Final Project Proposal

Group Number – 41

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Problem Statement:

In today's competitive retail environment, customers face significant challenges in finding affordable groceries and essentials, especially in new or unfamiliar areas. Price comparison across multiple supermarkets is often time-consuming and inefficient, leading to higher expenses and dissatisfaction. Cost-conscious shoppers, including students and budget-focused families, require a streamlined solution to locate the best deals.

Simultaneously, businesses in the ecosystem—supermarkets, suppliers, advertisement agencies, and payment processors—face operational inefficiencies. Key challenges include:

Fraudulent Activities: Enterprises suffer losses due to customers exploiting promotional offers by placing multiple fraudulent orders, resulting in inventory mismanagement and reduced profits.
Ineffective Advertising: Advertisers struggle to target customers effectively, leading to wasted resources and poor campaign performance.
Operational Inefficiencies: Supermarkets lack real-time tools for dynamic pricing, inventory management, and analytics, hampering their ability to remain competitive.
Supplier Disconnection: Suppliers lack direct visibility into customer preferences, making it difficult to design relevant promotions or manage stock effectively.

To address these challenges, It is introduced as a unified platform that integrates key stakeholders—supermarkets, suppliers, advertisers, and fraud detection teams—into a seamless ecosystem. By leveraging real-time data, actionable analytics, and targeted solutions, the system aims to enhance the customer experience while improving operational efficiency for enterprises.

Solution:

It is a Java-based platform with a Swing UI that connects customers and enterprises in a retail ecosystem, as illustrated by the UML diagram. The system addresses core challenges through the following components:

1. Interactive Price Comparison

- Customers can search for products through a user-friendly Swing-based interface.
- The platform retrieves price data from various supermarkets within the vicinity and presents a comparative view of prices and suggest where they can get each product from.
- This will simplify shopping decisions for cost-conscious users by enabling transparent price comparison.
- Saves time and money, fostering customer loyalty.

2. Fraud Detection

- A dedicated fraud detection module monitors transaction patterns to identify suspicious activities, such as multiple orders exploiting promotional offers.
- This will help in preventing revenue losses and inventory mismanagement caused by fraudulent activities.

3. Advertising

- Advertisement organizations can target customers with relevant behavior.
- The system integrates with advertisement catalogs, enabling agencies to track campaign performance through metrics such as clicks and conversions.
- Increases customer engagement through personalized advertising.
- Optimizes advertising strategies, enhancing return on investment (ROI).

4. Supplier Analytics and Insights

1. To analyze the stocks from the supplier end and check which supermarket needs different products
2. Suppliers can use this data to optimize inventory and promotional plans.
3. Enables data-driven decision-making for suppliers, improving sales and inventory management.

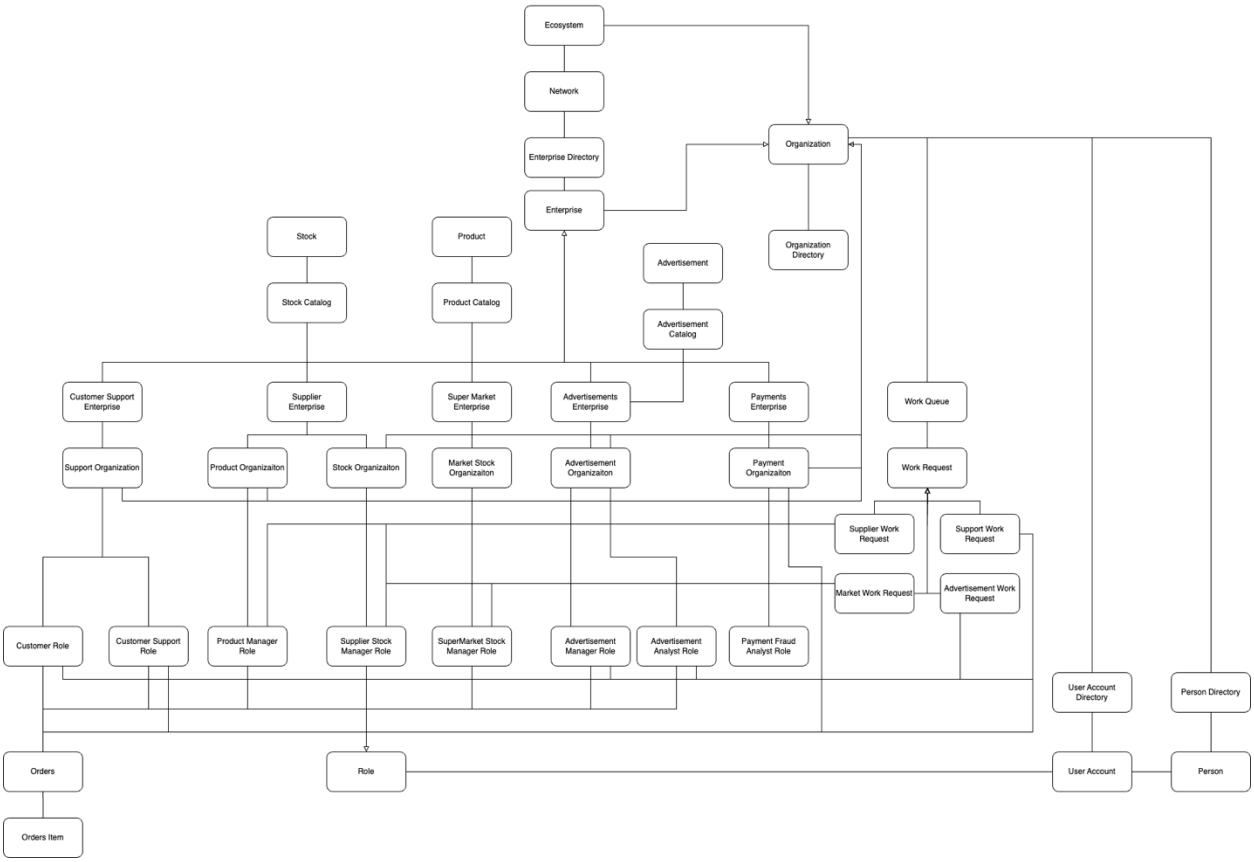
Overall Impact:

It fosters a dynamic ecosystem by connecting customers with businesses in a secure, data-driven environment. By integrating price comparison, fraud detection, advertising, and enterprise collaboration, the system benefits all stakeholders:

For Customers: Simplified shopping, cost savings, and personalized offers.
For Enterprises: Reduced fraud, better operational efficiency, and improved ROI.
For Suppliers and Advertisers: Enhanced visibility and actionable insights for better engagement.

The UML diagram reflects this cohesive structure, ensuring that every component—enterprise directories, work queues, roles, and catalogs—supports the overarching goal of creating a seamless and efficient retail ecosystem.

High-level System Design:



Enterprises:

1. Super Market (Ex: Target, Star Market, etc)
2. Supplier (Ex: KeHe, McLane, etc)
3. Advertisement (Ex: E22)
4. Payment (Ex: Paypal)

5. Customer Support

Organizations:

1. Customer Support
2. Product
3. Stock
4. Supplier
5. Advertisement
6. Payment

Roles:

1. Admins (System and Enterprise level)
2. Product Manager
3. Stock Manager
4. Supplier Stock Manager
5. Advertisement Manager
6. Advertisement Analyst
7. Payment Fraud Analyst
8. Customer
9. Customer Support Manager

Work Requests:

1. Supplier Work Request (Cross Organization work request)
2. Market Work Request (Cross Enterprise work request)
3. Advertisement Work Request (Within Organization/Enterprise work request)
4. Customer support Work Request (Within Organization/Enterprise work request)