TEAM: REBEL FORCE

IS – 636 (Sec-02): Structured Systems Analysis and Design

Deliverable 2: Requirements Definition

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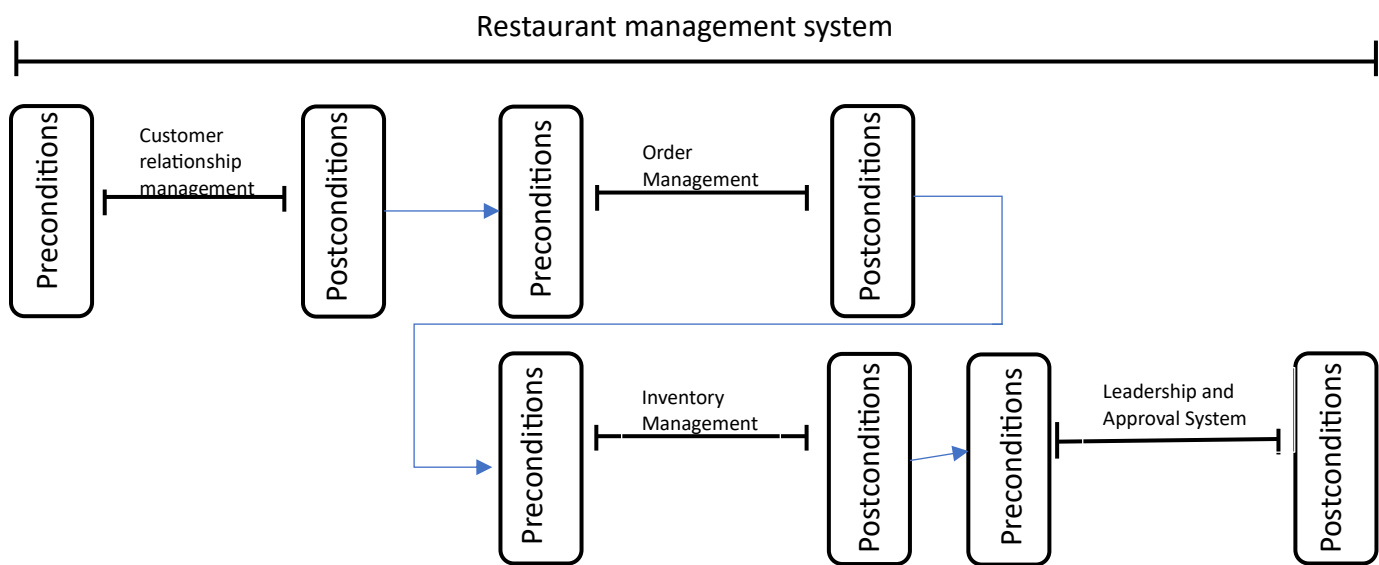Valli Pattikonda

Mar 16, 2023

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Use Cases:

The document outlines four use cases describing the restaurant management system requirements. The first use case, Inventory Management, focuses on managing the inventory levels and suppliers, ensuring that supplies are always available. The second use case, Order Management, allows the restaurant staff to manage and track customer orders in real time, resulting in shorter wait times and higher customer satisfaction. The third use case, Customer Relationship Management, allows the marketing manager to collect and analyze customer data, providing insights into customer behavior and preferences for tailored marketing initiatives. The fourth use case, the Leadership and Approval System, allows the manager to approve items and communicate with local staff in real time, reducing delays in communication and optimizing performance.

Use Case Diagram:

Restaurant management system

Preconditions — Customer relationship management — Postconditions — Preconditions — Order Management — Postconditions

Preconditions — Inventory Management — Postconditions — Preconditions — Leadership and Approval System — Postconditions

Preconditions for order management:
1) Employees can use the system with good proficiency.
2) All the raw materials are readily available in inventory.

Postconditions for order management:
1. The order is managed and tracked in real-time, resulting in shorter wait times and higher customer satisfaction.

Preconditions for Inventory management:
1. There must be a database table to track the inventory levels accurately.
2. The system manager has access to real-time inventory data.

Postconditions for Inventory management:
1. The manager orders the list of items that are about to run out.
2. The manager then decides the stores from where he needs to order.
3. This request is sent to the leadership approval system.

Preconditions for leadership and approval system:
1. The staff requests approval for items, and the system sends a notification to the manager.
2. The manager views and approves the request, and the staff receives a notification of the approval status.

Postconditions for leadership and approval system:
1. Approval from the partners.
2. Placing the orders.
3. Updating the system with the latest stock.

Preconditions for Customer relationship management:
1) The system has access to customer data and can analyze it.

Postconditions for Customer relationship management:
1) The model is deployed and used to improve customer services and boosts the business.

Use Case 1(Casual Format):

Use Case Name: Inventory Management	ID: USE01	Priority: High
Actor: Inventory Manager		
Description: This use case allows the inventory manager to keep track of the inventory levels and suppliers.		
Trigger: Low stock levels		
Type (External/Temporal): External		
Preconditions: 1. There must be a database table to track the inventory levels accurately. 2. The system manager has access to real-time inventory data.		

Normal Course:
1.0 Monitoring inventory.
   1. The inventory manager logs in to the system after providing his credentials.
   2. The system allows the manager into the system if his credentials are right.
   3. The manager then looks for the list of items that are lower than the threshold set previously (basically optimal if the raw material is sufficient for 1-2 days).
   4. The system then provides a list of items that satisfies the query of the inventory manager.
   5. The manager then decides what he needs to order and from the stores, they need to order.		

Post Conditions: 4. The manager orders the list of items that are about to run out. 5. The manager then decides the stores from where he needs to order. 6. This request is sent to the leadership approval system.		

Use Case 1(Fully Dressed Format):

Use Case Name: Inventory Management	ID: USEFD01	Priority: High
Actor: Inventory management		
Description: This use case allows the inventory manager to keep track of the inventory levels and suppliers.		
Trigger: Low stock levels		
Type (External/Temporal): External		
Preconditions: 1. There must be a database table to track the inventory levels accurately. 2. The system manager has access to real-time inventory data.		

Normal Course:	Information for Steps:
1.0 Getting approval to re-stock inventory within 24 hours after.	
1. The inventory manager logs in to the system after providing his credentials.	→ Credentials
2. The system allows the manager into the system if his credentials are right.	← Authentication success status
3. The manager then looks for the list of items that are lower than the threshold set previously (basically optimal if the raw material is sufficient for 1-2 days).	→ Queries for the list of items that are lower than threshold.
4. The system then provides a list of items that satisfies the query of the inventory manager.	← List of items with item ID's
5. The manager creates a request for partners to approve the purchase.	→ RequestID
6. The system notifies the partners about the request.	← Alert
7. If partners approve the request. The system sends notification to manager.	→ Responds to the alert.
8. Then the manager decides what he needs to order from the stores.	← List of item Id's to be bought.

Alternative Courses:	Information for Steps:
1.1 The process that needs to be implemented if approvals are not provided in 24 hours.	
1. Loop back to step 2 in happy condition.	
2. If partners didn't provide the approval for restocking the inventory in 24 Hours after raising the approval.	→ No response
3. The system auto approves the request.	← Auto approval
4. The manager will be notified to place the order.	← Status update
5. Manager places the order	

Post Conditions:	

1. Approval from the partners.	
2. Placing the orders.	
3. Updating the system with the latest stock.	

Summary Inputs	Source	Summary Outputs	Destination
Credentials	Inventory manager	Authentication status	Inventory Manager
Query to search items below threshold.	Inventory manager	List of items that are below the previously set	Inventory Manager
Approval for request raised.	Business partners	threshold. Status of request (Approved / No)	Inventory Manager

Use Case 2:

Use Case Name: Leadership and Approval System	ID: USE02	Priority: High
Actor: Partners and manager		
Description: This use case allows the manager to approve items and communicate with local staff in real-time.		
Trigger: Approval for inventory restocking		
Type (External/Temporal): Temporal		
Preconditions: 3. The staff requests approval for items, and the system sends a notification to the manager. 4. The manager views and approves the request, and the staff receives a notification of the approval status.		
Normal Course: 1.0 Leadership and Approval System 1. The staff requests approval for items through the system 2. The system sends a notification to the Partners and manager. 3. The manager views and approves the request. 4. The system then notifies the staff of the approval status.		
Post Conditions: 1. The local staff receives quick approval, reducing the delay in communication between the staff and the management, and resulting in optimized performance and customer satisfaction.		

Use Case 3:

Use Case Name: Order Management	ID: UC002	Priority: High
Actor: Waiter and Customer		
Description: This use case allows the restaurant staff to manage and track customer orders in real-time.		
Trigger: Customer places an order		
Type (External/Temporal): External		

Preconditions:		
The system has access to the order data and can communicate with the staff.		
1) Employees can use the system with good proficiency.		
2) All the raw materials are readily available in inventory.		

Normal Course:
1.0 order management
1. The customer places an order, and the receptionist places the order in the system.
2. The system sends a notification to the staff with the list of orders.
3. The staff views the order, updates the status, and informs the customer of any delays or problems.
4. The customer receives real-time updates on the status of their order and collects it once it is ready.

Post Conditions:
The order is managed and tracked in real-time, resulting in shorter wait times and higher customer satisfaction.

Use Case 4:

Use Case Name: Customer Relationship Management	ID: UC003	Priority: Medium
Actor: Organization and market manager.		
Description: This use case allows the marketing manager to collect and analyze customer data, such as preferences and order history.		
Trigger: Customer data		
Type (External/Temporal): External		
Preconditions: 1. The system has access to customer data and can analyze it.		

Normal Course:
     1. Customer Relationship Management
     2. The marketing manager collects the user data and stores it in a database.
     3. The system updates the existing users' data.
     4. A team of analysts analyzes customer data and develops a model that creates customized personal suggestions by identifying patterns and preferences and initiates tailored marketing initiatives, such as advertising, loyalty programs, or promotions.		

Post Conditions: 1. The model is deployed and used to improve customer services and boosts the business.		

Full list of Requirements:
To develop a suitable system for Chopathi Indian Restaurant, we have listed down various categories of system requirements that provide different perspectives. For instance, the categories depend on business needs, user needs or what the application should do and what characteristics the system should have.

Proposed Solution:

Functional Requirements:
1. **Order Management System:** (Process oriented)
    1.1 Ability to receive and process orders from various channels such as phone, online.
    1.2 Provide real-time updates on order status and estimated wait times.
    1.3 Allow customers to customize their orders and specify any special requests.
    1.4 Allow staff to make changes or modifications to orders as needed.
2. **Leadership and approval system:** (information oriented):
    2.1 Allow manager to raise an approval request.
    2.2 Active participation of managers and partners in monitoring the requests.
    2.3 Allow manager to track the status of the approval.
3. **Customer Relationship Management System:** (Process oriented)
    3.1 Capture customer data such as contact information, order history, and preferences.
    3.2 Use data analytics to identify trends and patterns in customer behavior.
    3.3 Provide personalized recommendations based on customer preferences and order history.
    3.4 Create a loyalty program to reward frequent customers and incentivize repeat business.
    3.5 Allow customers to leave feedback and reviews to improve overall customer satisfaction.
4. **Inventory Management System:** (Process oriented)
    4.1 Construct an automatic reordering system based on minimum stock levels or predetermined reorder points.
    4.2 Regular tracking of inventory levels of all ingredients and supplies in real-time.
    4.3 Generate reports and analytics to identify purchasing patterns and optimize inventory management.
    4.4 Allow staff to adjust inventory levels manually when needed.

Non-Functional Requirements
1. **Operational Requirements**:
    1.1The system should be easy to use and require minimal training for restaurant staff.
    1.2The system should be reliable and able to handle large volumes of orders and data without crashing or slowing down.
2. **Performance Requirements**:
    2.1 The system should provide real-time updates on order status and inventory levels without any delay.
    2.2 The system should be able to process and handle many orders and customer data simultaneously without any performance issues.
    2.3 The system should have a fast response time to ensure efficient order processing and customer satisfaction.
    2.4 The system should be able to generate reports and analytics quickly and efficiently.

3. **Security Requirements**:

    3.1 The restaurant should implement access control measures to restrict access to sensitive information to only authorized personnel.

    3.2 Two-factor authentication and role-based access control should be implemented.

    3.3 All employees who handle sensitive information should receive regular security awareness training.

4. **Cultural**:

    4.1 As per restaurant policy there must a 10 % discount on every order on culturally   important days.

    4.2 The system should support multiple languages to cater to customers and staff from different cultures and backgrounds.

Requirements Gathering Methodologies

To gather requirements for the Chopathi restaurant, we utilized various methodologies, including interviewing key stakeholders, making observation notes, distributing questionnaires, and examining relevant documents.

Interviews:

We conducted interviews with multiple persons in various job positions, including:

- Mr. Sri Ram, Owner of Chopathi Restaurant.
- Mr.Krishna, Head Chef.
- Mr. Deepak, Inventory Manager.

The interviews were conducted on different dates and times between 1st March 2023 to 10th March 2023. The interviewers were Valli Pattikonda, Sai Iluru, Venkata Jayanti, and SriHarsha Kommareddy. The list of questions asked during the interview includes:

- What are the main objectives of the Chopathi restaurant?
- What is the target audience for Chopathi?
- What are the most popular dishes on the menu?
- What are the current customer satisfaction levels?
- What are the current challenges faced by the restaurant?
- What features do you want to add in the new system?

Observation:

We made observation notes while studying the current system at Chopathi restaurant. We observed the following:

- The Customers usually customize their food order by adding or removing ingredients.
- The staff frequently makes modifications to the customer's order.
- The restaurant has a limited number of seats, and customers usually prefer take-out orders.

Questionnaires:

We distributed questionnaires to 50 customers who visited the restaurant between 5th March 2023 to 9th March 2023. The questionnaire included questions about their satisfaction levels with the food quality, service, and atmosphere. The response rate was 80%.

Documents:
We examined various documents related to the restaurant, including:
- The menu cards and price list.
- The restaurant's mission and vision statement
- Customer feedback forms
- Sales and expense reports

Interview report 1:
Person Interviewed: Mr. Sri Ram
Owner, Chopathi Restaurant (Hanover)
Interviewers: Valli Pattikonda, Sai Iluru, SriHarsha Kommareddy and Jayanthi Chaithanya

Purpose of interview:
> Understand the reports used for retaining its customers and maintaining its inventory.
> Analyze the way the online ordering system works and how it can be processed.

Summary of Interview:
During an interview with Mr. Sri Ram, owner of an Indian restaurant, it was identified that the current online ordering system is not efficient. Mr. Sri Ram expressed his concerns that the system is slow, and customers have reported difficulties placing orders. He also mentioned that the system does not allow for the customization of orders and that customers are unable to make special requests. These issues have led to customer complaints and decreased revenue for the business. Mr. Sri Ram is currently looking for a more user-friendly and customizable online ordering system to improve the overall customer experience and increase sales.

Open Items:
> Get the current online ordering system process manual/guide.
> Seek the cause of why the restaurant isn't retaining customers.

Interview report 2:
Person Interviewed: Mr. Krishna
Head Chef, Chopathi Restaurant (Hanover)
Interviewers: Valli Pattikonda, Sai Iluru,SriHarsha Kommareddy and Jayanthi Chaithanya

Purpose of interview:
- Understanding the chef's culinary background, training, and experience. Learning about the restaurant's menu, including the ingredients used and any signature dishes.
- Discussing the chef's approach to cooking and any unique techniques or styles.
- Identifying any challenges or limitations the chef faces in terms of ingredients, equipment, or kitchen space.
- Gathering feedback on current dishes and menu items, as well as potential new menu items.
- Discussing any dietary restrictions or preferences of customers and how the restaurant accommodates them.
- Learning about the chef's management style and how they work with the rest of the kitchen staff.
- Discussing any plans for future growth or expansion of the restaurant

Summary of Interview:
- Mr. Krishna shared that the restaurant has been receiving complaints from customers about the difficulties they face when ordering food online.
- He explained that the current system is not user-friendly and that customers find it challenging to navigate through the different options.
- Mr. Krishna suggested that the restaurant needs to improve its online ordering system to meet customer needs and stay competitive in the market.
- He also highlighted the importance of ensuring that the quality of food ordered online matches the quality of food served in the restaurant.
- Overall, the interview provided valuable insights for the restaurant's management team to consider when making decisions about improving the online ordering system.

Open Items:
> Get current online ordering system process manual/guide.
>Seek cause of why the restaurant isn't retaining customers.

Interview report 3:
Person Interviewed: Mr. Deepak
Inventory Manager, Chopathi Restaurant
Interviewers: Vaill Pattikonda, Sal lluru, SriHarsha Kommareddy and Jayanthi Chaithanya

Purpose of interview:
- To understand the inventory management system and process of the restaurant.
- To gather information about the inventory manager's responsibilities and how they contribute to the restaurant's success.
- To learn about any challenges or issues the inventory manager faces in their role and how they address them.
- To gather feedback and suggestions for improving the inventory management process and reducing waste.
- To discuss the process of ordering and receiving supplies and ingredients, and any issues or delays that may arise.
- To understand how the inventory manager works with other staff members, such as the head chef and kitchen staff, to ensure proper inventory levels and reduce food waste.
- To gather insights into the busiest times and days for the restaurant and how the inventory manager manages inventory during those times.

Any observation notes taken as as-is system was studied:
When we visited the Chopathi Indian restaurant we observed that they use a system they use is a square online system and they do take orders from uber eats and Doordash. The Square online system is managed by an external vendor even though the outage is less it is observed that sometimes their network connection to the printers fails which results in a delay in the delivery of orders to the customers and we also noticed that the payment system failed twice in last 2 months.

Summary of Interview:
The passage outlines the potential purpose of an interview with an inventory manager at the Chopathi Indian restaurant. This may include gaining insight into the restaurant's inventory management process, identifying any challenges or issues the inventory manager faces in their role, gathering feedback and suggestions for improving inventory management and discussing how inventory management impacts the restaurant's overall success. Additionally, the interview may cover topics such as inventory ordering, stock rotation, food waste reduction, and coordination with other staff members.

Open Items:
> Get the current online ordering system process manual/guide.
> Seek the cause of why the restaurant isn't retaining customers.

By utilizing these methodologies, we were able to gather the necessary information required for the requirements-gathering process for Chopathi Restaurant.

The goal of this system is to streamline the process of food ordering, tracking, and delivery, with an emphasis on increasing transparency in the delivery service. The first step in identifying the system's requirements was to determine the key users and stakeholders and to address any issues faced by the existing system. To obtain a thorough understanding of the needs and requirements, we conducted interviews with users, restaurant owners, and delivery partners, and grouped the requirements into functional and non-functional categories to avoid confusion.

During the elicitation process, stakeholders were asked a series of questions, such as the purpose of the project, specific features they would like to include, user experience goals, and short and long-term objectives. After gathering requirements, we differentiated functional requirements by their operational features, system user needs, and functions that enhance efficiency, while non-functional requirements focused on quality attributes, policy formulation, and user expectations.

Prioritization criteria were used to give more attention to the most critical requirements of users and stakeholders, and requirements analysis was carried out to assess feasibility, effectiveness, and conflict resolution. The feasibility analysis included technical, economic, and organizational factors, and was conducted to determine the system's viability and to fully understand the consequences of the requirements. Conflicting requirements were resolved through discussions with stakeholders, and requirements were prioritized based on their importance.

In summary, the Indian restaurant Chopathi's food delivery system was developed through a comprehensive process of requirement identification, analysis, and prioritization, with a focus on increasing transparency in the delivery service and meeting the needs and expectations of users, stakeholders, and team members.