



CAPSTONE PROJECT REPORT

Smart online electronics sales system

Report1: Project Introduction

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I. Project Introduction

1. Overview

1.1 Project Information

- Project name: Smart online electronics sales system (Electric store)
- Vietnamese project name: Website bán đồ điện tử trực tuyến
- Project code: SEP490
- Group name: If-else
- Software type: Website

1.2 Project Team

Table 1 – Project Team

Full Name	Role	Email	Mobile
Vo Hoang Tu	Lecturer	Tuvh6@fe.edu.vn	0793932002
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2. Product Background

My electric store has been a traditional business. Before, we used office tools such as Notebook and Excel to manage orders. We will receive the orders through by phone. Initially, the situation was quite good, but over the past few years, we have realized the development of technology expanding daily like Shopee, Lazada, etc. The number of our customers is less day by day, therefore our revenue daily decreasing quickly, It makes us cannot compete with them. Recently, we want to transfer the business model. We want to create a website to attract customers. On the other hand, we want to manage orders, revenue monthly, new list products, and so on. To reach customers better and save time and cost for our business.

Technologies are used to develop the system including:

- Frontend: ReactJS
- Library UI: TailwinCSS and Antd
- Backend: Node JS
- Database: Firebase
- AI: Recommendation (Algolia)
- Payment: VNPay/Paypal
- ChatBot: AWS Lex
- Source Code Management: GitHub
- Deploy server: Vercel

2.1. ReactJS

Description: React is a free and open-source JavaScript front-end library for building user interfaces based on individual UI components. It is developed and maintained by Meta and its community of individual developers and companies.

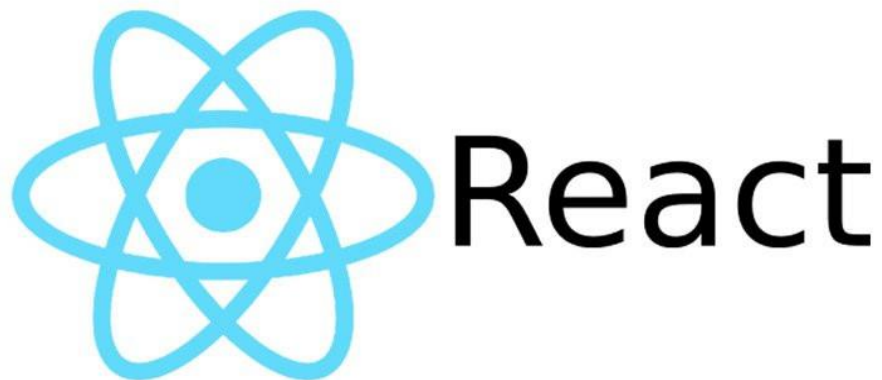


Figure 1. Product background - ReactJS Framework

2.2. TailwinCSS

Description: Tailwind CSS is a utility-first CSS framework for rapidly building modern websites without ever leaving your HTML.



Figure 1 - TailwinCSS

2.3. Ant Design

Description: An enterprise-class UI design language and React UI library with a set of high-quality React components, one of the best React UI libraries for enterprises.



Figure 2 - Ant Design

2.4. Node JS

Description: Node.js® is a JavaScript runtime built on Chrome's V8 JavaScript engine.



Figure 3 – Node JS

2.5. NextJS

Description: Next.js is not only a front-end framework but also provides robust back-end capabilities, enabling developers to create full-stack applications. With Next.js, you can build server-side rendered applications, manage API routes, and handle server-side logic seamlessly. It supports serverless

functions, allowing you to deploy scalable and cost-effective back-end services. The framework integrates easily with databases, authentication services, and other back-end tools, making it versatile for various use cases. Next.js empowers developers to build complete, high-performance web applications with both front-end and back-end functionalities within a single framework.

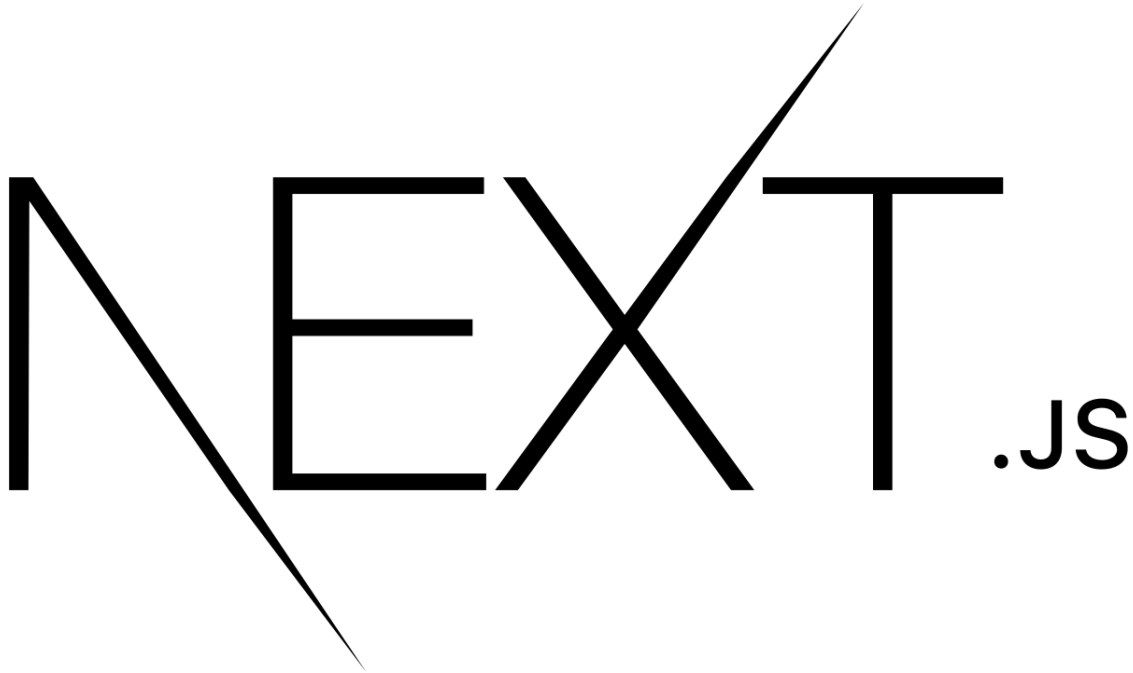


Figure 4 – Next.JS

2.6. Database - Postgresql

Description: PostgreSQL is an advanced, open-source relational database management system (RDBMS) that provides robust data storage and management solutions for applications. It supports both SQL for relational queries and JSON for non-relational queries. With features like ACID compliance, complex queries, foreign keys, triggers, and views, PostgreSQL ensures data integrity and reliability. It's highly extensible, supporting custom functions and extensions, and is known for its performance, scalability, and security. PostgreSQL is suitable for a wide range of applications, from single-machine applications to large, web-based applications with many concurrent users.



Figure 5 - PostgreSQL

2.7. Model AI: Recommendation (Algolia)

Description: Recommend is a JavaScript UI library, available on GitHub, for Algolia Recommend with components for displaying recommendations on your site. Recommendations encourage users to discover more of your catalog based on what they're already interested in.



Figure 6 - Algolia

2.8. Pay: VNPay

Description: VNPay is a leading digital payment platform in Vietnam, offering secure and convenient payment solutions since its establishment. VNPay provides a wide range of services including online money transfers, bill payments, and mobile top-ups. With VNPay, users can easily and safely manage their transactions through various channels such as mobile banking apps, QR code payments, and e-wallets. VNPay is widely accepted across numerous merchants and service providers, making it a trusted choice for digital payments in Vietnam.



Figure 7 - VNPAY

2.9. Chatbot: AWS Lex

Description: AWS Lex is an artificial intelligence service from Amazon. It is designed to create a smart and easy-to-use automated chat application



Figure 8 – AWS Chatbot

2.10. Kommunicate

Description: Kommunicate is a comprehensive chatbot platform designed to streamline customer support and engagement. It enables businesses to build, deploy, and manage AI-powered chatbots that can handle customer inquiries, provide instant responses, and automate routine tasks. With Kommunicate, you can integrate chatbots into your website, mobile apps, and social media platforms, ensuring a seamless and consistent customer experience across all channels. The platform supports both rule-based and AI-driven bots, allowing for flexibility in addressing various customer needs. Additionally, Kommunicate offers features like live chat handover, real-time analytics, and multi-language support, making it an effective solution for enhancing customer communication and improving service efficiency.



Figure 9 – Kommunicate

2.11. ORM: Prisma

Description: Prisma is a modern, open-source ORM (Object-Relational Mapping) tool that simplifies database management and operations for developers. With Prisma, you can interact with your database using a type-safe and intuitive query language, reducing the complexity and errors associated with traditional SQL queries. It supports multiple databases, including PostgreSQL, MySQL, SQLite, and MongoDB. Prisma offers features like data modeling, migrations, and real-time capabilities, making it easier to manage and scale your database. Its seamless integration with modern frameworks and languages, such as Node.js and TypeScript, allows developers to build robust and maintainable applications efficiently.



Figure 10 – Prisma

2.12. VPS: Digital Ocean(VPS)

Description: DigitalOcean is a cloud infrastructure provider that offers scalable and easy-to-use Virtual Private Servers (VPS), known as Droplets. Established in 2011, DigitalOcean provides developers with cloud services to deploy and scale applications running simultaneously on multiple computers. Its user-friendly control panel and API enable seamless management of infrastructure, including creating,

resizing, and destroying VPS instances. DigitalOcean's robust performance, reliable uptime, and straightforward pricing make it an ideal choice for developers and businesses looking to host web applications, databases, and other services in the cloud.



Figure 11 – DigitalOcean

2.13. Authentication: NextAuth

Description: NextAuth.js is a complete open-source authentication solution for Next.js applications. It provides a flexible and easy-to-use framework for implementing secure user authentication with support for various authentication providers, including OAuth (e.g., Google, Facebook), email/password, and custom authentication methods. NextAuth.js seamlessly integrates with Next.js, allowing you to add authentication to your application with minimal configuration. It supports features like JWT (JSON Web Tokens), session management, and database adapters, ensuring robust security and scalability. With NextAuth.js, developers can quickly set up and manage authentication, enabling secure access control for their Next.js applications.



NextAuth.js

Authentication for Next.js

Figure 12- NextAuth

2.14. Github

Description: GitHub is a web-based interface that uses Git, the open source version control software that lets multiple people make separate changes to web pages at the same time.



Figure 13 - GitHub

3. Existing Systems

3.1 DienMayXanh

- **Description:** The Điện Máy Xanh website offers a comprehensive range of electronic appliances from reputable global brands such as TVs, refrigerators, washing machines, air conditioners, air purifiers, rice cookers, gas stoves, tablets, smartphones, and more, catering to every customer's need. Customers can easily compare products of the same type in terms of price, features, and technical specifications before making a purchase, and can also refer to the opinions of previous buyers. Additionally, they can easily track the status of their orders on the website.

The link website: <https://www.dienmayxanh.com/> (access date 03/05/2024)



Figure 2. Existing system – DienMayXanh 01

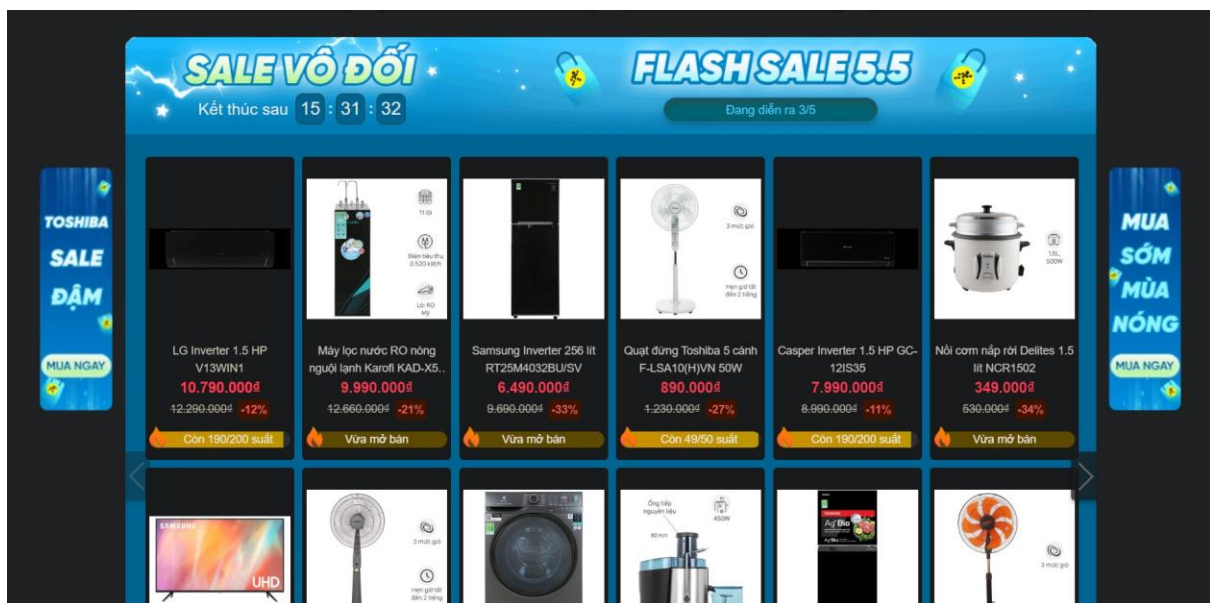


Figure 3. Existing system – DienMayXanh 02

- **Main Features:** Điện Máy Xanh website offers a convenient and diverse online shopping experience, allowing easy search, comparison, and filtering of products. Flexible payment support and free nationwide shipping are provided. Quality assurance through return and warranty policies is guaranteed. Additionally, it provides information through blogs and promotional programs, loyalty point redemption, and enthusiastic customer support.

- **Advantages:** The Điện Máy Xanh website has numerous advantages. It features an attractive and user-friendly interface, offering a full range of electronic and home appliances from reputable brands worldwide. Detailed product information including images, videos, customer reviews, and price

comparisons helps users make informed purchasing decisions. Competitive pricing, attractive promotions, and support for various payment methods are available. The delivery service is fast and secure, with flexible return policies, genuine warranties, and a dedicated team of enthusiastic and attentive customer service representatives.

- **Disadvantage:** The website may experience slowdowns during peak hours due to high traffic, some products may be priced higher than the market, shipping costs can be high for low-value orders or deliveries to distant areas, an abundance of promotions may confuse customers, and the website is not fully optimized for mobile devices.

3.2 NguyenKim

- **Description:** The Nguyễn Kim electronics supermarket website offers a convenient and diverse online shopping experience. The website is designed to be clean and user-friendly, allowing users to easily browse and purchase electronic and furniture products. The homepage showcases featured items and attractive promotions. Users can search for products by category or keywords. Each product is described in detail, accompanied by images and technical specifications for users to evaluate before making a purchase.

The link website: <https://www.nguyenkim.com/> (access date 03/05/2024).

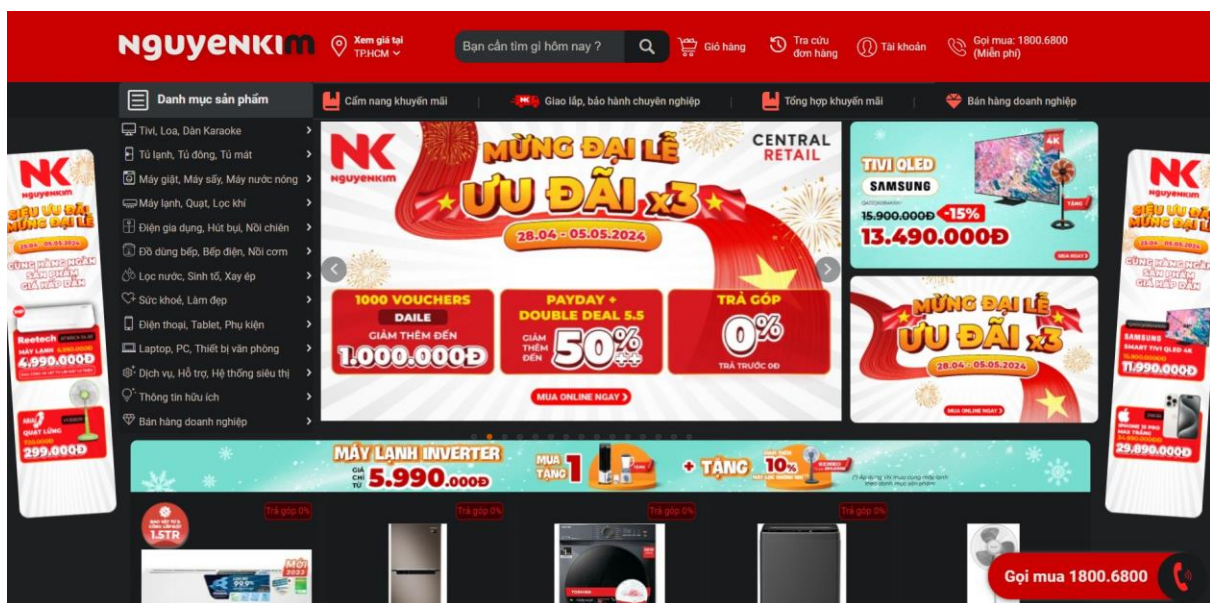


Figure 4. Existing system – NguyenKim 01

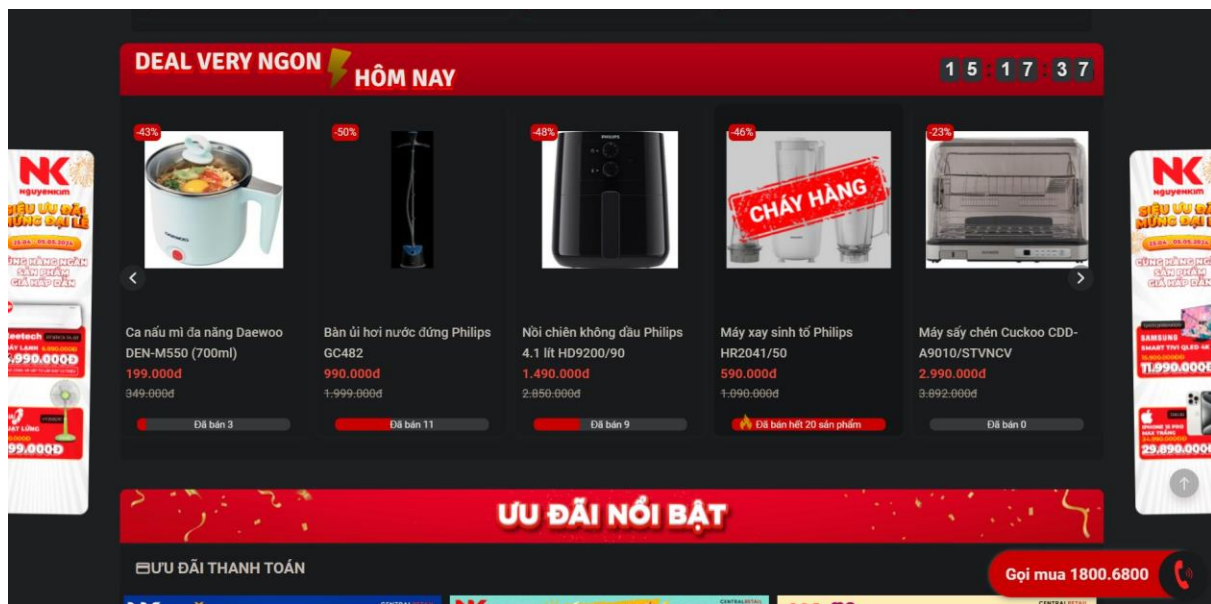


Figure 5. Existing system – NguyenKim 02

- **Main Features:** Nguyễn Kim's website offers a seamless online shopping experience with efficient search, comparison, and filtering options for products based on various criteria. It supports multiple secure payment methods and provides free or subsidized shipping for qualifying orders. With a 7-day return policy and genuine warranties, it ensures customer satisfaction. Round-the-clock customer support is available, and the website features a Blog with valuable insights and frequent promotions. Additionally, it offers membership rewards and project-based shopping services for comprehensive solutions.

- **Advantages:** Nguyễn Kim takes pride in its modern, user-friendly, and appealing website interface, designed to attract users. They offer a wide range of electronic and home appliance products from reputable brands worldwide. Detailed product information, accompanied by images, 360-degree videos, price comparisons, and customer reviews, helps users make purchasing decisions effortlessly. With regular promotional programs, Nguyễn Kim ensures the most competitive prices. They provide various secure payment methods and fast delivery services, along with a flexible 14-day return policy and genuine manufacturer warranties, fostering customer trust. Their professional advisory team and 24/7 customer service across multiple support channels, along with enticing membership programs and convenient project-based shopping services, further enhance the overall customer experience.

- **Disadvantage:** The website may experience slowdowns during peak hours due to high traffic volume. Some products on the website may have higher prices compared to the market, especially newly released items. Shipping costs can be high, particularly for low-value orders or deliveries to remote areas. The abundance of promotional programs might confuse and complicate the decision-making

process for customers. Additionally, the multitude of features may overwhelm new users. The installment payment feature is not optimized, with a potentially convoluted and complex process.

3.3 Midea mart

- **Description:** The MediaMart website features a modern and user-friendly interface, facilitating easy product navigation. It offers a diverse selection of electronic and household items from well-known brands, with competitive pricing maintained through regular promotions. With various payment options and nationwide delivery, customers enjoy convenient shopping experiences. MediaMart's reliable warranty policy and attentive customer service team further contribute to its reputation as a trusted and quality online platform for electronics shopping. The link website: <https://mediamart.vn/> (access date 03/05/2024)



Figure 6. Existing system – Midea mart 01



Figure 7. Existing system – Midea mart 02

- **Main Features:** The website provides a diverse and convenient online shopping experience. Customers can easily search for products based on various criteria such as name, category, brand, price, and compare them before adding to cart and checking out. Multiple payment methods including online and cash on delivery are available, along with nationwide delivery and a 7-day return policy. Customers also benefit from frequent promotions, special offers, and free consultation services, installment purchasing, installation, and home warranty services. Additionally, the website's community forum allows users to share experiences, and product reviews, and ask questions.

- **Advantages:** The Media Mart website features an attractive, modern, and user-friendly interface. Product categories are organized systematically, aiding users in easily finding the items they need. Moreover, the website offers various useful features such as online shopping, online payment, and product return services. Detailed product information is provided extensively, allowing customers to compare and select suitable products. Finally, Media Mart's customer service is highly praised, with dedicated and enthusiastic staff always ready to assist customers.

- **Disadvantage:** Media Mart has limitations in terms of product variety compared to other major e-commerce platforms. The delivery time is also a concern, as Media Mart may take longer than its larger competitors. Additionally, Media Mart's product return policy is perceived as inflexible and may not meet the needs of some customers.

4. Business Opportunity

There is a significant opportunity in the market for an online platform that allows users to purchase electronic goods, akin to the model employed by popular retailers like Nguyễn Kim. Currently, consumers face various challenges when buying electronics, including the inconvenience of visiting physical stores, limited product availability, and the inability to compare prices easily.

By introducing an online platform, customers can browse a wide range of electronic products from the comfort of their homes or offices, thereby saving time and effort. Additionally, the platform can provide detailed product descriptions, specifications, and customer reviews, facilitating informed purchasing decisions.

One of the key advantages of this online platform is its ability to streamline the purchasing process. Customers can place orders for electronic devices, accessories, and gadgets online, selecting their preferred delivery option, whether it's home delivery or pickup from a designated location. This not only enhances convenience for customers but also optimizes the logistics chain, leading to improved operational efficiency.

Furthermore, the platform can leverage data analytics to anticipate customer preferences and trends, thereby optimizing inventory management and reducing wastage. Insights into consumer behavior can also inform strategic decisions regarding product offerings and marketing initiatives, ensuring that the platform remains competitive in the rapidly evolving electronics market.

Incorporating features such as secure payment gateways and reliable customer support will further enhance the attractiveness of the platform to consumers, fostering trust and loyalty.

Overall, the proposed online platform for electronic goods addresses the growing demand for convenient and efficient shopping experiences in the digital age. By aligning with market trends towards online retail and digital transformation, the platform is well-positioned to capitalize on the burgeoning e-commerce landscape and establish itself as a market leader in the electronics sector.

5. Software Product Vision

Just like Nguyen Kim or Dien May Xanh. Smart selling conducts the buying and selling of electronic goods across various operating networks from phones, TVs, etc. Smart selling to develop an easy-to-operate and user-friendly interface. The variety of products.

In the future, Smart selling targets customers looking for electronic items that will not be counterfeited because they do not need to go to a place of sale. Instead, customers can refer to the catalogs and items available on the web. Smart selling always continuously updates products to ensure users' essential needs for electronic products.

One more convenience when shopping online is that you will still receive dedicated advice, with pictures and video descriptions. Goods will be shipped quickly thanks to the development of the logistics supply chain. The item will arrive to the user quickly and intact. Highest satisfaction guaranteed.

Furthermore. Smart selling will guarantee that items and products have production documents and clear origins. To be able to give customers an experience of always being assured of the electronics they will and are using.

6. Project Scope & Limitations

6.1 Major Features

Smart online electronics sales system is a smart sales system combined with product suggestions based on customer behavior and habits, with the following main functions:

6.1.1 Guest / Customer

- FE-01: Register
- FE-02: Login/Logout
- FE-03: Manage personal profile: View profile, Update profile (personal information, interest), Change password.
- FE-04: Search product, View detail product, and Filter all products.
- FE-05: Add products to cart, Edit cart information, View cart information, and Cart Payment.
- FE-06: Make Q&A.
- FE-07: Recommendations for Products.

6.1.2 Staff

- FE-08: Login/Logout
- FE-09: Manage personal profile: View profile, Update profile, Change password.
- FE-10: Manage order: View orders information, Cancel Order, Filter orders by date, and Export excel file.
- FE-11: Manage Product: View all products, Add new product, Edit product.

- FE-12: Manage statistics: Statistics on orders and products, and export Excel files.
- FE-13: Manage Blog: View all blogs, Add new blog and Edit blog

6.1.3 Admin

- FE-14: Login/Logout
- FE-15: Manage personal profile: View profile, Update profile, Change password.
- FE-16: Manage User: View all users information, Add new Staff, Edit user information
- FE-17: Manage order: View orders information, Filter by date, Order statistics, and Export excel file.
- FE-18: Manage Product: View all products, Add new product, Edit product.
- FE-19: Manage statistics: Statistics on orders and products, and export Excel files.
- FE-20: Manage Revenue: View all revenue in year/month/day and View list statistic.

6.1.4 Payment Provider

- FE-21: Integrate with the payment provider to make transactions convenient for the customer.

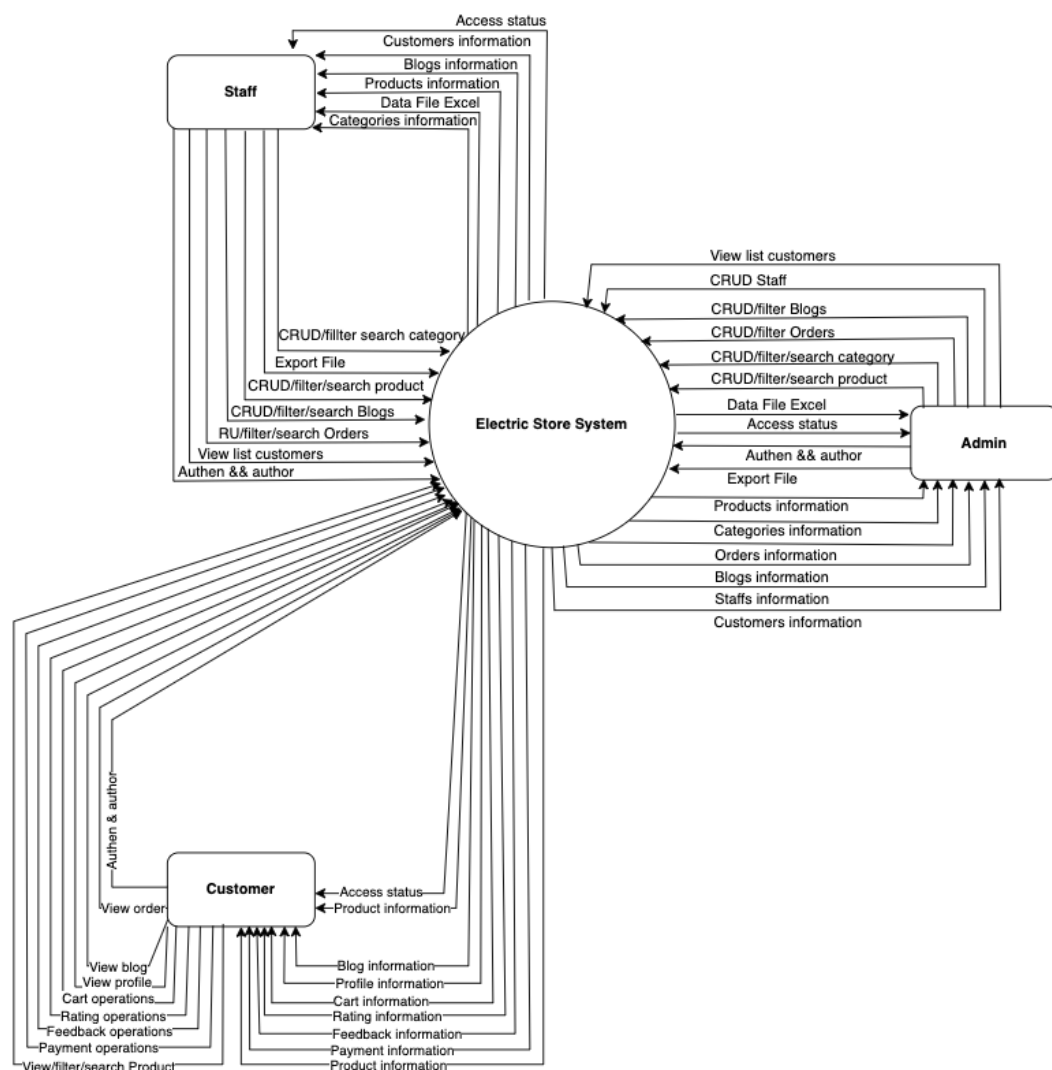


Figure 14 – Electric Store System

6.2 Limitations & Exclusions

- LI-01: No need for additional delivery services. Because there are currently many fast delivery applications that are very complete in this field. Furthermore, the rental cost is very low. We just need to hire their app to track our orders. This will be more convenient.
- LI-02: To simplify and make it more convenient for shoppers. This application is only developed on the website, it is optional to launch on the App Store or CHPlay.
- LI-03: Features are still limited because there is not much time to add more features.
- LI-04: Language: Currently our application is newly released and is exclusively for people who know English, but in the future, this feature will definitely be released for everyone.