



Design and implementation of a limited-edition saree E-commerce system (Saiba Creations)

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Abstract

This research shows how to develop and build a specific e-commerce site for firms that sell limited-edition sarees. Many small businesses use social media and manual ways to keep track of orders and inventory, which often leads to overselling and poor record keeping. The goal of this project is to develop a web-based platform that is safe, easy to use, and can grow with the business. It will also automate inventory management and order processing.

The front end of the system was made with HTML, CSS, and JavaScript, the back end was made with PHP, and the database was managed with MongoDB. The results reveal that the accuracy of the inventory has gone up, the handling of orders has gotten easier, and the customer experience has been better. The study finds that a customized e-commerce solution can help small firms run their online activities in an organized and long-lasting way.

Keywords: E-Commerce, Boutique Management System, Inventory Control, Limited Stock, PHP, MongoDB.

Introduction

The growth of digital payment systems and internet technology has had a big impact on the worldwide retail industry. E-commerce platforms are becoming the main way that firms and customers may talk to each other across borders. More and more people are choosing to purchase online since it's easier, there are more options, and it's easier to compare prices.

Even with these improvements, many small boutique firms, especially those in the fashion and traditional clothing industries, haven't entirely switched to structured e-commerce systems. Saree shops, especially those that sell limited-edition or handmade collections, often use social media sites like Instagram and WhatsApp to promote their products and talk to customers about their orders. These platforms do help with marketing and direct contact, but they don't have established ways to maintain track of inventories, automatically check orders, keep all records in one place, or handle transactions securely.

Businesses that sell limited-edition sarees have their own set of rules. They generally make their products in small batches, and sometimes they just make one of each. A lot of collections come out based on the season or preorders. In these situations, keeping track of your inventory accurately is quite important. Even small mistakes in keeping track of stock can cause overselling, unhappy customers, and a loss of trust in the company.

As more and more people want things, manual systems become less and less useful. Sellers have to keep track of questions, check availability, record payments, and update stock by hand. This method takes a long time, is easy to make mistakes, and is hard to scale.

Because of this, there is an obvious need for a digital solution that is specifically designed for the way boutique saree businesses work.

The goal of the research

The main goal of this project is to create and put into use a specific e-commerce system that helps limited-edition saree stores with their day-to-day problems. The system's goals are to:

- To stop overselling, automate the process of checking inventory in real time.
- Make sure that users can log in safely and manage their sessions.
- Allow for systematic browsing and classification of products.
- Add dynamic cart features that check stock levels.
- Make it easier to check out and confirm orders.
- Give people the tools they need to keep track of products and orders.
- Use contemporary web technologies to make sure that your site can grow and stay reliable.

The system aims to improve operational efficiency and provide customers with a smooth shopping experience by reaching these goals.

Importance of the Study

This study has both real-world and academic importance.

Real-world Importance

The scheme gives boutique business owners:

- Better accuracy in inventory
- Less labor to do by hand
- Processing orders more quickly
- Customers trust you more
- Managing structured data
- More room to grow

The platform helps small businesses compete better in the digital marketplace without having to pay for expensive and complicated enterprise-level solutions.

Importance for Academics

From a scholarly and research standpoint, this work illustrates:

- Using software engineering ideas in real-world business situations
- Putting into place a modular web development architecture
- Combining technology for the front end, back end, and database
- How to use document-oriented database systems in real life
- Making e-commerce frameworks work for certain industries

The research helps us learn how customized digital technologies may solve unique operational problems instead of just using general enterprise platforms.

Literature review

The Growth of E-Commerce Systems

E-commerce systems have changed a lot since the early 1990s, when rudimentary web interfaces first made it possible to buy and sell things online. At first, e-commerce platforms were static catalog-based systems that didn't allow for much interaction. As web technologies, database systems, and internet infrastructure improved over time, these platforms became dynamic, real-time transaction management systems.

Pressman and Maxim (2014) say that structured engineering principles must be followed by modern software systems to make sure they are reliable, scalable, and easy to maintain. E-commerce platforms are also not immune. To work well, they need to integrate frontend interfaces, backend logic, and secure database management systems.

According to Laudon and Traver (2020), there are three main pillars that support successful e-commerce platforms:

- Infrastructure for technology
- Integration of business processes
- Managing relationships with customers

Amazon and Flipkart, two big online stores, use very complicated systems that include cloud computing, distributed databases, machine learning algorithms, and automated supply chain systems. But these enterprise-level technologies are often not needed and too expensive for small boutique enterprises.

Digital Problems That Small Businesses Face

Studies show that small and medium-sized businesses (SMEs) often have trouble using new digital technology. These problems are:

- Costs of development are high
- Complicated technology
- Not having enough IT knowledge
- Not working with tiny business models
- Boutique fashion stores, especially those that sell limited-edition items, need customized procedures instead of ones that work for everyone.
- Boutique vendors are different from bulk dealers in that they handle:

- A small number of items in stock
- A lot of unique products
- Release cycles based on the season
- Business models that are built on preorders

Traditional enterprise e-commerce systems focus on managing huge inventories and automating warehouses, which may not work for small businesses.

Why It's Important for Businesses with Limited Stock to Manage Their Inventory

Any retail system needs to have good inventory management. In enterprises that only sell a few items, there is a much higher chance of overselling because the items are rare and in short supply.

Spreadsheets and handwritten registers are examples of manual inventory procedures that make it more likely that:

- Data that doesn't match
- Entries that are the same
- Mistakes in stock calculations
- Updates that are late

Research in retail management shows that checking inventory in real time lowers the number of mistakes made in operations and increases customer trust. Automated stock control makes sure that the status of product availability is updated right away when an order is placed.

This feature is very important for small saree enterprises because each saree may be one of a kind and can't be replaced.

The role of web technologies in online business

- Small businesses may affordably make the switch to digital thanks to modern web development tools. HTML for structure and
- CSS for making things seem nice
- JavaScript for making things interactive
- PHP for processing on the back end
- MongoDB is a versatile way to store data that makes a powerful but cheap system design.
- MongoDB is a NoSQL document-based database that is great for small businesses because:
- It works with dynamic schema structures.
- You can change the properties of a product without changing the database tables.
- It lets you store data that can grow.
- It works well with documents that look like JSON.
- This adaptability is helpful for fashion enterprises where things like fabric type, color variants, embroidered details, and collection tags may change often.

Found a Research Gap

Most of the research and commercial platforms that are out there focus on big digital commerce systems. There is not much study on personalized digital solutions for small firms that deal with:

- Collections that are only available to certain people
- Inventory in small batches
- Releases based on preorders

So, this project helps by creating a framework that fits the way limited-edition saree dealers work. It fills the gap between selling things on social media and a well-organized digital commerce system.

Existing system overview

Most boutique saree sellers use social media sites like Instagram and WhatsApp to publicize their products and keep track of orders. Customers usually:

- Look at pictures of products that have been uploaded online
- Send direct messages to ask questions.
- Send money with bank transfers or digital wallets.

This approach might work for a few transactions a day, but it gets less effective as the number of transactions goes up.

Specific Problems with the Current System

1. Selling too many of things that are in short supply
2. Because stock confirmation is done by hand, more than one client may try to buy the same saree at the same time. If you don't get updates in real time, you might sell too much.
3. Confirming an order by hand
4. Sellers have to validate each order separately, which slows things down.
3. No central database
5. There are a lot of chat platforms where customer information is stored.
4. Bad Data Security
6. It may not be safe to store sensitive consumer information.
7. Not very good at analyzing things
8. Problems with scalability

As the firm grows, it becomes impossible to handle more requests by hand.

Need for the Proposed System

To get around these problems, a structured digital platform is needed. The suggested system makes sure:

- Checking inventory in real time
- Safe login

- Cart features that work automatically
- Organized order processing
- Monitoring of administration

Survey and requirement analysis

Introduction to the Survey

We used Google Forms to create a systematic survey to find out what practical problems boutique saree merchants and purchasers encounter. The survey aimed to get practical insights on inventory management, order processing techniques, consumer preferences, and the deployment of digital technologies in small-scale saree enterprises.

The survey was meant to confirm the research results that were talked about in the literature review and make sure that the suggested solution solves real-world problems instead of just theoretical ones.

The questionnaire was made to get both quantitative and qualitative answers. There were short descriptive replies, yes/no questions, and multiple-choice questions. The poll was sent out to both customers who often buy sarees from small businesses and boutique saree dealers.

How the survey was done

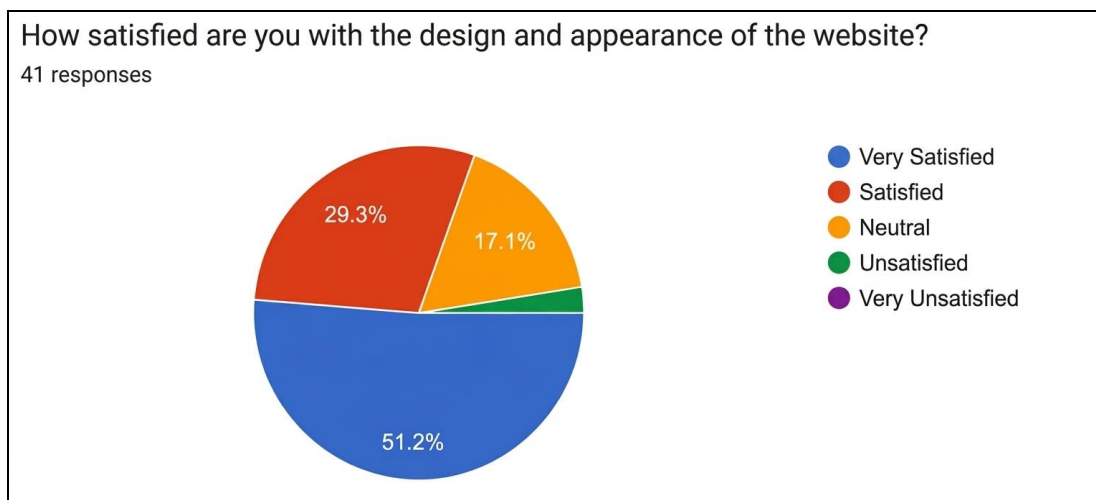
We used Google Forms for the survey because it was easy to send out, gather responses automatically, and see the results in graphs.

Information about the survey:

1. Platform utilized: Forms from Google
 - People who offer and buy boutique sarees are the target audience.
 - How to share: on WhatsApp and Instagram
 - What kind of questions are there? Multiple choices.
 - Time to Collect Responses: 7 Days
 - Total Responses Collected: (41 responses)

Google Forms analytics automatically summarized the data that was collected, using pie charts to make it easy to see.

Survey Questions and Analysis

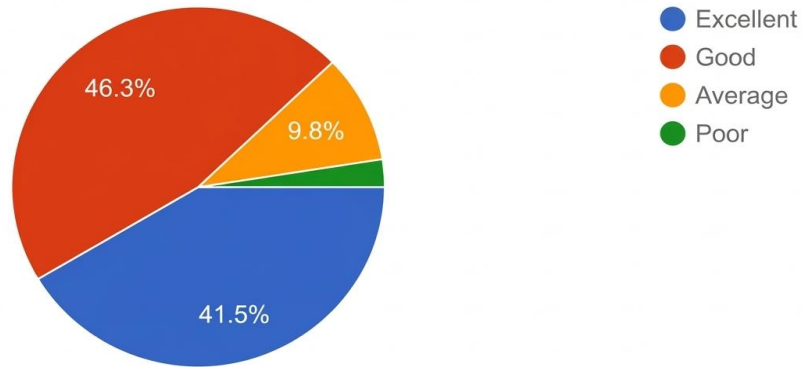


We did a survey with 41 people to find out what they thought of the website's design and look. 51.2% of users were extremely happy, and 29.3% were happy, which shows that most people liked the website. 17.1% of those who answered said they were neutral, which means that the

design is okay but might be better. There were only a few users that were unhappy. Overall, the results show that most people like the website design, find it easy to use, and think it's appealing.

How did you first feel about the overall experience of using the website?

41 responses

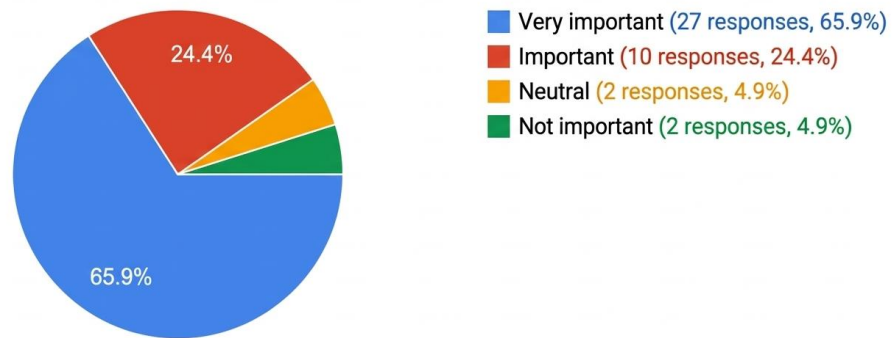


We got 41 replies to find out how well the website worked for everyone. Forty-six percent of the people who took part said their experience was good, and forty-one percent said it was great. This shows that most users had a good time using the platform.

About 9.8% of users thought the experience was ordinary, while only a very small minority thought it was bad. These results show that the website is generally straightforward to use, well-organized, and can give most people a good experience when they browse and shop.

How important is it for you to see real-time product availability while shopping online?

41 responses

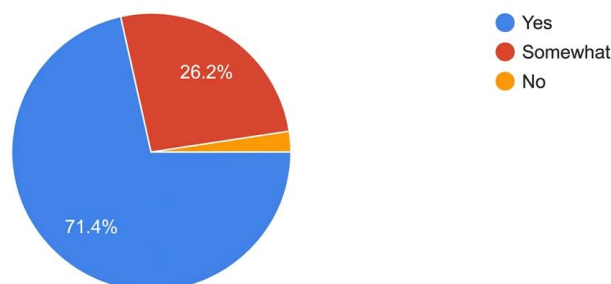


The survey also wanted to find out how crucial it is for people to see real-time product availability when they shop online. The results suggest that 65.9% of people who answered thought it was extremely important, and 24.4% thought it was significant. Only a small number of users thought it was unimportant or neutral. This clearly shows

that customers want to see correct stock information when they look at products. Giving customers real-time information about availability builds trust, cuts down on confusion, and makes the whole online purchasing experience better.

Was it easy to browse products and view their details?

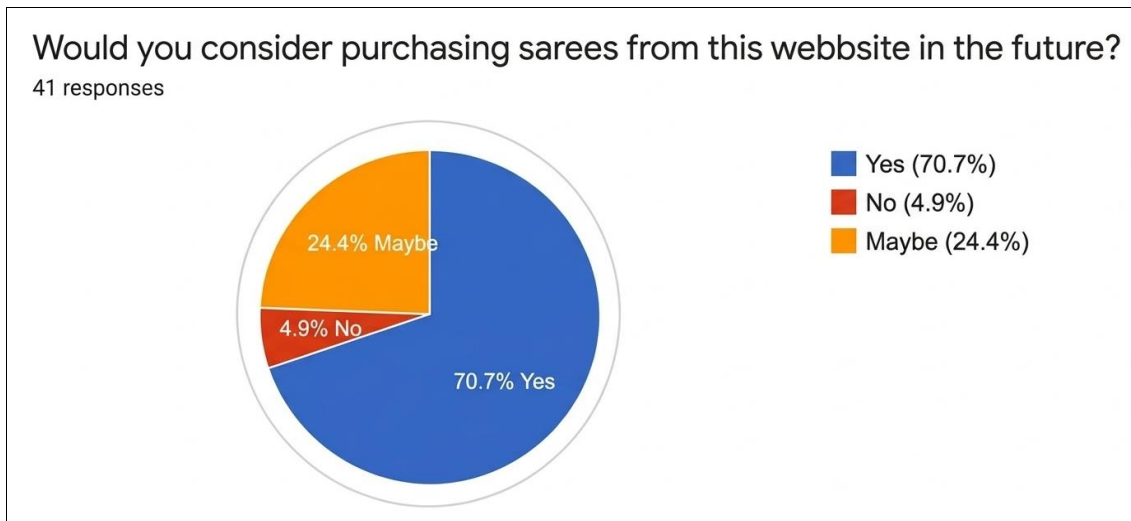
42 responses



We asked users if it was easy to look through products and see their details on the website. Seventy percent of the people who answered said yes, which means that the product layout and navigation are clear and work well. Also, 26.8% chose "somewhat," which means that the experience

was mostly good, but there may still be some small things that may be better.

Only a tiny number of people had trouble. The overall results demonstrate that the design of the website does a good job of helping people find and comprehend product information.



The last question was about whether visitors will think about buying sarees from the website in the future. The results show that 70.7% of those who answered replied yes, which shows that they are quite interested in the platform. Another 24.4% chose "maybe," which means that these people might buy if the product or service gets better or more options become available. A modest number of people said no. This means that the website could be a viable way for boutique saree businesses to get consumers and make sales online.

Objectives of the project

Primary Objective

The main goal is to create and put into action a safe, scalable, and easy-to-use e-commerce platform that is specifically designed for businesses that sell limited-edition sarees. The goal of the system is to digitize commercial activities and get rid of the problems that come up when things are done by hand.

Specific Secondary Goals

1. User interface that responds
To make sure that PCs, tablets, and cellphones can all access it.
2. A safe way to verify your identity
To keep user accounts safe by using encrypted passwords and managing sessions.
3. Managing Inventory in Real Time
To automatically change the amount of stock after every confirmed order.
4. System for Structured Cart
To let customers handle certain items before they check out.
5. Module for Handling Preorders
So that buyers can book future collections.
6. Dashboard for Admin

So that business owners can:

- Change or add products
- Watch sales

- Keep an eye on stock
- Look at orders from customers

7. Design of a database that can grow

To help the firm grow without making big changes to its structure.

Methodology

Identifying Requirements

- Requirements were determined via:
- Watching how little saree businesses work
- Examination of selling models based on social media
- Talks with people who own small businesses

Key needs found

- Limited control over stock
- Checkout that happens automatically
- System for safe login
- Control panel for administration

Analyzing Requirements

Requirements for Functionality

The system needs to:

- Show goods in groups
- Make sure your product pages have a lot of information.
- Let people sign up and log in
- Control the cart's features
- Check the stock before confirming the order.
- Make records of order confirmations
- Give control of the admin dashboard

Requirements that aren't functional

The system needs to make sure:

- Protection against unlawful entry
- Compatible with responsive design
- Fast loading and high performance
- Data that is reliable and consistent
- Ability to grow in the future

System Architecture

The system is based on a Three-Tier Architecture Model:

1. Frontend (Presentation Layer): Made using HTML, CSS, and JavaScript Manages the user interface and interactions

2. The Backend or Application Layer: Made with PHP Takes care of authentication, business logic, and processing orders

3. The Database Layer: MongoDB

- Holds information about products, users, and orders
- This modular design makes sure that:
- Easy to maintain
- Scalability
- Separation of issues
- Debugging that works well

How to Develop

A Modular Development Methodology was used. The system was broken up into separate parts:

- Module for Authentication
- Module for Managing Products
- Module for the Cart
- Module for Checking Out
- Admin Dashboard for the Order Management Module

Made each module on its own, tested it on its own, and then put it all together into the full system.

How to Design a Database

Used MongoDB collections:

- Collection of Users
- Collection of Products
- Collection of Orders
- Collection of Carts

Each document stores structured data in JSON format, which lets you change the attributes of a product.

System DESIGN

System design is an important step in making software because it turns requirements into a defined technical plan. The suggested system has a modular and layered design that makes it easy to scale, maintain, and run quickly.

A Look at the System Architecture

The platform is built on a Three-Tier Architecture, which divides the application into three logical layers:

Client-Side Presentation Layer: Made using HTML, CSS, and JavaScript

In charge of rendering the UI and interacting with users makes ensuring that the design works on both desktop and mobile devices.

Layer of Application (Server-Side): Made with PHP

Handles:

- User verification
- Logic for business
- Operations of the cart
- Processing orders
- Checking the inventory

The Data Layer (Database Layer) Built with MongoDB

Shops:

- Data about users
- Information about the product
- Records of inventory
- Transactions for orders
- This separation makes guarantee that:
- Better system maintenance
- Improved optimization of performance
- Easier to fix bugs and add new features

Implementation details 9.1 frontend implementation

The frontend was developed with focus on:

- Clean layout design
- Responsive grid structure
- Product filtering system
- Interactive cart updates
- CSS was used to ensure:
- Elegant color themes
- Proper typography
- Mobile responsiveness
- JavaScript was implemented for: Real-time cart updates
- Form validation
- Dynamic stock display

Backend Implementation

PHP handles:

- Session management
- Password hashing
- Order confirmation logic
- Stock decrement logic
- Admin authorization
- Secure coding practices were followed to prevent:
- SQL/NoSQL injection
- Session hijacking
- Unauthorized access

Database Implementation

MongoDB collections include:

- users products orders carts
- Advantages of MongoDB in this project:
- Flexible schema
- Easy JSON document storage
- High scalability
- Fast query execution

Testing strategies

Testing makes ensuring that things work, are safe, and are reliable.

1. Testing of Units

We tested each module separately:

- Checking the registration form
- Login verification
- Logic for adding to the cart
- Checking stock

2. Testing for Integration

Modules were put together and tested to make sure that data could move smoothly between:

- Front and Back
- Database and Backend

3. Testing the System

Testing the whole system included:

- Placing an order from start to finish
- Managing products for the admin
- Validation of inventory updates

4. Testing for Security

Tested security measures:

- Encryption of passwords
- Cleaning up input
- Session time out
- Limiting access without permission

5. Testing for User Acceptance (UAT)

Test users looked at:

- How easy it is to get around
- Experience at checkout
- How fast pages load
- Experience of looking at products

Feedback showed that people were quite happy with how easy it was to use.

Results and performance analysis

The system that was built *met all* of the project's goals.

Results

- Real-time stock validation stopped people from selling too much
- Smooth cart operation
- A safe way to verify identity
- Quick time for pages to load
- Recording orders correctly
- The evaluation of performance showed:
 - Less labor to do by hand
 - Better efficiency in operations
 - Better organizing of data
 - More trust from customers

Discussion

The method shows how tailored internet platforms may help small boutique enterprises in real life.

Strengths: A light architecture

Development that doesn't cost too much

Easy-to-use interface

Designing a database that can grow

Weaknesses

- Limited ability to accept payments from other people
- No recommendation engine based on AI
- No app for mobile devices

Even if it has certain flaws, the system does a good job of meeting the needs of small businesses.

Future scope

The platform can be enhanced with:

1. You can add an AI-based product recommendation system to the platform.
2. Dashboard for sales analytics
3. Programs for keeping customers loyal
4. Making apps for mobile devices
5. Cloud deployment for global growth
6. Notifications of orders by SMS or email

Future expansion could turn the platform into a full-fledged digital commerce ecosystem.

Limitations of the system

Although efficient, the system has certain limitations:

- The system works well, although it does have certain problems:
 - Made mostly for small businesses
 - Limited automation in tracking logistics
 - No sophisticated marketing tools
 - Needs a hosting environment to be deployed

In later stages of development, these problems can be fixed.

Deployment strategy

Steps for deployment include:

- Setting up the hosting (Apache server)
- Setting up MongoDB in the cloud
- Registering a domain
- Installing an SSL certificate
- Deployment of PHP on the server side
- Correct deployment makes ensuring that:
 - Safe transactions
 - Integrity of data
 - Reliability of the system

Maintenance plan

To make sure it works well for a long time:

- Backups of the database on a regular basis
- Updates to security every so often
- Monitoring performance
- Fixing bugs
- Updates to features

Maintenance makes ensuring that things can grow and stay reliable.

Swot analysis

Strengths

- Made particularly for small businesses
- Managing stock in real time
- Development that doesn't cost a lot

Weaknesses

- Not as much automation as corporate systems

Possibilities

- The saree market is growing online.
- More small firms are using digital tools.

Threats

- Competition from big online shopping sites
- The rapid growth of technology

Conclusion

The Limited-Edition Saree E-Commerce Website (SAIBA CREATIONS) is a great example of how to develop and build a digital solution that works well for small fashion enterprises. The platform solves important operational problems for saree sellers with limited supply by combining secure authentication methods, real-time inventory management, modular system architecture, and adaptable web design.

The solution replaces slow, unproductive manual processes with a structured, automated workflow that makes operations run more smoothly, lowers the risk of overselling, and makes customers happier. The solution is good for small and growing businesses because it is flexible, scalable, and cost-effective thanks to PHP and MongoDB. This research shows that small firms may compete well in the digital economy without having to use complicated enterprise-level infrastructure. The planned structure is a robust base for future growth and improvements in technology.

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