Yogurtland Inventory System: Systems Analysis and Design Document

BUS 171- Group 13

University of California, Riverside

March 10, 2025

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University Of California, Riverside
System Service Request

Requested by: Nadia Aierken, Lauryn Tran, Evelyn Romo, Nathan Chapero, Minhee Chung
Date: 01/17/2025

Department: Yogurtland Inventory Management Team

Project name: Yogurtland and their Inventory Management System

	TYPE OF REQUEST		**URGENCY**
	New system		**Urgent**
x	**System enhancement**	**x**	**Medium**
	System error correction		**Low**

PROBLEM STATEMENT

The lack of a digitalized inventory system at Yogurtland has posed an inaccurate track of ingredients and overall inventory in stores. It has created an issue when it comes to keeping an accurate, real-time balance of on hand inventory. Due to there being no digital system to keep an accurate record of inventory, stores have seen an influx of overstocking and understocking issues with several products. This has led to a shortage of available ingredients and the loss of spoiled foods. Additionally, there is an absence of data on inventory levels as well as seasonal changes which prevents the store from understanding or knowing customer purchasing patterns. Yogurtland is in need of a centralized system that can track inventory levels, customer preferences, and online orders efficiently.

SERVICE REQUEST

Our team requests an enhancement of our inventory management system, with the intent to update and effectively improve the existing system in order to increase inventory accuracy, better track customer purchase behavior, and handle and track all transactions store-to-store. To achieve this, we propose implementing a centralized digital system that provides real-time tracking of inventory levels, analyzes customer purchasing patterns, and manages all transactions efficiently. This enhancement will aim to reduce waste from spoiled or unneeded product inventory, preventing stock discrepancies. We aim to improve our overall operational efficiency and maximize customer satisfaction.

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SPONSOR Lauryn Tran, Purchasing Director

PROJECT CHARTER

Project name	**Project manager**	**Project Sponsor**
Yogurtland inventory systems	Group 3	Dr. Sanjoy Moulik
Email	**Phone**	**Organization Unit**
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Budget	**Expected saving**	**Expected start date**	**Expected completion**
$250,000	$50,000	01/22/2025	03/08/2025

PROJECT OVERVIEW

Problem or issue	Lack of digitalized inventory system, leading to overstocking and understocking of ingredients and food. Lack of knowledge of seasonal changes in purchasing behavior.
Purpose of the project	To enhance the inventory information system to minimize food waste, save expenses, and analyze customer behavior.
Business case	To decrease purchase of ingredients and inventory by 10%. To increase profit by 10%.
Goals	• Minimal overstock disposals and spoiled ingredients • Reduce low inventory levels • Save expenses • Increase profit • Improve analysis of seasonal customer purchase patterns
Expected deliverables	An inventory information system to track customer purchase behavior to better analyze inventory levels, purchasing patterns, and transactions

PROJECT SCOPE

Within scope	• Analyze current inventory levels • Enhance and develop current system • Ensure compatibility with store • Cost benefit analysis
Outside scope	• Brand new inventory system • Implementation of system • System testing • Customer service • Staffing

TENTATIVE SCHEDULE

KEY MILESTONE	START	END
Scope	**01/22/2025**	**01/30/2025**
Finalize project plan	**01/23/2025**	**02/01/2025**
Define phase	**01/24/2025**	**02/02/2025**
Measurement phase	**01/25/2025**	**02/10/2025**
Analysis phase	**01/26/2025**	**02/28/2025**
Improvement phase	**02/10/2025**	**03/03/2025**
Control phase	**03/01/2025**	**03/06/2025**
Project summary/ close out	**03/02/2025**	**03/08/2025**

Feasibility Study

Project Title	Date	Prepared By:
Yogurtland Inventory System	1/31/2025	Evelyn Romo, Lauryn Tran, Nadia Aierken, Nathan Chapero, Minhee Chung

1. Executive Summary

- *Brief overview of the project*
- *Key objectives and goals*
- *Summary of findings and recommendations*

- This project has been initiated with the purpose of resolving Yogurtland's issue with keeping an accurate inventory record of all products. Due to a lack of a functional digital inventory system, the company has experienced losses in revenue and product. Our main goals for this project are to reduce overstock disposals and spoiled ingredients, reduce low inventory levels, preserve revenue, increase profit, and improve the customer purchase pattern analysis. Since there is no existing digitized inventory system, we will have to start from scratch and experiment with different systems which could be implemented to best suit Yogurtland's needs. For this we will be referencing other food business inventory systems and considering their protocol for inventory tracking.

2. Project Description

- *Detailed description of the project*
- *Scope and objectives*
- *Expected outcomes*
    - As Yogurtland is lacking an effective inventory system to keep track of ingredients, we are looking to develop a centralized digital inventory management system that will ensure real-time tracking of inventory levels for all the ingredients. This will include the toppings, supplies, flavorings, and more. As we are looking to move over from a pen and paper system to a digital system, one of the necessities is to have the inventory system send automatic alerts and notifications in order to indicate low stock levels and reorder statuses. With a new and improved digitized inventory system, we aim to have extremely accurate inventory records, optimal operational efficiency, better decision making, and a huge reduction in terms of revenue loss.

3. Market Analysis

- *Target market and audience*
- *Market size and growth potential*
- *Competitive analysis*
- *Market trends and opportunities*
    - Yogurtland's target market generally includes families with children along with young adults who enjoy a customizable and interactive dessert option. This audience is often spread between both urban and suburban areas where self-serve options are available and popular. In terms of market size and growth potential, there is a steady increase in consumption and demand from consumers looking for a healthier and personalized dessert choice. Yogurtland has many competitors in its industry such as Menchie's and Pinkberry that also offer their customers the similar concept of self-serve frozen yogurt. Considering this, it is highly important that Yogurtland improves its inventory management system to differentiate itself from competitors and avoid any disadvantages that will cause harm to company revenue and customer satisfaction. This is a great opportunity for Yogurtland to enhance its business and improve its operations as technology has and will continue to remain popular in the food and beverage industry.

4. Technical Feasibility

- *Technical requirements and resources needed*
- *Technology and infrastructure*
- *Potential technical challenges and solutions*
    - Some technical requirements that Yogurtland would be experiencing would include the need for inventory management software, hardware, and a cloud-based system. Additionally, with the introduction and operation of a new system, employees will have to undergo training in order to properly handle the software. The company would need to invest into a computer that is capable of processing inventory records and automated

orders. They would also need to consider a reliable internet connection to make these actions feasible. Some challenges that could be encountered would be the overall adaptation to the new system, migrating data from the old system to the new digitized version, integrating the new software with pre existing systems, and costs in totality. The solutions greatly outweigh the challenges as the company would have an accurate inventory count, better equipped technology to assist in inventory management, training to support employees, and making an investment into a cost-effective solution.

5. Financial Feasibility

- *Estimated project costs*
- *Funding sources and budget*
- *Financial projections and ROI*
- *Break-even analysis*

- Our budget for this project is $250,000. With a company of this scale, we can expect the total cost of the inventory system to be around $150,000. This accounts for the cost of software, hardware, cloud services, IT support and maintenance, training, data migration, and security. Due to the implementation of a new system, it is very possible to encounter several complications within the first few months which is why the company has set an ample budget in order to have the flexibility to address any additional software, staffing, or data necessities they may encounter along the way. Since the cost for this inventory system is estimated to be around $150,000, the company will be facing a recurring annual cost of around $15,000. However, the system will in turn help them preserve $35,000 of annual revenue. Taking these numbers into account, the company will break even in about 5 years.

6. Organizational Feasibility

- *Organizational structure and team*
- *Roles and responsibilities*
- *Management and leadership*

- Yogurtland's organizational structure is highly suitable for an addition of a new and improved, digital inventory management system. Implementing this project will require the collaboration of IT, store management, finance, supply chain and more. A project manager will be necessary to head this project and ensure that timelines and objectives are met throughout the entire implementation process. Along with this, IT specialists can assist with the systems design and development to guarantee an efficient and effective system for the store. These roles and responsibilities are crucial to achieve a smooth project timeline and execution. Management and leadership are two main factors that will ensure the project's overall success. A strong leadership team that is actionable, responsible, and insightful is necessary to make sure the project remains within its resource and budget constraints while still achieving objectives and goals.

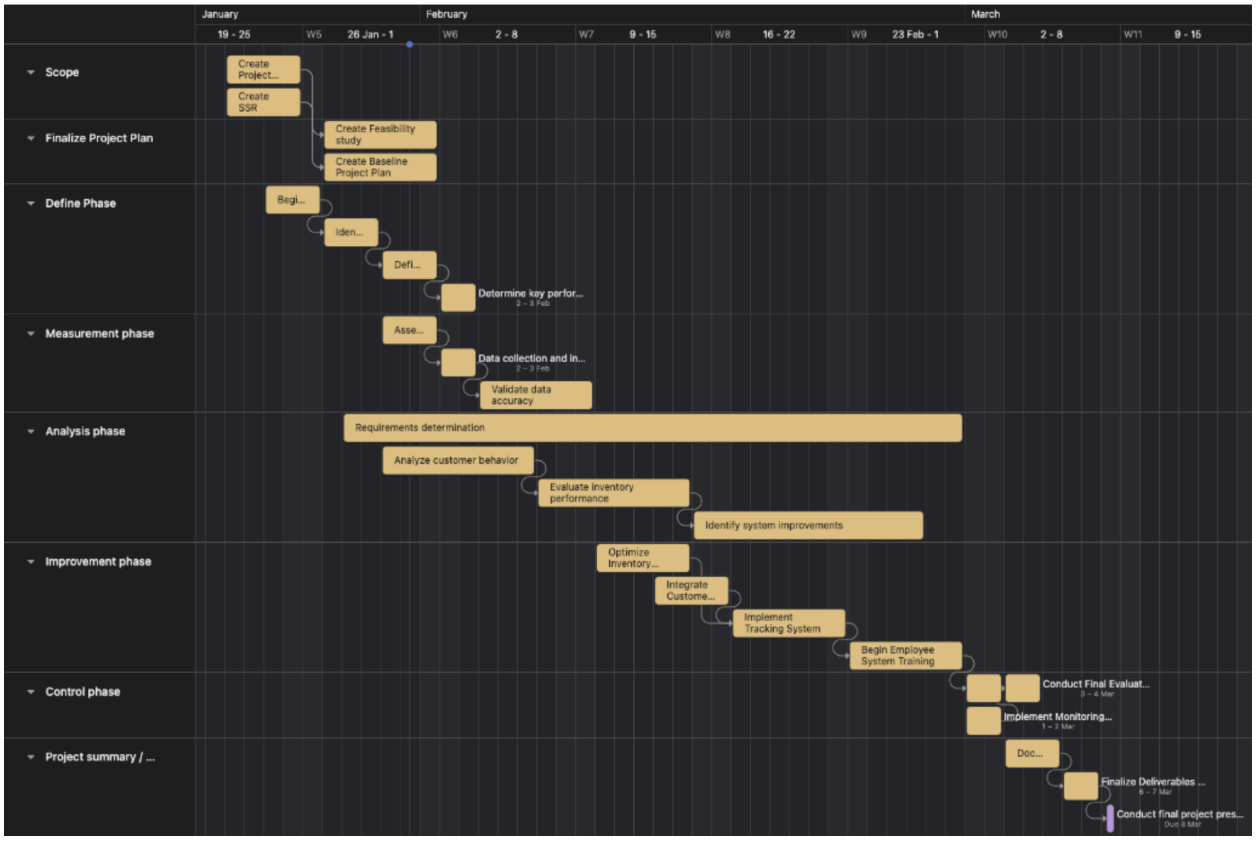
7. Conclusion and Recommendations

- *Summary of findings*
- *Final recommendations*
- *Next steps and action plan*

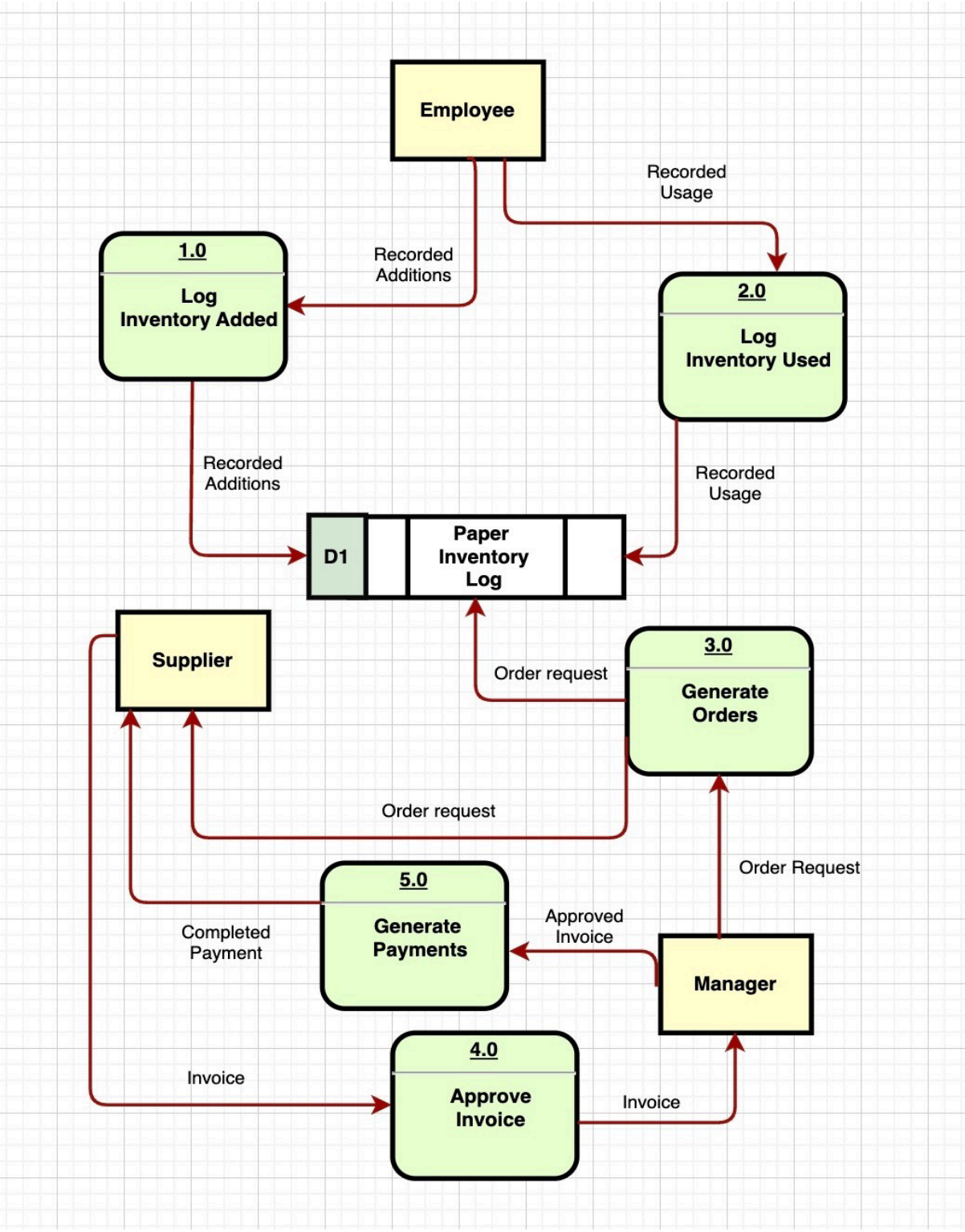
- In its totality, Yogurtland's digitized inventory management system will be set in place in order to preserve the company's revenue and reduce the quantity of overstock and spoiled ingredients among several store locations. It is highly recommended for the company to have enough supporting staff to carry out the implementation of the new system. Whether it be for training purposes or simply to keep things running smoothly at each individual location. Executing this project requires a lot of coordination, planning and training within different levels of the organization. After achieving a suitable system that can efficiently track Yogurtland's ingredients and products in store, it is important for employees and management to have a good understanding of how to implement the system for an easier and more organized work experience, as well as an improved and simple customer experience.

Baseline Project Plan

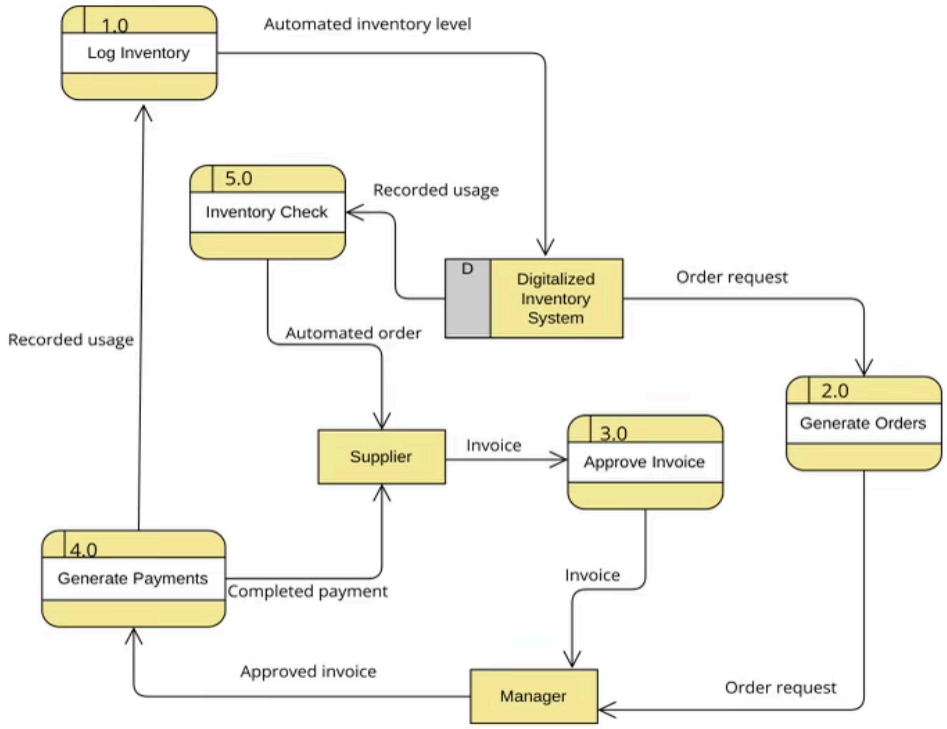
Gantt Chart Asana Link: https://app.asana.com/0/1209287701026849/1209287738697464



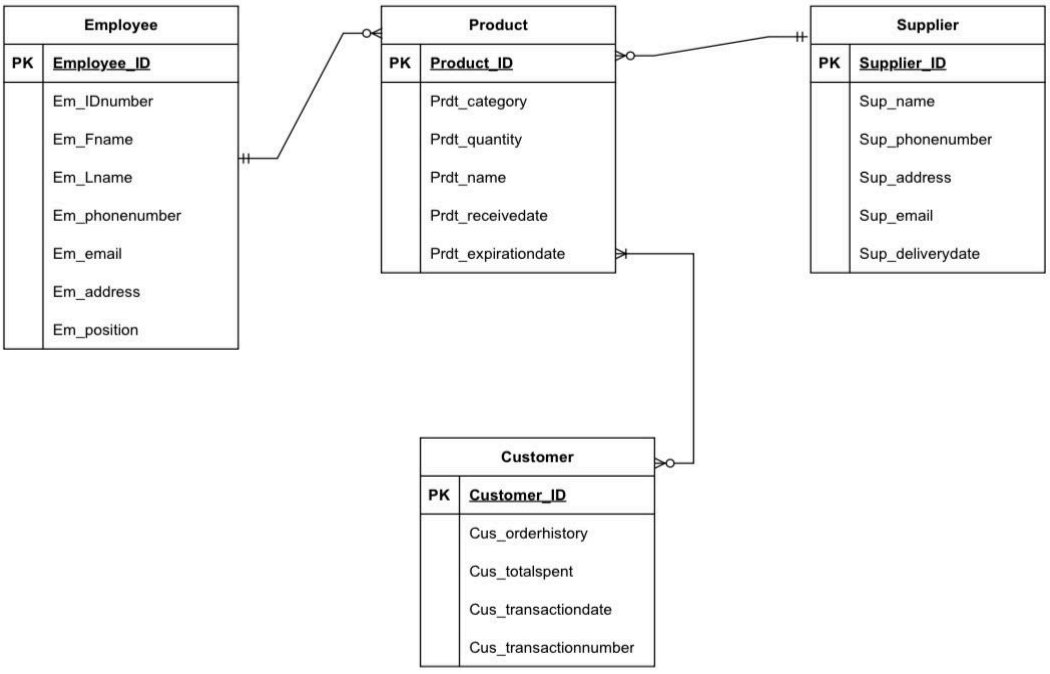
DFD Existing System



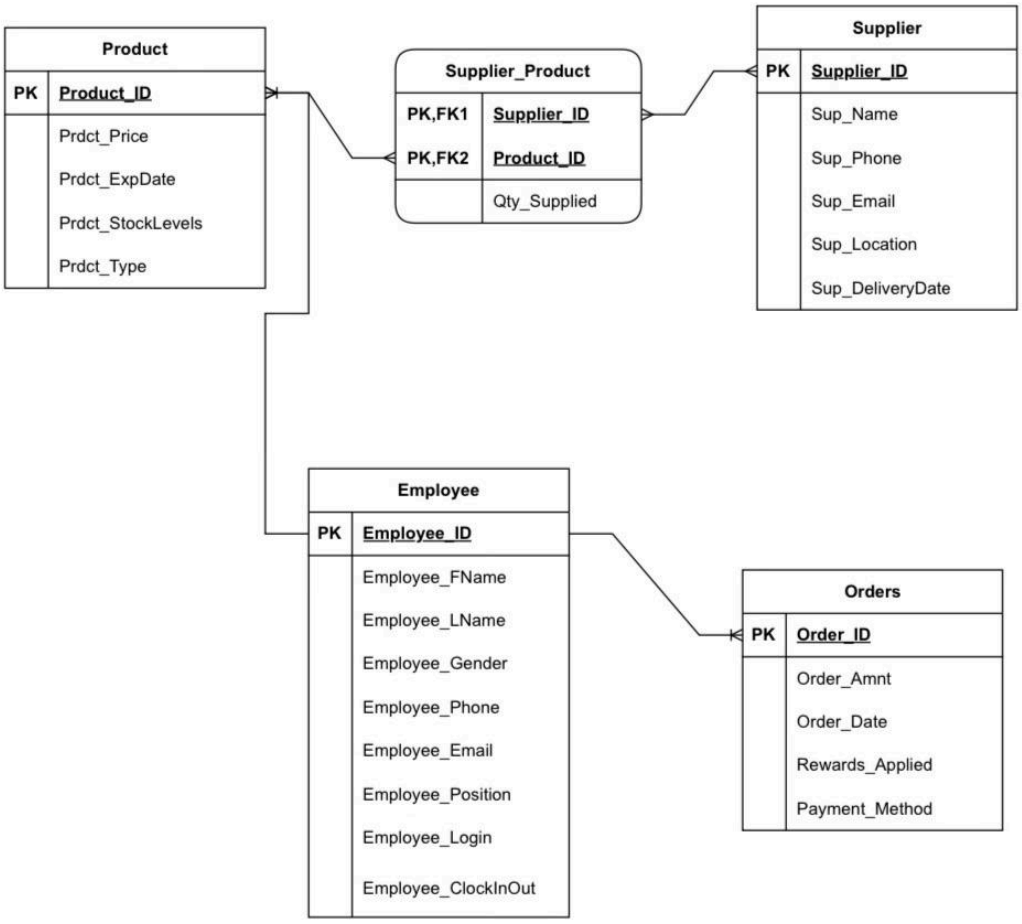
DFD Proposed System



ER Model Existing System



ER Model Proposed System



Executive Summary

Introduction:

Youghurtland currently utilizes manual recording of all of their stock levels, usage, and freshness of the ingredients. The inventory is set to be counted every morning and night shifts. This leaves room for too much human error, for example a worker can miscount the amount of items in the storage or sometimes forgetting entirely. This method is also impractical—manual paper-based inventory systems are time-consuming and expensive in the long run. To address these issues, our team is proposing a digital inventory tracking system that streamlines tracking, improves accuracy, and is cost-effective.

Current/ Proposed ER model:

The existing ER model demonstrates just how ineffective the manual system is, it also shows the lack of structure for inventory management. The relationships do not effectively support easily retrievable information, particularly in supplier and customer data. The collected

data is insufficient for analyzing business trends. Additionally, employees sometimes had to write their work hours on paper.

To solve these issues, we propose a new digital system where products are scanned for accurate stock counts, and the system alerts the store when inventory needs restocking. The system also tracks total consumer spending, allowing the store to analyze purchasing trends and make informed business decisions. Key improvements include adding stock levels as an attribute to the product entity, clarifying the supplier-product relationship, and incorporating a payment method attribute to prepare for future cash transactions.

Current/ Proposed DFD:

The current DFD model appears to meet the store's needs but is highly time-consuming due to its manual processes. Instead of an entirely new model, we improved the relationships between entities, making the system easier to understand and follow.

Key differences include transitioning from a manual to a digital inventory system and automating inventory updates. Instead of updating inventory twice a day, the new system updates it in real time, significantly reducing the risk of errors. Additionally, the proposed DFD improves data flow and enhances database structure, ensuring greater efficiency and accuracy.

APPENDIX

System Documentation - Yogurtland Inventory System & Improved System Needs

Existing system:

- Inventory recorded by paper and pen
- Constant inaccuracy of inventory and ingredient tracking
- Lots of overstocking and understocking issues with multiple products
- Lack of inventory levels; hard to track customer purchasing patterns for certain ingredients (yogurt flavors and toppings)

Goals - What needs to be improved:

- Inventory system method
- Implementation of a digitized inventory system
- Accuracy of inventory and stock for ingredients
- Better transparency of inventory levels
- Minimize food waste and lower unnecessary costs
- Ability to analyze customer behavior and preferences (wants and needs)

Proposed system:

- Brand new digitized inventory system
- Will ensure ACCURATE real-time tracking of inventory levels for ALL ingredients

- Require system with automatic alerts to notify store when there are low stock levels or when certain items need to be reordered
- Highly accurate inventory records to achieve highest level of accuracy and efficiency
- Reduce revenue loss and make better decisions through digitized system