Sales and Inventory Management System

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1.Description of project scope

A garment company, which is using paper pen format to keep their records till the day wishes to use computer technology to keep track of all its transactions and day to day operation to achieve its business goal. The company acquires products from suppliers and sell them to its customers in the area. The business is basically buying and selling different men clothing.

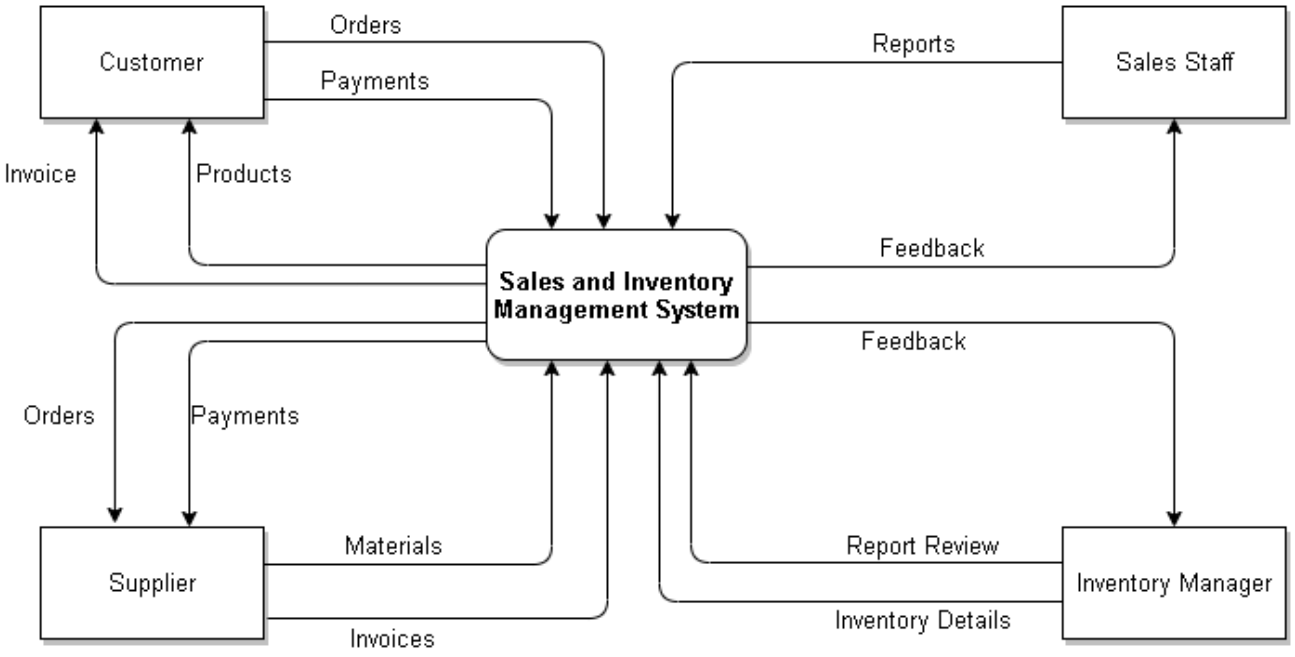
The goal of the company is to make staffs work effectively efficient by using computer technology. Warehouse staffs were having problems all the time to keep track of the goods coming in and going out of the warehouse. The sales staffs are using papers for the orders they receive from the customers. The problem with paper orders is that, they are all the time misplaced. At times when several sales persons need to see the same record, records being in paper format cause problems. These problems have increased the need for computer technology.

The company at the moment is fully dependent on its staff skills of recording information using the paper and pen. This dependency of owner among the workers is wasting money and time. The designed system will be used to maintain the data that is used and generated to support the distribution operations of the company. Data stored in the system will be shared among the staff of the company to facilitate the co-operation and sharing of information between sales and staff.

The conceptual design of the computer system and not a complete implementation of the designed data model. The designed logical data model will be forwarded to the database programmer who will convert the logical data model into a fully working database with a user-friendly interface. However, this thesis includes brief planning of database security and user authentication.

Diagram Depiction of Project Scope

Context Diagram:



Context-level data flow diagram showing project scope for Sale and Inventory Management System.

2.Information Gathering

2.1 Interviews

The owner and all staff members currently employed in the company were interviewed. The purpose of the interviews was to gather further information on the problems the staff are facing and their possible solution from the new system that is to be developed. The interviews were conducted as a structured interview. All the interviewees were asked both open-ended as well as closed-ended questions. The following were the questions asked during the interview.

Participants:

1.Owner

- **What is your business about?**
  A garment company that is receiving goods from different suppliers and sell them to customers.

- **Why do you feel that you need computer technology?**
  Currently we are keeping records in paper sheets. The problems with paper sheets are they get misplaced and records are lost most of the time, to find one particular record we have to go through piles of documentation. We thought computer technology will help us to overcome this problem we are facing with paper records.

- **Why don't you choose existing Sales and Inventory System?**
  They are quite expensive to buy and maintain, needs to have one more IT staffs, which in our current situation seems more costly. Moreover, existing system does not exactly meet our needs despite of investing lots of money; they will still require further development and changes to meet our needs.

- **How do you think, development of new system will solve your problem?**
  This system will be developed according to our business environment. We can always put our thoughts and ideas in its development. We will familiar with it since the day of its development. We can develop it considering our future growth and requirements.

2.Warehouse staff

- **What is your job description?**

  Being a warehouse staff, my job mostly involves managing records of incoming and outgoing products from the warehouse. Observe the stock in warehouse and make reports which are sent to the owner.

- **What kinds of task do you perform in daily basis?**

  Most part of my job includes managing records and keeping track of goods available in the warehouse and generate reports. I also have to notify the owner when there is a change in the profit margin offered to us by the suppliers. Labelling of products and organizing products in warehouse.

- **What kind of data do you work with?**

  I keep records of products from different manufacturers coming in warehouse. I keep records of orders sent to my sales personnel and dispatch the orders. I send re-ordering of products to our suppliers with the confirmation of the owner.

- **What do you need to make your work easier and faster?**

  A system where I can easily record all the products with proper descriptions. A system which enables to keep track of all products quantity in warehouse and alarms when stock is less than a certain amount. A system which generates incoming and outgoing products report graphically.

3.Sales staff

- **What is your job description?**

  Our role is mostly to deal with local customers who come at our shop. We collect all the sales orders and forward them to warehouse for the delivery. We keep records of all clients and make reports about the most ordered goods in certain time.

- **What kind of task do you perform in daily basis?**

  We deal with sales orders and our customers. We often make calls and receive calls from clients regarding deliveries and new arrivals.

- **What kind of data do you work with?**

  We work with sales orders which include products, quantity, amount, tax. We deal with clients' inquiries about certain product details and price. We make frequent inquiries about the stock quantity for products in the warehouse in order to know about the products available in the warehouse.

2.2 Document Analysis

All the documents from the past operations of company were examined and studied. The following were the documents that were studied during the process:

1. Incoming order records
2. Clients records
3. Inventory records
4. Suppliers records
5. Products list
6. Invoices
7. Staff records

2.3 Database Requirement

Searches and inquiry

Most of the searches are made by the sales staff. The frequency of queries will be high during the first business hour by the sales staff. The inquiry shall be less after the first business hour and will be high again during the mid-day. Inventory staff will most likely check the records every afternoon before the closing so the chunks of data will be searched during that time.

Shared access requirements

Every sales and inventory staff will have their own workstations. Each workstation will be connected to the local server where the system database will reside. Each system user will access the system from the interface program installed in the local workstation.

Security

The system will be password-protected. Each user will be assigned system access privileges appropriate to the particular user view. Staff members shall see only the data necessary to perform their job. The system will be disconnected from World Wide Web to prevent all possible hacking and cracking from the Internet. The system should only be accessed from local workstations.

2.4 Functional Requirement

Administration Functional Requirements

The owner acts as the system administrator.

- System login function, with password change functionality after login
- Create new user of the system with staff details, limit their privileges according to their job description
- Add new item and category into system product list
- Edit and update product prices
- Remove item and category from inventory

- Delete and update system users

Sale staff Functional Requirements

- System login function and change password function
- View the inventory status
- Product search function by product name or product code or product category
- Create purchase order entering purchase details
- Cancel the bills in case of error in entering the details
- Enter the product details for the returned order.

Inventory Manager Function Requirements

- System login function through user interface and change password after first login
- Add product details and prices into the system
- Check the inventory status, minimum and maximum stock point and order point
- Update the inventory according to the sales done in previous day
- Create inventory reports of items category-wise, price-wise

2.5 Users transaction requirements

The operations operated over the database objects are transaction. The minimum required user transactions are described in this section. The transaction requirements for the company were discovered during the company's document analysis and fact collecting techniques used to collect user's views and ideas about the system.

Data entry

Enter the detail of suppliers
Enter the details of products
Enter product category details
Enter new and existing staff's details
Enter role details of each staff
Enter customer details.
Enter order, order details.
Enter payments details.

Data update/deletion

Update/delete staff details.
Update/delete product details.
Update/delete product category details.
Update/delete order, order details.
Update/delete customer details.
Update/delete supplier details.
Update/delete payment details.

Data listing

List the details of staffs.
List details of each staff roles.
List details of suppliers.
List details of each product.

List products in stock.

List products reaching minimum stock level.
List products by category
List available category details.
List customer details.
List all incoming order details
List payment details for recent orders
List orders with credit payments and customer details
List total number of orders.
List orders with full payments.

2.6 Functional Analysis

In this step of design process, the brief analysis of all the function that user wishes to have in the system is described.

Input

The data that shall be input into the system will be inserted by the user of the system. The data each user inputs to the system is different. The following are the types of data that will be input to the system:

- Username, password and new changed password
- New user details
- Product details and category
- Incoming product details
- Order details
- Cancelled bills
- Return products details
- Search parameter (product name, product category, product ID)

Process

After the data is input to the system, the system will process data to generate output. The processes that should be processed by the system are as follows:

- Authentication of existing username and password
- Save any changes to database (add, delete, update products/categories)
- Carry the search within database
- Generate bill for the sales item
- Cancel the bills generated in case of error
- Produce invoice for the purchase order
- Produce bills or reports for return purchase
- Validate the inventory stocks

Output

The system processes the data that is input into the system. The system shall produce different kinds of reports as the outputs. The following are the outputs the system shall produce:

- Product lists
- Detailed reports on purchase and sales
- Reports on due payment from clients over certain period of time

- User information and client information
- Product details on execution of search query

3.Proposed solution

- Web page (Accessible from the internet).
    - Client can register himself on the webpage.
    - Client can login on the website.
    - Client can easily view and find garments based on his requirements.
    - Client can pay online using debit or credit cards instead of cash, increasing user friendliness.
    - Queries of client can be answered via a customer care chat available on the website.
    - Client can post his reviews or view previous reviews left by other members.
    - Can opt to receive notifications via email or text message about discounts available for client, reminder for return dates and pending payments.

    Advantages

        - It is easily accessible through a web browser irrespective of OS.
        - Client does not need to go to the shop in order to make a reservation.
        - Telecommunication cost is reduced as the internet provides a cheaper way of communication.
        - Having a website will help gain more publicity and cover a wider area.
        - Does not take storage space for the clients.

    Disadvantages

        - Internet access is required to be able to visit the website and make reservations.

- Database (Install on company's computers)
    - Staff and owner can log in on the database
    - Owner can input staff, product and supplier details
    - Staff can input customer, order and payment details
    - Update, delete and listing function
    - Alert function to show low stock
    - User-friendly GUI
    - Generate reports of products
    - Generate invoice form

    Advantages

        - The system will be user-friendly. Therefore, it will not require special skills and training to use the system
        - The system will be password-protected
        - The system will be able to handle huge volume of data
        - The system will be able to handle multiple concurrent users

    Disadvantages

- Designing a database is time consuming