code as they would if Node.js were used to create the HTTP module.

Developers often refer to it as the "de facto standard server framework for Node.js."

### 3. React JS/ Redux

This JavaScript library is utilised to create user interfaces. React was eventually open-sourced after being initially developed by a software developer who worked for Facebook. Currently, Facebook and a robust community of independent developers and software development firms support it. The creation of views that are HTML-rendered frequently uses this specific library. Since the views you develop in Reach are declarative, you won't need to spend extra time managing the modifications and consequences they have on the data. React leverages JavaScript, a powerful programming language, to build reoccurring or conditional DOM components, which is unquestionably a significant bonus. The production of repetitious HTML and DOM components may be automated without the usage of templates. Thanks to React, the same code may run in both the server and the browser. Because of these, developers frequently refer to React as the "heart and soul of the MERN stack."

### 4. Node JS

For the purpose of running JavaScript code outside of a browser, Node JS is a cross-platform environment. It was initially developed for Google Chrome and subsequently made freely accessible. As you might know, Node JS has made it possible for programmers to utilise JavaScript to develop command line tools and back-end scripts for the purpose of producing dynamic web page content before the page is broadcast to the user's web browser. To make it simpler for programmers to create scalable network applications, Node JS was created.

#### Why use MongoDB?

- Fast and simple to index documents because it is a document-oriented database. Consequently, a quicker reaction.
- Scalability - By splitting up large amounts of data into several machines, it can be processed.

The major benefit is the usage of JavaScript, which MongoDB makes use of.

- Schema Less - Any kind of data in a different document.
  - JSON-formatted data storage
1. Arrays, Values, Objects, Object Members, and Strings
  2. JSON syntax is incredibly user-friendly.
  3. A broad variety of browsers are compatible with JSON.
  4. Data sharing is simple and supports data of any size and form (audio, video).

### **Express: Back-End Framework:**

Express is a Node.js framework used for back-end development. Express makes it simpler and easier to develop the back-end code than using Node.js and producing several Node modules. Great web apps and APIs may be created with the aid of Express. Express offers a wide range of middlewares, which results in quicker and simpler code.

#### **How come express?**

- Single-threaded and asynchronous.
- effective, quick, and scalable
- has the largest Node.js community
- Express' integrated router encourages code reuse.
- Strong API
- Start your express project in a new folder and create a package.json file by using the command below at the command prompt. Accept the defaults and go on. Then, install express by using the command shown below.
- Now finally create a file inside the directory named index.js.
- npm install express --save
- Now type in the following in index.js to create a sample server.

### **3. React: Front-End Library**

User interfaces are made using the React JavaScript library. React is used to make single-page apps and mobile apps because it can handle rapidly changing data. React allows for the creation of UI components and supports JavaScript scripting.

#### **Why use React?**

A DOM object is represented by a virtual DOM object. In reality, virtual DOM is a duplicate of the original DOM. Every time the web application is changed, a brand-new virtual DOM representation of the whole user interface is constructed. The modifications are then done in accordance with the original DOM after comparing the discrepancies between the original DOM and this virtual DOM.

JSX is a shortened form of JavaScript XML. JavaScript Extension for HTML/XML is used by React. makes writing React components simpler and easier. Components – ReactJS is capable of supporting components. Each part of the user interface (UI) serves a certain function and adds to the total. These components also encourage code reuse while streamlining the whole online application.

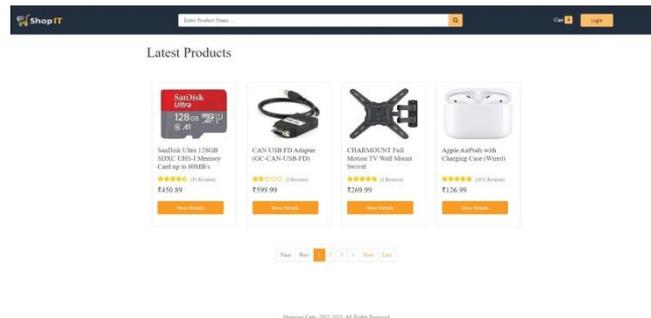
High Performance - Because of features like Virtual DOM, JSX, and Components, it is significantly faster than other frameworks available.

Making Android/iOS Apps - With just a working knowledge of JavaScript and ReactJS, you can easily make apps for either the Android or the iOS operating systems using React Native.

#### **WORKING OF A E-COMMERCE WEBSITE**

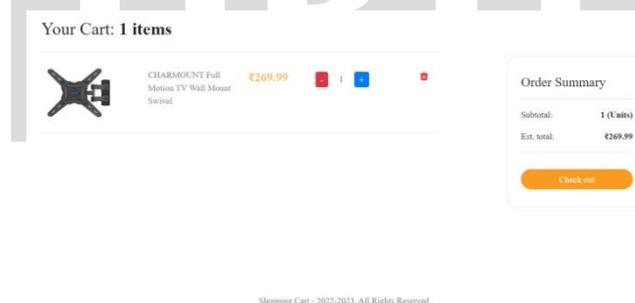
- Ecommerce websites serve as the digital stores or gateways that make ecommerce possible. Keep in mind that the word "ecommerce" refers to a broad category of online transactions.
- Any website that incorporates ecommerce features and enables users to buy products or services is considered to be an ecommerce website.
- Email and phone conversations were historically used for the first eCommerce transactions.
- Effective eCommerce websites need to be created from the very beginning to:
- Maximizing the total number of transactions will help generate revenue.
- "Average order value" optimization
- directing them toward the lucrative goods and categories.
- encouraging audience engagement, client loyalty, and repeat business.
- enhancing the checkout process and other essential conversion funnels.

- eCommerce sites can range from simple plug-and-play shopping carts to complicated, expensive, and time-consuming sites that cost thousands of dollars to build and operate.



### How do ecommerce websites work?

- eCommerce websites operate through a number of processes that make use of the database, website code, and third-party programmes like a payment processor or payment gateway.
- SSL certificates are used by e-commerce websites to safeguard and encrypt all data transfers. If a website does not follow all necessary standards, including PCI Compliance, sensitive data, including credit card information, should never be maintained within the website's database.
- eCommerce websites frequently function as follows:
  - Through search engines, sponsored adverts, referral traffic, etc., a potential consumer finds an e-commerce website.
  - Links on the eCommerce website lead to the online store's database, which contains information on the website's categories, products, their weights and measurements, articles and other materials, photos, etc. The website requires this information in order to dynamically render any requested web pages.
  - A potential consumer browses the eCommerce website, places something in their virtual shopping basket, and then decides to check out.
  - The customer completes the transaction by checking out and completing it.
  - To carry out credit card processing safely and remotely, the customer's credit card information is encrypted and delivered to a Payment Gateway (such as PayPal).
  - The website normally offers an anticipated shipment date, a special transaction number, a postal tracking number, etc. when the order is complete and the money has been processed. A decent eCommerce website's main functionality includes the majority of these automated procedures.
  - Orders are routed to an order fulfillment team and saved in the website admin when transactions are made. Order fulfillment may be carried out internally or by a drop shipper or other third party.



- Comparing eCommerce websites to conventional brick-and-mortar businesses, there are both benefits and drawbacks to consider.

## II. ADVANTAGES OF E-COMMERCE

There are a number of clear and less obvious benefits to conducting business online. Individuals and corporations can benefit from e-Commerce if they fully understand how it operates:

An expanded market Through e-commerce, one may connect with clients both domestically and internationally. E-commerce provides a platform for company owners to interact with customers while relaxing in their own homes. Customers may buy anything they want, anytime they want, and more and more people are becoming accustomed to making purchases on their mobile devices.

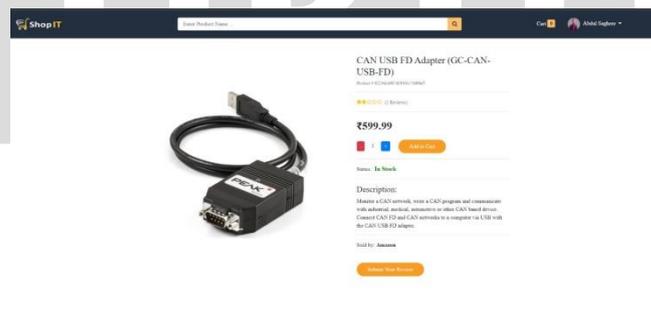
Gaining knowledge about customers through analytics and monitoring. Regardless of how a company directs customers to its e-commerce website—through PPC, SEO, advertisements, or even a simple postcard—there are ways to track traffic and users' entire user journeys so that it can learn more about its keywords, marketing message, user experience, pricing strategy, and other aspects. Quick Response To Market Demands And Consumer Trends: Business owners who "drop ship," in particular, benefit from improved logistics since it enables them to react quickly to market demands, eCommerce trends, and consumer wants. In order to draw clients and increase sales, businesspeople may also quickly generate bargains and promotions. Fewer Cost: Thanks to the development of eCommerce platforms, starting and operating an online store is now incredibly reasonable and simple. This results in lower overhead costs. Business executives no longer need to account for employee and real estate costs, or spend a substantial chunk of money on TV commercials or billboards. Additional Chances To "Sell" In a physical store, businesspeople can only provide a certain amount of details regarding a product. Additionally, eCommerce websites allow them to add extra content like reviews, demo videos, and client testimonials to aid in boosting conversion. Personalized Messaging: E-Commerce platforms give people in business the opportunity to provide personalized content and product recommendations for registering customers. These customised messages can help increase conversion by giving the visitor the most important information. Increased Sales and Instant Reward: eCommerce enables businesses who sell digital goods to ship orders as soon as they are received. This satisfies the consumer's need for instant satisfaction and increases sales, especially of inexpensive things that are commonly referred to as "impulse buys."



Additional Unrestricted "Shelf Space" that may be quickly scaled up or down. Any online business' ability to grow is not only limited by geography. When a business grows, logistics may become an issue, although this is less challenging than running a physical store. E-commerce firm owners may quickly scale up or down their operations in response to client and market demands by utilising the endless "shelf space."

### III. RESULT

We are all familiar with COVID-19, the new normal, so don't worry. The COVID19 Pandemic has altered every aspect of life, including online learning, work from home, college, and shopping. Well, e-shopping and e-commerce existed before COVID, but no one understood their potential. All the digital items that were already there have gotten a boost from the COVID-19, but we are not very concerned. E-commerce saves a lot of time, but before to COVID, few people used it. Today, however, everyone uses the internet.



The question of what exactly is e-commerce now emerges. Let's begin with the phrase itself. E stands for Electronic and commerce, which is the activity of purchasing and selling. Therefore, if we combine the two terms, we can say that buying or selling through an electronic medium is known as E-commerce. Since we now require connections between computers, the internet is essential to E-commerce.

- So, anyone who can access the internet can participate in E-commerce activity. E-commerce consists of two types:
- Shopping
- Trading Stocks
- We are all familiar with online purchasing; some good examples are Amazon, Flipkart, and Tata Cliq. Some websites solely offer a specific kind of goods, such as JIO Mart, which sells just groceries, as opposed to Flipkart and Amazon, which sell everything. On the other hand, if we discuss stock trading, it used to be extremely difficult for regular people since they lacked the necessary expertise and had to spend a lot of money on agents. However, this industry is currently undergoing change.

Influence on the User

E-commerce has altered how people view the company. Every person who was involved in the business, including customers, vendors, advertisers, and even the business concept itself, has been impacted. Our lives now include the internet, which saves us a tonne of time. Going to the bank every day for little transactions and everything is unthinkable. Since we work so much, we don't have time to go shopping. This is where online shopping comes into play, which provides comfort, convenience, comfort, and, most significantly, saves time.

E-commerce offers a number of benefits, but it also has certain drawbacks. Let's evaluate E-commerce closely:

#### E-benefits commerce's

E-commerce is advantageous for both buyers and sellers, as well as for consumers. Here are some benefits of adopting e-commerce:

##### Markets worldwide:

Your firm might grow through e-commerce without facing any regional restrictions. For instance, if Ram had an electronics store in Ghaziabad, he could only sell to people there. However, if he went online, he could reach people all over the world. Due to this, we believe that e-commerce has enormous potential.

##### Operational cost reduction

E-commerce might result in lower operational costs, boosting sales for the vendor. For instance, if Riya wants to sell books, she'll need a fantastic website with lots of visitors as well as a product and design company that can attract customers. If someone wants to sell books online, all she needs is a reputable website that is less expensive than a physical location.

##### Greater Choice

Because internet shoppers may purchase things from any location in the world, there are numerous options available to them. Additionally, because the business is online, the seller need not worry about space and may offer as many things as they like.

##### Time-saving

Online purchasing also saves time because the payment and selection processes move quickly. There is no need to visit physical stores; therefore travel time may be reduced.

##### Lower prices

Because there were so many middlemen in offline retailers, consumers had to pay more. When making an online purchase, the customer has the choice to purchase straight from the manufacturer. Because of increased manufacturer rivalry brought on by the internet market's worldwide reach, costs have decreased, eventually benefiting customers.

##### Information accessibility

Our nation has a consumer protection statute called the Right to Inform that guarantees everyone the right to know about a product's quality, quantity, purity, and price in order to protect them from unfair business practices. Online retailers provide customers this right. Any person may evaluate the products, read customer reviews, and then buy the item.

##### Convenience

Convenience is one of the benefits of online shopping. You can order a product while seated on the couch or in an office chair, and after some time, it will arrive at your door. You merely need a smartphone and strong internet; you don't need to go shopping.



Your Order has been placed successfully.

[Go to Orders](#)

#### Instantaneous Purchase

Digital goods, including music and eBooks, may be bought and downloaded simultaneously. There is no need for the customer to wait for the merchandise at an offline store. When we consider the benefits of e-commerce, many individuals overlook the importance of online advertising. The reach of advertising has increased thanks to e-commerce. These days, a vendor may promote their goods using social media and email marketing while spending less money and reaching a larger audience. There are several opportunities for online advertising.

### Future Scope

Simply expressed, given how well the trend has taken off in our country, the scope of e-business in the near future appears to be expanding and developing. The world's largest online retailer, Amazon, is eager to dominate the Indian market and has already made significant investments; including a 49 percent interest in the Future Group. Indian e-commerce behemoth Flipkart has already started a few physical locations and has additional locations planned in smaller towns. To increase sales, they intend to merge their retail and online storefronts. To improve internet and cell penetration among rural women, Google and Tata Trust jointly created the "Saathi" campaign.

Shipping > Confirm Order > Payment

### Card Info

Card Number

4242 4242 4242 4242

Card Expiry

03 / 56

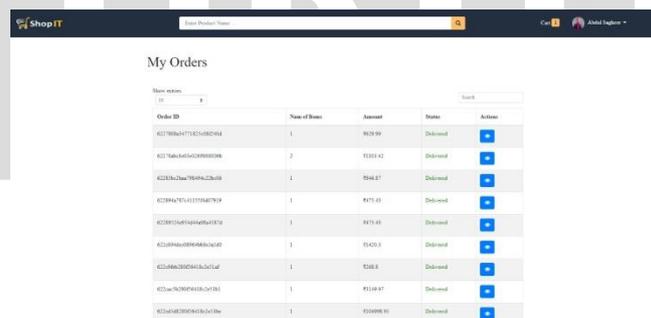
Card CVC

255

Pay - 283.49

### IV.CONCLUSION

Even if the stock market and commodity prices declined, e-commerce was still able to thrive and have strong transaction levels. It still represents one of the business strategies that may benefit if used properly. For our Malaysian company, e-commerce has enormous potential. Additionally, it has to do with applying contemporary methods and aesthetics to a transaction. It is actually much better to disseminate the virtue of a person or a state by utilising the widely used E-Commerce on the Internet. E-commerce is undeniably growing in significance in our culture. Long-term success will go to the businesses that take e-commerce seriously and provide enough resources to its growth. E-commerce is not an IT problem, but a business-wide endeavour. Businesses who use it as a chance to modernise their internal procedures stand to gain the most. Another useful tool that connects customers to businesses and organisations throughout the globe is e-commerce



Order ID	No. of Items	Amount	Status	Action
42278847781248204	1	803.99	Delivered	+
42278847781248208	2	1103.42	Delivered	+
42278847781248209	1	7946.87	Delivered	+
42278847781248210	1	8471.01	Delivered	+
42278847781248211	1	8471.01	Delivered	+
42278847781248212	1	15420.3	Delivered	+
42278847781248213	1	7088.8	Delivered	+
42278847781248214	1	81149.97	Delivered	+
42278847781248215	1	82006.91	Delivered	+

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