VIETNAM GENERAL CONFEDERATION OF LABOR

TON DUC THANG UNIVERSITY

FACULTY OF INFORMATION TECHNOLOGY

FINAL REPORT

COURSE: MANAGEMENT OF INFORMATION SYSTEMS

AN ONLINE COFFEE SHOP MANAGEMENT SYSTEM

Instructor: **MS HO THI THANH TUYEN**

Performer: **BUI HUU LOC - MSSV: 521H0504 - Class: 21H50301 - Course: 25**

NGUYEN TRIEU DUONG - MSSV: 520H0621 - Class: 20H50301 - Course: 24

NGUYEN MINH SANG - MSSV: 520H0147 - Class: 20H50203 - Course: 24

DO NGOC THUY DUYEN - MSSV: 520H0222 - Class: 20H50301 - Course: 24

NGUYEN NGOC TRUNG HIEU - MSSV: 519H0290 - Class: 19H50301 -Course: 23

HO CHI MINH CITY, 2023

VIETNAM GENERAL CONFEDERATION OF LABOR

TON DUC THANG UNIVERSITY

FACULTY OF INFORMATION TECHNOLOGY

FINAL REPORT

COURSE: MANAGEMENT OF INFORMATION SYSTEMS

AN ONLINE COFFEE SHOP MANAGEMENT SYSTEM

Instructor: **MS HO THI THANH TUYEN**

Performer: **BUI HUU LOC - MSSV: 521H0504 - Class: 21H50301 - Course: 25**

NGUYEN TRIEU DUONG - MSSV: 520H0621 - Class: 20H50301 - Course: 24

NGUYEN MINH SANG - MSSV: 520H0147 - Class: 20H50203 - Course: 24

DO NGOC THUY DUYEN - MSSV: 520H0222 - Class: 20H50301 - Course: 24

NGUYEN NGOC TRUNG HIEU - MSSV: 519H0290 - Class: 19H50301- Course: 23

HO CHI MINH CITY, 2023

THANK YOU

We would like to express our sincere thanks to Ms. Ho Thi Thanh Tuyen, lecturer of Management of Information Systems. Thank you for imparting useful knowledge to us during the past time. Whether it's theoretical or practical lessons, she is dedicated to teaching. Once again, we would like to thank you for your guidance in completing this thesis.

Finally, we would like to wish her good health and success in teaching as well as in life.

Ho Chi Minh City, April 20, 2023

Student group made

(Sign and write your full name)

ESSAY IS COMPLETED

AT TON DUC THANG UNIVERSITY

We hereby declare that this is our own report and is under the guidance of Ms. Ho Thi Thanh Tuyen. The research contents and results in this topic are honest and have not been published in any form before. The data in the tables for analysis, comments and evaluation are collected by the author himself from different sources, clearly stated in the reference section.

In addition, the report also uses a number of comments, assessments as well as data of other authors, other agencies and organizations, all with citations and source annotations.

If we find any fraud, we take full responsibility for the content of our report. Ton Duc Thang University is not related to copyright and copyright violations caused by us during the implementation process (if any).

Ho Chi Minh City, April 20, 2023

Student group made

(Sign and write your full name)

LECTURER'S ENDORSEMENT AND VALUATION

Confirmation section of female instructors

_____
_____
_____
_____
_____
_____
___

Ho Chi Minh City, April 20, 2023

(Sign and write your full name)

The evaluation part of the teacher marks the test

_____
_____
_____
_____
_____
_____
____

Ho Chi Minh City, April 20, 2023

(Sign and write your full name)

TABLE OF CONTENTS

LIST OF TABLE

LIST OF TABLE

LIST OF FIGURES

LIST OF FIGURES

CHAPTER 1 – HEADING

With the consent of the Faculty of Information Technology and the assignment of the subject's lecturer, Ms. Ho Thi Thanh Tuyen, we made the Final Report of Management of Information Systems with the topic "An online coffee shop management system". This report is the result of the process of absorbing knowledge about Management of Information Systems that we have learned in the past.

The content of the report includes the following sections:

_ About the organization approached

_ Analyze their existing information system

_ Organizational issues and requirements for the new information system

_ Proposal of a new system

_ Evaluation, conclusion

In this report, we have referenced the lecture slides of Ms. Ho Thi Thanh Tuyen. This report was made over a period of about two weeks. Although we did our best, due to limited knowledge, the report could not avoid errors. Please consider and comment to improve the report.

CHAPTER 2 – ABOUT THE ORGANIZATION YOU APPROACHED

2.1. Objectives:

The objective is to develop an online coffee shop management system that caters to the various needs of handling business functions during the course of business operations. The system aims to offer customers a platform to shop for an array of high-quality coffee-related products. By implementing this system, management will experience an improvement in convenience, efficiency, and working performance while reducing costs. The quality of customer service will also be enhanced, establishing a professional image for the coffee shop. The system will help minimize business risks and provide a business environment that is accessible anywhere and anytime.

2.2. Mission:

The development of an online coffee shop management system is crucial for businesses looking to increase orders and expand their customer base, particularly in the face of the Covid-19 pandemic and potential future outbreaks. The system enhances the efficiency and competitiveness of the store in the market and provides an optimized online shopping experience for customers. Customers can easily search for products that match their preferences, read informative blog posts on coffee processing, brewing techniques, and coffee culture, and reach out to customer service for any queries or requests. The system brings economic benefits and simplifies store management for all stakeholders. It also creates a comprehensive database that safeguards against data loss with backup and recovery processes.

2.3. Size:

The online coffee shop management system serves as a platform to facilitate the buying and selling of the store's featured products, ranging from pure coffee, different types of coffee, drinks, filters, to coffee machines. Customers can easily access the website to browse, select, and make purchases with convenient payment options. The system also simplifies store management for shop owners, allowing them to efficiently manage products, orders, and customers. In addition, the system offers attractive promotions and gifts to enhance the customer experience and boost sales.

2.4. Organization chart:
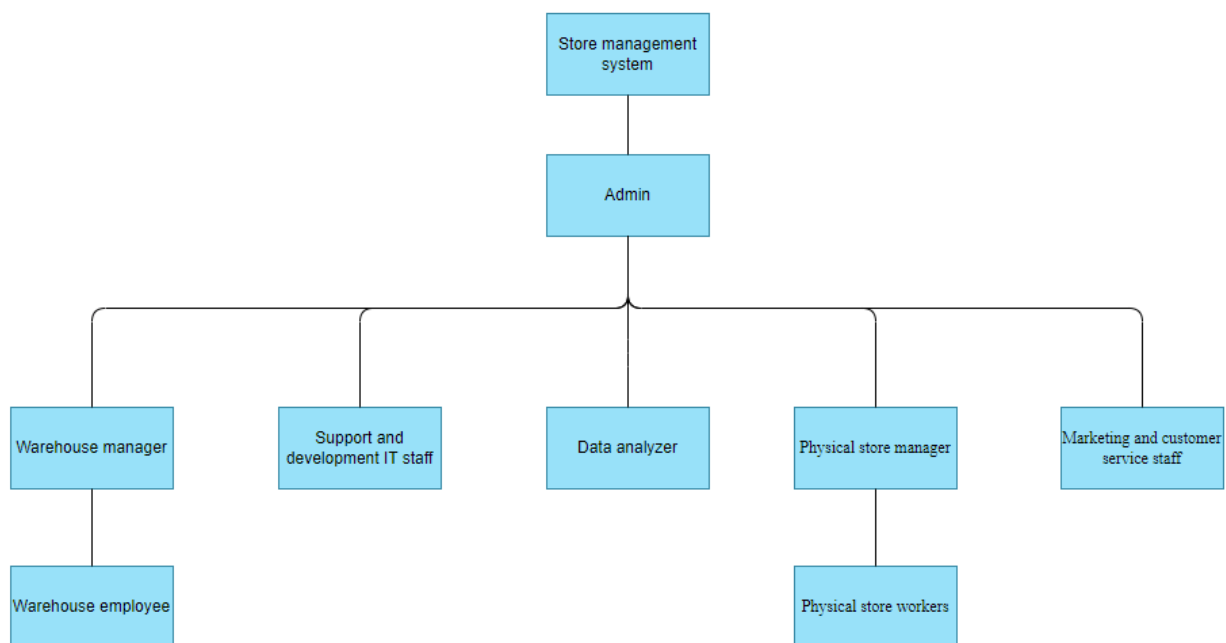
Figure 2.1. Online cafe organization chart

_ Warehouse management staff: add, delete, edit products in the system, manage suppliers.

_ Support and development IT staff

_ Data analyzer

_ Physical store manager

_ Marketing and customer service staff

2.5. Business area/function:

The online coffee shop management system provides a quick and efficient way for staff to sell and serve customers, with the ability to make sales with just a few touches on the screen. Staff can easily add or remove items, adjust prices, and search for loyal customer names saved in the system. The system also offers menu management features, allowing for easy customization of discounts and promotions, and setting different prices for different types of customers. The system provides employee and coffee business management features that enable the saving of customer information, review of loyal customer activities, and management of daily and monthly transactions and profits. Warehouse management features help track the actual quantity of goods, allowing for timely import of products when needed, and avoiding excess stock. The system also offers online ordering and home delivery services, providing convenience to customers while facilitating payment either online or in-person.

CHAPTER 3 – ANALYZE THEIR EXISTING INFORMATION SYSTEM

3.1. Analyze the industry structure and target market share pursued by the organization:

3.1.1 The industry structure

- **Market size:**

Over the past several decades, Vietnamese coffee production has developed as an export-oriented industry. With its position as the world's second largest coffee producer and exporter. Vietnam is currently the second largest country in the world in terms of coffee export market share with 20.1% of the world market share (period 2021 - 2022). Vietnam ranks first in coffee yield, reaching 2.4 tons/ha following the report of ICO (International Coffee Organization). [1]

Beside coffee, Vietnam is a country with great advantages in tea production. In recent years, the tea industry not only produces domestically but also reaches out to the world, bringing a considerable economic value to society, creating job opportunities and income to improve people's lives. According to statistics of the Vietnam Tea Association, by 2020, our country has 34 provinces and cities growing tea with a stable total area of 130 thousand hectares, the average yield is about 8.0 tons/ha , the output of dry tea is about 192 thousand tons. [2]

The trend in consumption is clean coffee has almost replaced the previous mixed coffees. There are more and more coffee shops that grind on site, with many large coffee chains announcing that they only sell 100% unblended coffee. All of them emphasize the elements of clean, rustic, pure, organic, even raising the bar to coffee philosophy in order to hit the consumer's preference for clean and fear of dirt. The dirty coffee crisis has caused consumers to shift their "gut" to clean, pure coffee, creating opportunities for many businesses to enter this market. Thus, the demand for support or making coffee and tea tools will increase.

- **Trend of market:**

The demand for "bitter-rich" Robusta coffee that is cheaper than Arabica is increasing. The reason is that consumers are forced to save spending during the global economic downturn after the pandemic, income is more difficult due to job problems, so they should switch to instant coffee for home use. This is considered an opportunity for Vietnamese coffee, the world's largest Robusta exporter.

Commenting on the outlook for coffee prices in the 2022-2023 crop year, experts say that high inflation in many countries may affect global coffee demand, but supply risks due to Climate change are still present and the trend of shifting to Robusta coffee will open up opportunities for Vietnam's coffee.

Besides, Vietnam's tea problems are facing problems such as the small scale of tea production, mainly households; The quality of Vietnamese tea and food hygiene and safety are not up to the standard as well as the lack of raw material areas to meet the demand, along with the low skill level in processing.

- **Competitive with other brands:**

There are numerous brands of coffee, tea and also related products. As for coffee and tea in general, we can easily see some large and old brands such as Highlands, Trung Nguyen, Vina Cafe, G7,... As for the tea industry, Vietnamese markets have some brands like Lipton, Vinh Tien tea, Thai Nguyen tea, Trà Việt,... . Beside the original brands, there are a lot of small retailers and also convenience stores sellings coffee and tea with the cheap price but quality and taste. Thus, this will make it highly competitive for new players who want to join at the level from middle low to higher average a little in price like us.

As same as coffee and tea, making tools and related products will also be highly competitive in both price and quality because of local and foreign brands.

- **Industry concentration**:

In Vietnam, the concentration of the coffee and tea industry is mostly in the level of middle to middle-high in prices

- In terms of coffee, the industry is dominated by a handful of large companies, including local brands such as HighLands, G7, Nestle, Trung Nguyen,... , which have a significant presence in the market and export, and some foreign brands such as Starbucks, Costa, Gloria Jean's,...

- The traditional tea industry in Vietnam is relatively small compared to the coffee industry, but known for producing high-quality green tea, which is exported to countries around the world. Although there are a lot of large brands like VinaTea, Phuc Long, Tan Cuong Hoa Binh,... Traditional tea in VietNam still remains a highly fragmented and diverse market with many smallholder farmers and processing firms operating across the country.

- Despite the concentration of the coffee and tea products industry among a few major players, there are still many smaller coffee and tea producers and suppliers in Vietnam, particularly at the local and regional levels. It may be influenced by a variety of factors, including government

policies, access to raw materials, and competition from other countries.

- **Entry barriers and advantages**:
  - **Advantages of Vietnam market and our business**:
    - We have our own management system which is more effective than papers or Excel or the third-party management in our market segment.
    - Vietnamese people have a coffee and tea culture so that they easily accept new brands.
    - There are several deliveries third-party which means we can easily co-op with and avoid shipping problems such as products broken or get lost.
    - Electronic transactions is also a developed technology in VietNam so that we can diversify payment methods.
    - Our shopping website has a beautiful design, user-friendly interface, and optimized online shopping experience for customers.
    - In the local supply chain, we can have good prices when dealing with suppliers.
  - **Barriers**:
    - The competitiveness of the VietNam market is very high because of the appearance of a lot of new coffee and tea shops beside large and experienced brands.

18

- Because of easy acceptance, mostly new customers will not be interested in recognizing the difference between our taste and others.
- High cost for renting a physical shop and warehouse.
- Complicated administrative procedures and many processes.
- VietNam is a humid tropical monsoon climate country so there are several seasonal factors which can prevent the number of customers that come to the physical shop.

3.1.2 Target:

- **Target customers:**

As we said before, most customers' age groups are from 15-24 and 25-54, so we'll focus on youngsters, teenagers and young-adults.

- **Target market share:**

To fit within the reach of our target customers, we decided to join market segments from average low to higher than average .

3.2. Competitive strategy of the organization in each period from the present to the next 10 years:

Focus on the quality of products all the time.

Having a good compensation policy for employees and staff is the one we also focus on all the time.

Strategy of our business for first 5 years:

Focus on marketing:

- KOLs of TikTok, Youtube, Instagram and Twitter with coffee and tea themes are a good choice for us to introduce their products to the populace. By hiring them to make video reviews about products, viewers will believe in their idols and know about the strength of our products. Beside making clips, we also give some free items for KOLs to use and have good reviews after experiencing.
- Facebook has a large number of people who use it. Thus, looking for a fan page or blog to write about us is very easy. After each post, we ask them to paste our link shop into the comment section for new customers who want to know more about us.
- Moreover, we will open our account on these social media and try to make marketing and vlog clips and posts following the new trend of youngsters.
- Logo is the face and the one thing for customers to recognize our brand. So that, beside the first design, the logo will be redesigned based on the demand and feedback of customers and counselors.

Focus on service:

- On the online customer service system, we try to give the answers for users as soon as possible when service staff receive the questions or requests.
- After users receive products and want to refund for some reason, our customer service staff will try their best to support and guide customers how to refund or give advice for customers about the products.
- At the physical store, we focus on the training staff route and make a list of daily activities to make sure staff follow the routine. In addition, there will be permanent communication meetings with members from managers to part-time workers to improve their mistakes in service to customers.

- Diversifying discount programs is very important because this is one of the things that attracts customers besides the uniqueness of the shop and system. For example, discount by the number of products customers pay for each bill or order.

Strategy of our business next 5 years:

- **For the favorable situation:**

  We will open more physical stores and diversify suppliers and products so that we can target more customers in all age groups. Besides that, after we have a high reputation for our products' quality, we will try to diversify the end users by developing more of our management systems. Thus, we become the supplier which means we can indirect distribution to others, for example shops the same as us the first time we enter the market and so on.

  Customer service and shopping experience will remain on our system. And to make it more convenient for customers, we are thinking about building an application on mobile. Because of that, customers can buy our stuff anywhere and can get the notices of vouchers any time it comes.

- **For not the favorable situation:**

  We still remain what we are doing if the capital allows us to hold up. Service and physical stores still remain. Beside that, if there is lack of customer consumption, the warehouse will for rent a haft to get more income.

3.3. Value chain of the system, identify and analyze the main activities/support activities in the value chain that you consider most important:

- **Main activities:**
  - **Inbound logistics:**

The process of receiving inputs of processed products like coffee beans, tea leaves or what is referred to from wholesalers or from factories. In order to maintain the quality of these products, we will obtain them from well-known and respected establishments such as Trung Nguuyen, Cold brew, Nicaragua, and others.

○ **Operation:**

Providing customers a place to buy high-quality and diverse coffee products which meet their needs. Beside that, the website also displays a lot of posts about coffee processing, storage, home brewing instructions, and coffee culture. which customers are able to read.

Beside purchasing prepared products, the website allows customers to order their drinks and the bartender of the shop will prepare it before customers come to the physical shop.

○ **Outbound logistics:**

Sales management is included in our systems. Warehouse managers or data analyzers can easily have a full view of the sale data for each product collected by system in a period of time.

Storing products and customer service are indispensable. Customers can easily get the answers for their questions by chatting with our staff.

○ **Customer service:**

Users can easily receive the answers for their questions by contact and chat with customer service staff. In addition, they can return and refund if there are some mistakes or packages being damaged before they receive them.

● **Support activities:**
  ○ **Enterprise infrastructure:**

The statement refers to various essential departments such as management, finance, legal, etc. that are necessary to ensure the smooth functioning of the company's stores. Beside that, the website will have a beautiful design, user-friendly interface, and optimized online shopping experience for customers.

  ○ **Technology development:**

Technology development is one of the activities that support outbound logistics which will be related to many features such as customer shopping experience, customer service and warehouse management. The technology used in our business has several types, starting from the cashier system at the physical store to the shopping website and management systems.

○ **Human resource management:**

Management especially in human resources becomes very important, involving recruitment, training, development and compensation of all personnel. This is the factor which can help the business chain from inbound to outbound. From finding and managing the supplies, controlling the number of inventory and quality of products in the warehouse to managing the physical store activities and delivery of third-party, sales of items and customer service. Registered members must pass through the selection stage of the interviewer with the criteria needed to be honest, committed, energetic, have management skills, professional skills, etc.

○ **Procurement:**

To reduce the cost, we will procure coffee and tea from local retailers such as Trung Nguyen Coffee, Cau Dat Farm, Phuc Long Coffee and Tea, etc. On the other hand, we also procure from small retailers like Cafe Runam, King Coffee, The Organik House or maybe purchase directly from the sub-process retailers with a high reputation in supply local.

For the coffee and tea related products, we will purchase directly from factories like ATS Trading Company VietNam, Tra Viet, etc by contact contract. But mostly those product brands we must purchase from the international suppliers to diversify models.

3.4. Analyze organization structure of 5 components of an information system:

3.4.1. Hardware:

- Basic computers at the warehouse management officer.
- Cashier machines will contribute to sales management in physical stores.
- Basic computers or phones to watch and manage the sales data.

3.4.2. Software:

- **Technology used:**
  - Programming language: PHP, it increases flexibility and extends easily.
  - Database: MySQL, it used to store information about products, orders, customers, etc.
  - Framework: Laravel, it used to reduce development time and provide a better approach to code and database management.
  - User Interface: HTML, CSS, and JavaScript are commonly used to design the website and give the best user experience.
- **Instruction:**
  - When users want to place an order, they do not need to register an account. After placing an order, they can choose to pay online or in-person.
  - When they have an account, users can change their personal information. In addition, they can view their order history and shopping cart. Only registered users can view their order history.
  - After users have successfully placed an order, the system will send the order to the sales staff to approve the order. The sales staff will check the accuracy of the order information to confirm or cancel the order. In addition, sales staff can manage promotional programs.
  - Posting staff can manage blog posts and add, delete, or edit content.
  - Customer service staff can support customers and answer their questions.
  - Warehouse managers can add, delete, or edit products in the system and add new products. They can also manage suppliers.

○ Administrators can do everything that employees can do, and also manage personnel and view system statistics.

3.4.3. Data:

- **Products:** id, image, name, description, status, number, brand, price.
- **Customer:** name, email, address, phone number, order history (if they have an account).
- **Order:** id, products, customer information, total prices, status, vouchers
- **Staff:** id, name, email, phone number, address, salary, position.
- **Posts:** date, image, title, body, tag, comment, writer.
- **Supplier**: name, address, phone number, contract, representative
- **Contract:** started date, end date, detail.

3.4.4. Processes:

- **For manage products and posts:**

    When products come to the warehouse, managers will create or update the information of items.The information on the system will be synchronized at all devices.
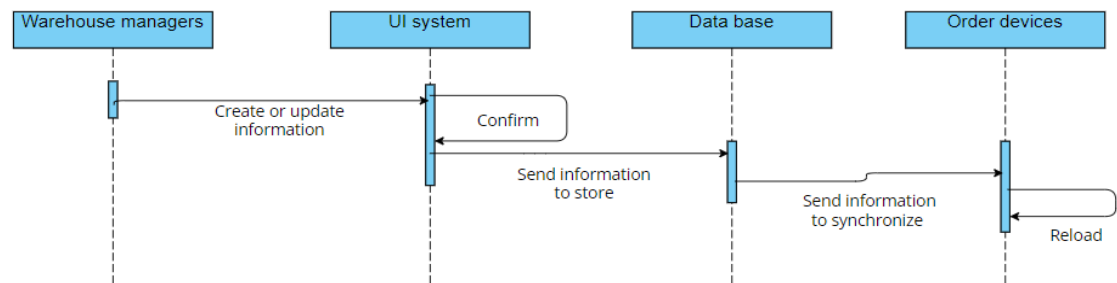
Figure 3.1 Process of management products

    Posting staff can create and manage their posts by editing or deleting posts.
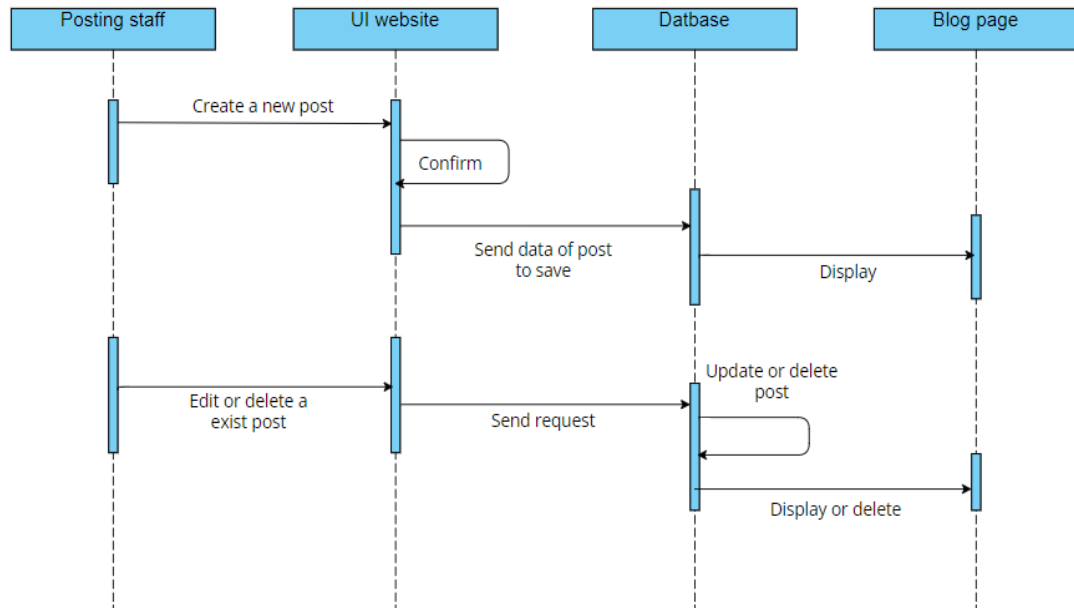
Figure 3.2 Process of management posts

- **For orders:**
  1. Customer placed an order.
  2. System sends requests to sales staff.
  3. Checking information of order, accept if correct and deny if not.
  4. The system sends order information to the warehouse managers. Managers will prepare products and contact the delivery service. In the case of a user having an account, order's data will be stored in the database.
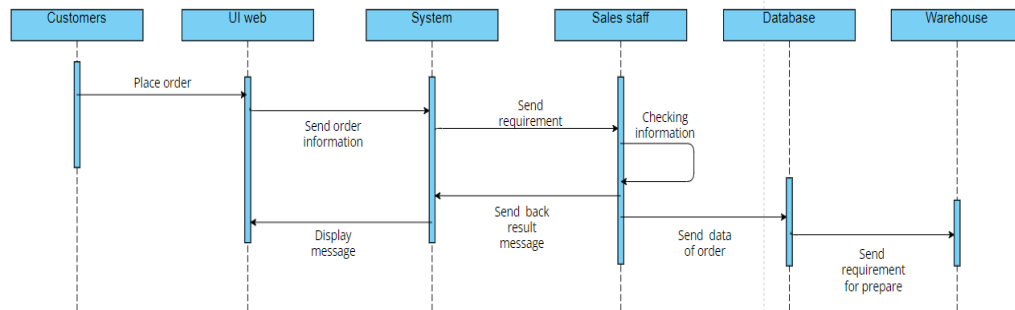
Figure 3.3 Process of order

- **For customer service:**
    1. Customers place requests or questions.
    2. The system will send them to customer service staff.
    3. Staff will send back answers for customers to their email.
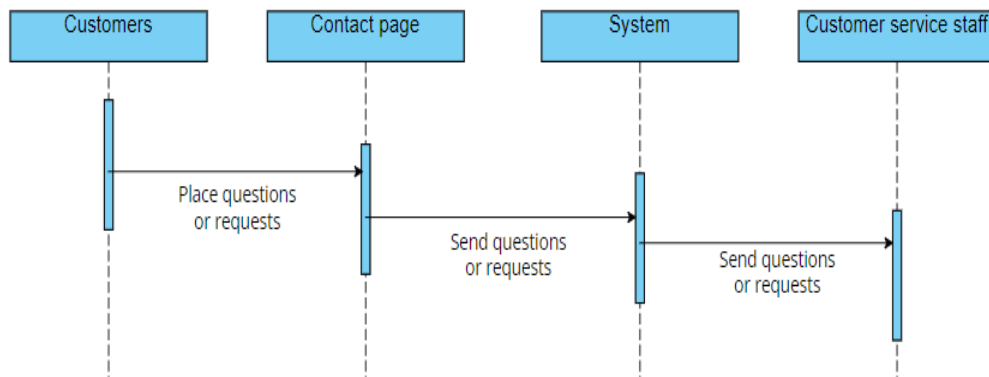
Figure 3.4 Process of customer service

3.4.5. People:

- **and warehouse employees**: working at warehouse, responsibility to manage the process of receiving and sending products to third-party delivery.
- **IT supporters and developers:** fixing, maintenance when websites go wrong. In addition, when our business increases in the future, they will also be the ones who develop the system.

- **Data analyzers**: analyze the sales data for making the correct decision and strategies.
- **Marketing and customer service staff**: take the responsibility of creating and editing posts on websites which fit with the algorithm of Google when new users find some things about coffee and tea and related information about them. At the same time, they must support customers when they send questions or requests.
- **Users**: the main component of system which bring in revenue for the business chain.
- **Administration**: controlling and managing everythings in the systems.

CHAPTER 4 – ORGANIZATIONAL ISSUES AND REQUIREMENTS FOR THE NEW INFORMATION SYSTEM

4.1. Indicate the existing problems of the old system and the expected goals of the new system:

To execute these use cases, the existing system need to do the following step for each use case:

- Search/View product: create an Excel sheet that contains all the product information, such as product name, price, description, etc. and use the built-in search function to find and view products based on specific criteria.
- Manage cart: This can be done by creating a separate sheet in Excel that keeps track of customer orders including information such as the product name, quantity, price, and total cost. The sheet can be updated as customers add or remove items from their cart.
- Send a support request: This can be done by creating a dedicated email address or phone number that customers can use to contact your support team. Create an Excel sheet to track support requests and their status.
- View order history: Create a sheet in Excel that contains all order information, such as customer name, order date, order status, etc. and use filters to view specific orders or search for them based on certain criteria.
- Manage promotion: Create a separate sheet in Excel to keep track of promotions and their details, such as discount amount, start and end dates, etc. This sheet can be used to manage and update promotions as needed.
- Manage order: This can be done using the order history sheet in Excel, which contains all the relevant information about each order, such as the customer's name, order date, order status, etc.
- Manage customer's information: Create a separate sheet in Excel to store customer information, such as name, email address, phone number, etc. This sheet can be used to manage and update customer information as needed.
- Manage product and repository: Create separate sheets in Excel to manage product information, such as product name, price, description, etc. and repository information, such as product inventory levels, supplier information, etc.
- Manage post: This can be done using a separate sheet in Excel to manage post information, such as post title, author, date, content, etc.
- View statistics: Create charts and graphs in Excel to view statistics such as sales figures, revenue, order volume, etc.

- Manage employee: Create a separate sheet in Excel to manage employee information, such as name, contact information, job title, etc.

Organizational issues

There may be several organizational issues with the system described. Some of these issues could include:

- Lack of scalability: System relies heavily on Excel and paper-based processes, it may become difficult to manage as business grows. Excel sheets and paper-based processes may not be scalable enough to handle the increased volume of data and transactions.
- Data integrity: Using Excel sheets and papers to manage data increases the likelihood of errors and inconsistencies. This could lead to incorrect orders, inaccurate inventory levels, and incorrect customer information.
- Lack of security: Excel sheets and paper-based processes may not be secure enough to protect sensitive customer and business data. Unauthorized access to this data could result in identity theft, fraud, and other security breaches.
- Inefficient processes: Managing a system using papers and Excel sheets could be time-consuming and error-prone, leading to inefficiencies in the overall system. This could negatively impact customer satisfaction and could lead to lost revenue.
- Difficulty in tracking changes: Tracking changes made to data in Excel sheets and papers can be difficult and time-consuming, making it challenging to maintain an audit trail of system activity.
- Lack of automation: Excel sheets and paper-based processes may not be automated, leading to manual data entry and a higher likelihood of errors.

There are several ways to make the current system could be improved to overcome the organizational issues mentioned earlier.

- Use a database system: Migrate from Excel and paper-based processes to a database system that can help centralize data management, streamline processes, and improve data integrity. Databases can help reduce the risk of errors and inconsistencies and make it easier to store, access, and manipulate data.

- Implement cloud-based software: Cloud-based software can help reduce the need for physical storage and enable remote access to data. It can also help increase collaboration between teams and departments.
- Invest in an ERP system: Enterprise resource planning (ERP) software can help integrate and automate various business processes such as inventory management, order processing, and customer relationship management. ERP software can help reduce manual data entry and improve overall system efficiency.
- Improve security: Implement access controls and authentication mechanisms to restrict access to sensitive data. Can also regularly back up data to prevent data loss in case of a security breach.
- Automate processes: Automating certain processes can help reduce the risk of errors, increase efficiency, and save time.
- Train employees: Providing employees with training on how to use new software or database systems can help improve their productivity and reduce errors. Training can also help employees adapt to new systems and processes more easily.
- Regularly review and optimize processes: Regularly reviewing and optimizing business processes can help identify inefficiencies and bottlenecks and improve overall system performance.

Expected goals of the new system

- Integration of data from various sources
- Automation of data processing Real-time access to information for authorized users
- Data accuracy, consistency, and completeness
- Compliance with relevant regulations and standards

To achieve these goals, the new system should have several key components, including a centralized database, data integration tools, data validation and cleaning mechanisms, access control and security protocols, and user-friendly interfaces. These components should work together to support various organizational processes, such as data collection, storage, retrieval, analysis, and reporting.

4.2. Clearly analyze in which components/structures of the system these problems arise:

The existing paper and Excel-based management system may face several organizational issues, including data redundancy, inconsistency, and inaccuracy, as well as limited accessibility and security concerns. For instance, the paper-based system may cause delays and errors due to manual data entry and transcription, while the Excel-based system may create data silos and discrepancies due to decentralized data storage and management.

The existing problems with the old system arise primarily from the data and process components. The paper-based system relies on manual data entry and transcription, which can lead to errors and delays in data processing. The Excel-based system suffers from data silos and inconsistencies due to decentralized data storage and management. Additionally, the system has limited accessibility and security, as it relies on physical documents and locally stored files that can be lost or compromised.

*Breakdown of the organizational issues mentioned earlier, **they might arise within the components and structures of the system**:*

__Lack of scalability__: This problem arises from a combination of hardware, data, and processes. If the hardware is not capable of handling large volumes of data, then the system will not be scalable. Similarly, if the processes are manual and time-consuming, then the system will not be able to keep up with the increased volume of data.

__Data integrity__: Data integrity issues can arise from data and processes. If the data is not properly organized and maintained, then errors and inconsistencies can creep in. Similarly, if the processes for data entry and maintenance are manual and error-prone, then data integrity can be compromised.

__Lack of security__: Security issues arise from a combination of hardware, software, and processes. If the hardware is not properly secured or if the software has vulnerabilities, then unauthorized access to data can occur. Similarly, if the processes for managing access to data are not robust, then security breaches can occur.

__Inefficient processes__: Inefficient processes can arise from data and processes. If the data is not properly organized or if the processes for data entry and maintenance are manual and time-consuming, then the system will be inefficient.

Difficulty in tracking changes*: Difficulty in tracking changes can arise from data and processes. If the data is not properly tracked or if the processes for maintaining an audit trail are manual and time-consuming, then it will be difficult to track changes.*

Lack of automation*: Lack of automation can arise from processes and software. If the processes are manual and time-consuming, then automation will be difficult to implement. Similarly, if the software is not capable of automating certain processes, then the system will remain manual.*

To overcome these organizational issues*, it is necessary to address the underlying problems within the components and structures of the system. For instance, to improve scalability, it may be necessary to upgrade hardware or adopt cloud-based solutions. To improve data integrity, it may be necessary to adopt database solutions or implement data validation and verification processes. To improve security, it may be necessary to implement access controls and authentication mechanisms or use encryption to protect sensitive data. To improve efficiency, it may be necessary to automate certain processes or optimize existing processes. Finally, to improve tracking changes, it may be necessary to implement software solutions that maintain an audit trail or use version control to track changes.*

Components/Structures of the System

- Centralized database
- Data integration tools
- Data validation and cleaning mechanisms
- Access control and security protocols
- User-friendly interfaces

Process Component

The process component refers to the procedures or workflows involved in managing and processing data. The existing paper and Excel-based system relies heavily on manual data entry and transcription, leading to errors and delays in data processing. This problem arises because the process component is not automated, and there is no system in place to validate and clean the data.

- Manual data entry and transcription causing errors and delays
- Automation of data entry and processing required
- Data integration from various sources necessary

Data Component

The data component refers to the information that is being managed and processed. The existing system suffers from data redundancy, inconsistency, and inaccuracy due to the decentralized data storage and management. This problem arises because there is no centralized database to store and manage data, and there is no system in place to integrate data from various sources.

- Decentralized data storage and management leading to data silos and inconsistencies
- Centralized database required
- Data validation and cleaning mechanisms necessary for data accuracy and consistency

Accessibility and Security Component

The hardware and accessibility component refers to the technology infrastructure that supports the system and provides access to data. The existing paper-based system is limited in accessibility, and the Excel-based system is limited in security due to physical documents and locally stored files. This problem arises because the hardware and accessibility components are not designed to provide secure and remote access to data, and there are no access control and security protocols in place.

- Limited accessibility and security concerns with the paper and Excel-based system
- Secure and remote access to data necessary

● Access control and security protocols required

In summary, the existing organizational issues with the paper and Excel-based system arise primarily from the process component and the data component. The process component suffers from manual data entry and transcription, while the data component suffers from decentralized data storage and management. Additionally, the hardware and accessibility component of the system is limited in accessibility and security, leading to further problems with the system. A new information system with new technology should address these issues by automating data entry and processing, centralizing data storage and management, and providing secure and remote access to data.

CHAPTER 5 – PROPOSAL OF A NEW SYSTEM

5.1. General use case diagram, ER Diagram:

5.1.1. Use Case Diagram:
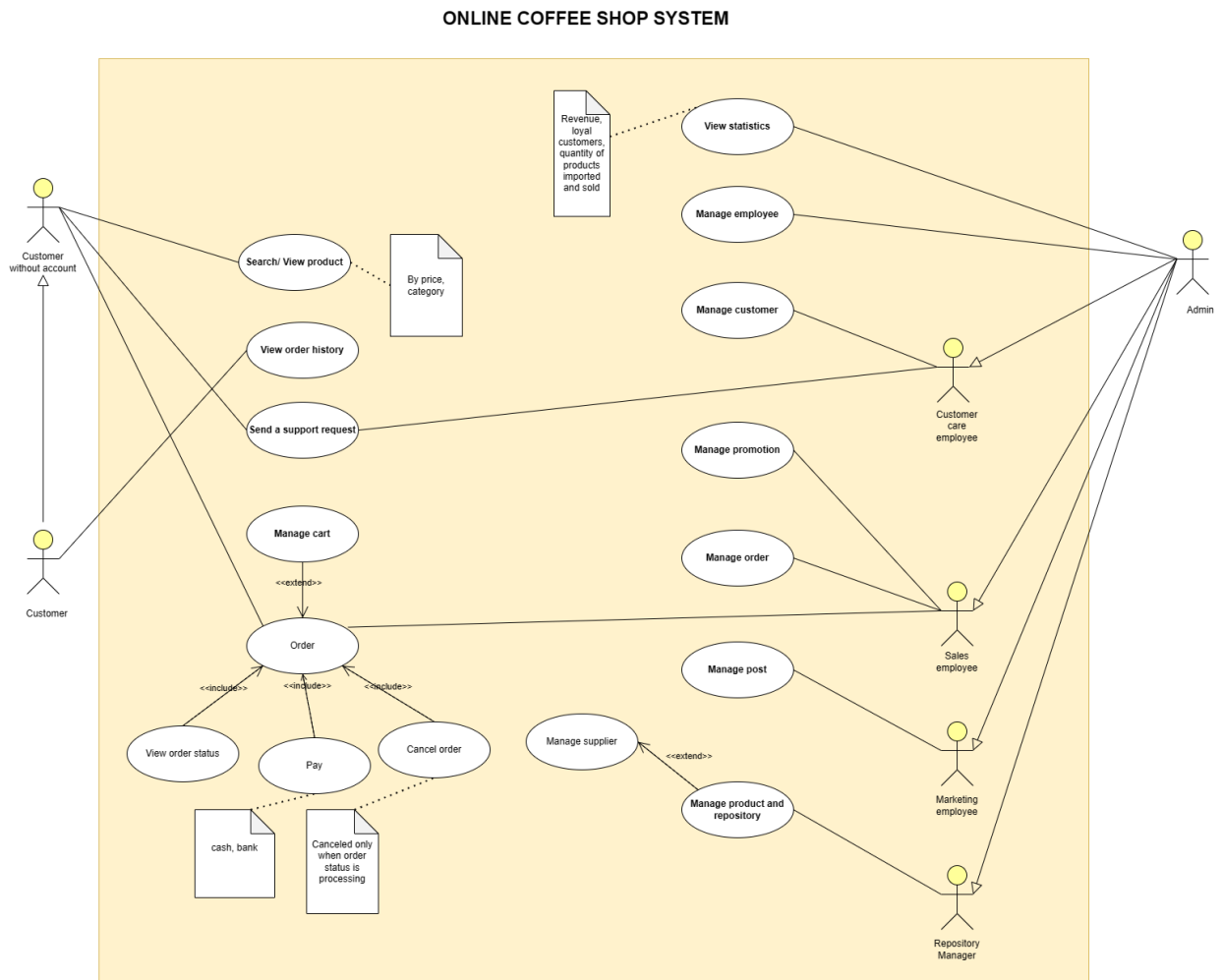
Figure 5.1. Use case diagram online coffee shop system

Table 5.1.List of actors of system

Actor	Description
Customer without an account	Search/View product Manage cart Send a support request
Customer	View order history Customer with account's rights
Sales employee	Customer without account's rights Manage order
Customer care employee	Manage customer's information
Repository manager	Manage product and repository
Marketing employee	Manage post
Admin	View statistics Manage employee All right of employees

Table 5.2.List of Use-Cases of system

ID	Use-Case	Description	Actor
UC01	Login	Actor login to the system. Depending on the account type, there are different functions	Admin, Customer, Employees
UC02	View statistics	View sales statistics, purchase rate of products, potential customers	Admin
UC03	Manage employee	It is a tool to manage employee accounts and divide roles. View, create, lock, unlock accounts	Admin
UC04	Manage customer	Actor manages customer information by viewing, deleting, and editing customer information and actions	Admin, Customer care employee
UC05	Manage product and repository	Manage products by add, edit, or delete. Import products from suppliers	Admin, Repository manager
UC06	Manage post	Actor manages the content of articles about the store, privacy policy and terms of use, articles promoting the company	Admin, Marketing employee
UC07	Manage promotion	Actor adjusts promotions, promotions of each product, product according to the manufacturer	Sales employee

UC08	Manage order	Actor reviews orders, approves orders, transfers them to shipping department	Admin, Sales employee
UC09	Send a support request	In the process of using the software, if there is an error, the actor sends a support request for the system employee to handle	Admin, Customer care employee, Customer
UC10	Search/View product	User can view, search, and filter products of the shop	Customer
UC11	Manage cart	User can create cart, add product to cart, control the amount of product	Customer
UC12	Order	Users can complete their order, see all stuff, edit address, choose the payment method. If users choose online payment, they can buy it automatically	Customer
UC13	View order history	User can see their history of buying products from the services	Customer

Table 5.3.UC01 Login

ID	UC01
Use-Case Name	Login
Actors	Customer, Admin and employees
Primary Actors	Customer, Admin and employees
Brief Description	The process of verifying a user's identity and allowing access to a system, application, or website is known as logging in. OAUTH2 authentication is required.
Trigger	User click the Login button
Relationships	
Flow	The user clicks the "Sign in with Google" button, which takes them to the Google OAUTH authorization server. The user must provide their Google login details and grant the system permission to view their Google account data. If the user approves permission, the Google OAuth authorization server returns a token to the system as verification that the user has been authenticated.
Subflows	

Table 5.4.UC02 View Statistics

ID	UC02
Use-Case Name	View statistics
Actors	Admin
Primary Actors	Admin
Brief Description	It is a mathematical instrument for data interpretation and analysis. Data are compiled according to the time provided. It can also be used to forecast future data in order to enhance the company's operations. The function give overview about income, which product has most people buy, receipt by status
Trigger	Admin click the Statistic menu
Pre-conditions	User must login first
Relationships	
Flow	Choose things to statistic: Revenue, product
Subflows	

Table 5.5.UC03 Manage employee

ID	UC03
Use-Case Name	Manage employee
Actors	Admin, employee
Primary Actors	Admin
Brief Description	It is a tool to manage employee accounts and divide roles. View, create, lock, unlock accounts
Trigger	Admin click the Admin Management menu
Pre-conditions	User must login first
Relationships	
Flow	1. Add new employee: - Click Add button - Fill the employee email and role - Click Submit button 2. Lock & Unlock: - Click Lock/Unlock button on the employee row
Subflows	Click View button on the employee row to see detail about employee Actor can search by name, email, or filter by role

Table 5.6.UC04 Manage Customer

ID	UC04
Use-Case Name	Manage Customer
Actors	Admin, Customer care employee, Customer
Primary Actors	Admin, Customer care employee
Brief Description	It is a tool to manage customer accounts, view overview of accounts.
Trigger	Admin click the Customer Management menu
Pre-conditions	User must login first
Relationships	
Flow	Click to the view button to see customer detail information.
Subflows	Actor can search by name, email

Table 5.7.UC05 Manage product and repository

ID	UC05
Use-Case Name	Manage product and repository
Actors	Admin, Repository manager
Primary Actors	Admin, Repository manager
Brief Description	It is a tool to manage products by add or edit or delete. Import products from suppliers, CRUD suppliers
Trigger	Actor click the Product and repository Management menu
Pre-conditions	User must login first
Relationships	Extend: Manage supplier

Flow	1. Import products:
	
	   - Click Import button
	   - Add products with its amount
	   - Choose the supplier
	   - Click Submit button
	2. Add new product:
	
	   - Click Add product button
	   - Fill product information
	   - Click Submit button
	3. Edit product:
	
	   - Click Edit button on the product row
	   - Edit product information
	   - Click Submit button
	4. Delete:
	
	- Click Delete button on the product row

Subflows	Manage supplier: CRUD suppliers Search by name, filter by category

Table 5.8.UC06 Manage post

ID	UC06
Use-Case Name	Manage post
Actors	Admin, Marketing employee
Primary Actors	Admin, Marketing employee
Brief Description	It is a tool to manage posts by CRUD. Actor can see the general information of the post
Trigger	Actor click the Post Management menu
Pre-conditions	User must login first
Relationships	

Flow	1. Add new post:
	
	  - Click Add post button
	  - Fill post information
	  - Click Submit button
	2. Edit post:
	
	  - Click Edit button on the post row
	  - Edit post information
	  - Click Submit button
	3. Delete:
	
	- Click Delete button on the post row

Subflows	Click the view button to see the general information of the post. Actor can search by title, and filter by category, created date

Table 5.9.UC07 Manage promotion

ID	UC07
Use-Case Name	Manage Promotion
Actors	Admin, sales employee
Primary Actor	Admin, sales employee
Brief Description	It is a tool to manage promotion code by view, create, edit promotions. Actors can see all promotions, disable it
Trigger	Actor click the Promotion Management menu
Pre-conditions	User must login first
Relationships	

Flow	1. Add new promotion:
	
	   - Click Add promotion button
	   - Fill promotion information
	   - Click Submit button
	2. Edit promotion:
	
	   - Click Edit button on the promotion row
	   - Edit promotion information
	   - Click Submit button
	3. Disable promotion:
	
	- Click disable button on the promotion row

Subflows	Actor can search by name, filter by status, created date

Table 5.10.UC08 Manage order

ID	UC08
Use-Case Name	Manage Order
Actor	Admin, sales employee
Primary Actor	Admin, sales employee
Brief Description	It is a tool to manage orders from customers. Actors can see the list of orders, and change status of order.
Trigger	Actor click the Order Management menu
Relationships	
Flow	Click button Accept or Decline order
Subflows	Actor can see orders group by status by choose the status type on filter bar Click to the change status on each order row to change status

Table 5.11.UC09 Send a support request

ID	UC09
Use-Case Name	Send support request
Actors	Admin, Customer care employee, Customer
Primary Actors	Customer
Brief Description	It is a tool to take care of customers. Actors can answer the support ticket from customers for support
Trigger	Customer: Click contact menu
Relationships	
Flow	Customer: Fill information (name, email, content), click submit Admin/ Customer care employee: Choose request on each row and response a message
Subflows	

Table 5.12.UC010 Search/View product

ID	UC010
Use-Case Name	Search/View product
Actors	Customer
Primary Actors	Customer
Brief Description	User can see products and detail of products of the shop, they can filter or search products
Trigger	User access website, click on a search bar, enter keywords to search for a product. Besides, user can click the button filter.
Relationships	
Flow	Click the Products menu on navbar Filter product by category (coffee, concoctions, . . .) Search product
Subflows	

Table 5.13.UC011 Mange cart

ID	UC011
Use-Case Name	Manage cart
Actors	Customer
Primary Actors	customer
Brief Description	User create cart, add product to cart, control the amount of product
Trigger	Add to cart: Click to button add to cart on each products Manage cart: Click cart menu on navbar
Relationships	
Flow	Click add to cart button on each products Adjust the product amount by click - or + in cart panel
Subflows	

Table 5.14.UC012 Order

ID	UC012
Use-Case Name	Order
Actors	Customer, Sales employee
Primary Actors	Customer
Brief Description	Users complete their order, see all stuff, edit address, choose the payment method. If users choose online payment, they can buy it automatically.
Trigger	Click checkout button in cart
Relationships	Included: View order status, pay, cancel order Extend: Manage cart
Flow	Order: Fill user's information like address, receiver's phone, choose payment method and click Checkout Checkout: Check information carefully Direct: Wait for the system accept Online: Fill card information to finish
Subflows	

Table 5.15.UC013 View order history

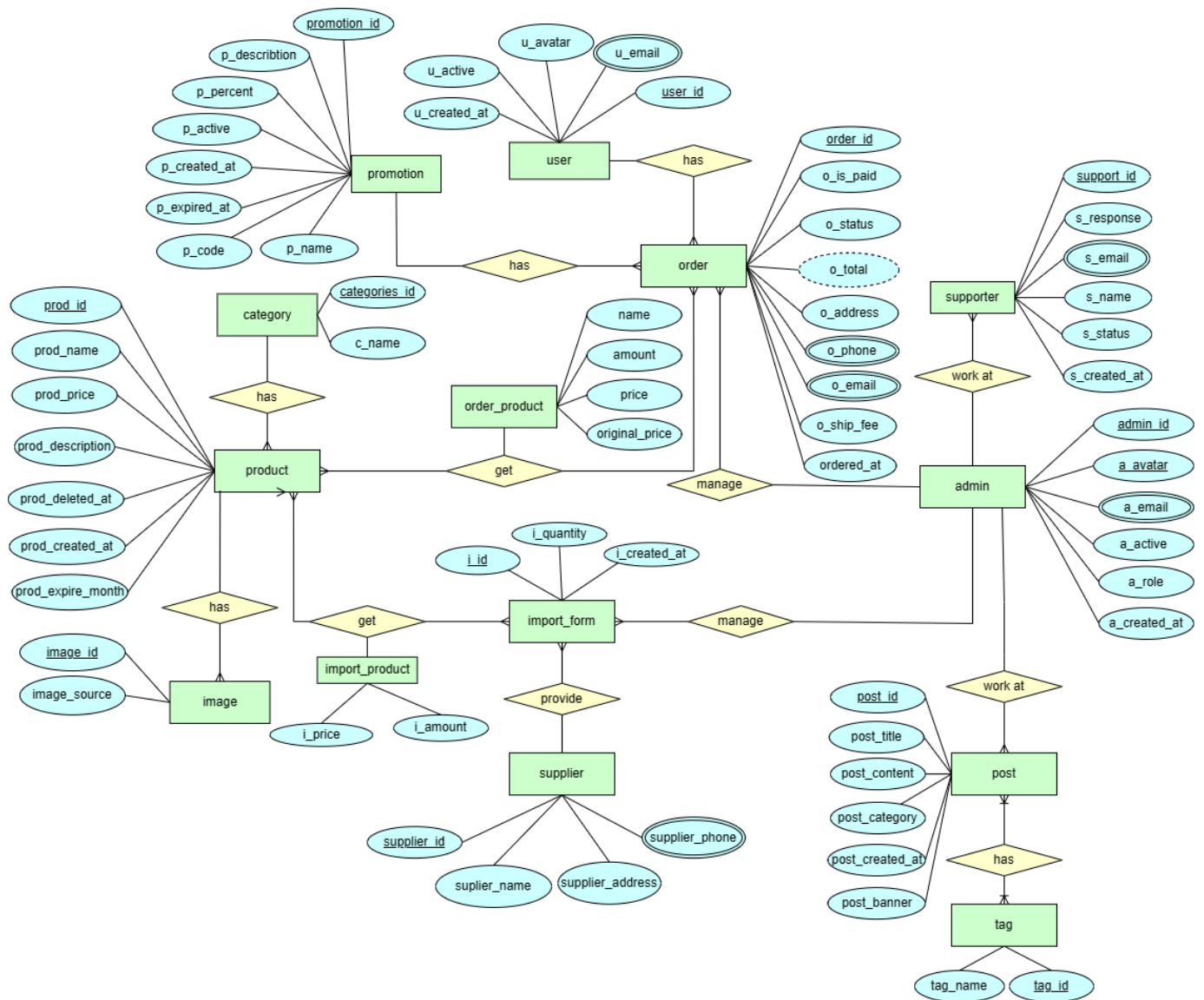| ID	UC013
Use-Case Name	View order history
Actors	Customer
Primary Actor	Customer
Brief Description	User can see their history of buying products from the services.
Trigger	Click the avatar of user, choose Cart History menu
Relationships	
Pre-conditions	The user must login
Flow	Click to each row to see detail of order
Subflows	

5.1.2. ER Diagram:

Figure 5.2. ER Diagram

- **Description:**

The ERD schema includes 12 entities as follows: admin, order, support, import, user, promotion, product, supplier, post, tag, category, image. In there:

- A category will include a wide range of goods.

- A product will feature a variety of pictures.

- A supplier will provide a range of items, which will be noted in the goods delivery note. Numerous suppliers sell the same product.

- A consumer may place one or more orders.

- One or more orders may contain one or more products.

- A discount coupon may only be applied once per account.

- One or more orders may contain one or more products.

- A single individual will oversee the publication of numerous articles.

- There will be a wide variety of tags for various posts.

- A blog has a single post and numerous tags.

A manager will respond to the majority of customer support inquiries.

- Multiple orders will be handled by one salesperson.

5.2. Describe the changed/improved processes of the new system:

The new system of the online coffee store has several improved and changed processes that enhance its efficiency and customer satisfaction.

- Database: Overcoming data inconsistencies, output data is more accurate.
- Security: There are improvements and measures to ensure the security of customer and store information such as access management, which ensures that only authorized people can access the data.
- Better customer management: The new system includes customer management features, from which some information can be retrieved to increase the ability of a better customer experience to find potential customers. This information can be used to improve customer service and develop more targeted marketing campaigns.
- Sales tracking: can track sales by day without having to spend effort to sum up revenue because the system will support, from which business owners can come up with the most suitable development plan.
- Overcoming delay: Traditional management can cause delays in a variety of situations, including data copying, transport, and processing... An online management system can overcome this, accomplish it, and provide the finest client experience possible.
- Process optimization: An online management system optimizes manual operations to minimize wasting time and simplify labor.
- Account decentralization: accounts are decentralized based on location and title. This makes it easier to divide specific tasks and manage them.
- Optimized Customer Interactions: users can search for products, filter the products they want. In addition, users can also create their own shopping cart, add products to the cart, control the quantity of goods they order and choose a payment method with a variety of payment methods. This enhances the user experience and reduces the amount of work for employees.
- Higher rate for approaching customers: Easier to adjust promotions, editing posts and controlling customer reports. Increase the rating of customer approaching by advertising and promotions

5.3. Analyze and evaluate what new changes/proposals meet/support for the organization's competitive strategy:

Change:

ID	Use-Case	New system	Old System
UC01	Login	Actors login to the system. Depending on the account type, there are different functions	No account, only work on excel files and papers
UC02	View statistics	All are aggregated by the system. Users can easily manipulate.	All compiled manually, errors may occur.
UC03	Manage employee	Tools for managing employee accounts and assigning roles. Work is divided specifically for each employee, controlling the work of employees without having to check each person.	There is no account for each employee.
UC04	Manage customer	Actor manages customer information through the system, all customer information is encoded into data making it easier to analyze customer and update information	Customers do not have an account, so they cannot store customer information

UC05	Manage product and repository	Manage products by adding, editing or deleting on the system, all information of products from description, inventory quantity, expiry date, price... are controlled by the system. Redundant personnel are reduced and personnel costs are reduced while the work is more accurate than conventional control.	Manage the product manually, it is difficult to check
UC06	Manage post	Use the system to manage the content of articles about the store, privacy policy and terms of use, articles promoting the company	Unmanageable, only manual way
UC07	Manage promotion	Actor adjust promotions, promotions of each product, item according to the manufacturer is updated to the system, when used, it will be automatically updated.	Must be noted and must be checked every time. It is very time consuming and has to be updated manually.
UC08	Manage order	Actor reviews the order, approves the order, transfers it to the shipping department, the shipping of the order will be transferred to the account of the person assigned that task, no need to carry it manually.	Had to move to take orders
UC09	Send a support request	In the process of using the software, if there is an error, the actor sends a support request for the system employee to handle	

UC10	Search/View product	User can view, search, and filter products of the shop	The user can only browse through the menu or catalog.
UC11	Manage cart	User can create cart, add product to cart, control the amount of product	Customers can only order in person or by phone
UC12	Order	User can complete their order, see all stuff, edit address, choose the payment method. If users choose online payment, they can buy it automatically	Customers cannot view the status of their order, cannot view content, cannot edit shipping addresses. And no variety of payment methods.
UC13	View order history	User can see their history of buying products from the services	Users cannot view their purchase history.

Propose:

- The new system will provide detailed analysis and reporting to help management make data-driven decisions. This proposition meets/supports the organization's competitive strategy by enabling the organization to identify and respond to market trends, optimize revenue, and improve business performance.
- The new system should include a loyalty program to encourage repeat purchases and reward loyal customers. This proposition meets/supports the organization's competitive strategy by improving customer retention, increasing sales, and enhancing the organization's reputation.
- The new system should incorporate features to allow the organization to personalize the customer experience, such as personalized recommendations and promotions. This proposition meets/supports the organization's competitive

strategy by improving customer satisfaction, increasing revenue, and enhancing the organization's brand image.
- The new system should synthesize the best-selling products. This proposal will help the management to plan the business.
- The new system should integrate with social media platforms to enable the organization to interact with customers and promote its brand. This proposition meets/supports the organization's competitive strategy by increasing brand awareness, improving customer engagement, and enhancing the organization's reputation.

Support:

- The new system will allow the organization to streamline logistics and supply chain management processes, reduce costs and improve efficiency. This proposition supports the organization's competitive strategy by enabling the organization to offer competitive pricing, reduce waste, and optimize inventory management.
- The new system should prioritize user experience, with a user-friendly interface and intuitive navigation. This recommendation supports the organization's competitive strategy by improving employee productivity and engagement, reducing training time, and enhancing customer satisfaction.
- The new system should incorporate automated marketing capabilities, such as email marketing and personalized advertising, to drive customer engagement and loyalty. This recommendation supports the organization's competitive strategy by improving customer retention, increasing sales, and enhancing the organization's reputation.
- Comprehensive training and technical support for employees, ensuring that they are equipped to use the system effectively. This recommendation supports the organization's competitive strategy by reducing the risk of system failures and downtime, improving employee productivity, and enhancing customer satisfaction.

CHAPTER 6 – EVALUATION, CONCLUSION

6.1. Pros:

_ Consolidate learned knowledge, especially analytical and problem-solving skills.
_ Understand the basic theoretical knowledge for system design.
_ Know how to apply theoretical knowledge to practical applications.
_ Design a database with some necessary functions for sales management to illustrate the theoretical problems presented.
_ Fully perform the basic functions of a software: add, edit, delete, update information, statistics, reports, ...
_ Friendly interface, easy to use and flexible.

6.2. Cons:

_ Only support coffee-related products, cannot support other types of products.
_ Products can be easily updated, so it can make employees not understand in a timely manner but not confident enough to advise customers.
_ The system does not support multiple languages.
_ Need comprehensive training and technical support for staff to ensure they can use the system effectively.
_ Only for testing purposes to learn and apply in real projects.

REFERENCES

[1] The coffee market

[2] The tea market