ITSE 1331 Semester Group Project (Fall 2016)

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Background Information

Paisano Pharmacies, a fictitious business in the pharmaceutical services industry, is owned by Victor Paisano. Currently, Paisano has two pharmacies located in Killeen and Temple, Texas. Victor's goal had always been to open three more pharmacies in central Texas (Waco, Hillsboro, and Gatesville) and would like to achieve that within the next few years.

While their business had been very successful, Victor realizes that their business processes have not evolved to meet customer expectations or the demands of the business itself. They have experienced a decrease in customer retention from 87% to 35% in recent years and a decrease in profit of 45% due to various factors including lost prescriptions, poor customer service, out of stock medications, etc. As a result, Paisano has recognized the need for an integrated pharmacy management system which will allow them to manage all operations more efficiently. They are seeking help from a consulting firm to automate their manual business processes which are described below.

Paisano employs, at each pharmacy, two pharmacists, three pharmacy technicians, two sales associates, one pharmaceutical purchasing agent, and several assistants. Some of these positions require shift work as they are open from 8am to 8pm on most days. All purchasing agents must be licensed as a pharmacy technician and have practiced as a tech for at least 3 years. Paisano has experienced high turnover in this position. The job description for a purchasing agent includes purchasing pharmaceuticals, making payments, updating inventory levels, and recording cost and setting pricing. The purchasing of pharmaceuticals is done in bulk in order to reduce the cost per item. Below is a description of the business processes typical of each pharmacy.

Business Processes

Account Setup

When a new customer arrives at the pharmacy to have a prescription filled, they are asked to provide basic customer information which includes their name, address, phone number, date of birth, social security number, and serious medical issues. In addition, allergy information (e.g. penicillin, sulfa, etc.) is required of the customer. A sales associate records the customer's information in the appropriate locations. The customer's basic information is recorded on the customer profile sheet. Their last name and the last 4 digits of their social security number (called: ssn4) is recorded in the daily new client log which contains all new customers by date they began receiving prescriptions at the pharmacy. In addition, the client's allergies to medications are recorded in the allergies binder.

Next, a unique new member number is determined by the sales associate by looking up the last member number in the client profile filing cabinet. The number is recorded on both a new member card as well as the customer profile sheet. The member card includes the client's name and new member number and is pre-printed with the Paisano logo, address, and business phone number. The member card is given to the customer and the customer profile sheet is filed in the filing cabinet.

For customers that have prescription drug coverage, the sales associate verifies their insurance information. The insurance company's name on the client's prescription card is matched against the pharmacy's listing of insurance companies that they accept. If the company is on the list, the sales associate contacts the insurance company's 800# automated service to determine if the customer has an active account that can be billed. The customer's insurance information and/or status is noted on the customer profile sheet. If the customer provides an invalid prescription card, the customer is given notification of the invalid card. Note: Customer's without insurance are still accepted but will be required to pay full price for all medications.

Prescription Fulfillment

When a customer wants a prescription filled, a sales associate receives the member's card and prescription and logs the request in a prescription log which contains the member's number, drug name, date and time. The member card and prescription are passed on to a Pharmacy Tech (PT). Note: At Paisano, a prescription is for only one medication. If a patient comes in with a single slip that has 3 medications listed, that would be treated as 3 prescriptions.

The prescription validation process uses the member's card, prescription, and the data in the client profile filing cabinet to validate the prescription. The prescription itself typically includes the patient's name, date of birth, date prescribed, prescriber, medication name, form (e.g. tablet, capsule, injectable, etc.), dosage (mg), quantity, number of refills, and frequency (e.g. twice a day). The validation includes things such as checking that the patient's name and birth date are consistent with the customer's profile and that the medication name and units are all valid. There is a drug facts binder which includes manufacturer information about the medication such as usage, active ingredients, and warnings. Some drugs come in multiple forms each having specific characteristics: form type, dosage, shelf life, directions, storage, and side effects.

The PT may use the binder to review the recommended dosing amounts. If the prescription is valid, it is next checked for availability. However, if there were issues with the prescription the customer is notified and asked to return to their physician to resolve the issue.

Next, the medication is then checked for availability. The PT checks that the medication, in the particular form that is required in the prescription, is available by checking the inventory spreadsheet which lists the medication quantity on hand (QOH) for each medication. If it is available, the available prescription is then given to the pharmacist.

The pharmacist evaluates the available prescription before it can be filled and will review the client's allergies as well as the drug facts. The evaluation involves reviewing potential issues such as allergies, drug interactions (drug-to-drug interactions for patients taking multiple medications or drug-disease interaction for patients with certain health issues). Once the prescription is approved, the prescription can then be filled. If the prescription is not approved, the customer is notified of the denial and asked to return to their physician to resolve the issue.

When the pharmacist fills the approved prescription, the prescription log is updated to: 1) reflect that the requested prescription was filled, and 2) show which pharmacist filled the prescription (i.e. the pharmacist's identification number is noted). The prescription's filled and discard dates are recorded. The inventory amount is then reduced in the inventory spreadsheet. The prescription slip is filed in the prescription filing cabinet. Finally, the medication, invoice, and medication information sheet are stapled together and left in a filled prescription bin for the sales associate to handle payment collection.

Bulk Purchasing

Every morning a purchasing assistant will take the previous day's prescription log and parse it into two history files: filled prescriptions (drug name and quantity sold), and unfilled prescriptions (drug name and quantity requested).

The purchasing agent uses these two files as well as current inventory levels from the inventory spreadsheet to determine the bulk order. The prescriptions not filled history file may give some indications as to potential need. Information from the catalogs for each of the Pharmaceutical Wholesale Distributors is utilized which includes the wholesaler's name, address, phone number, fax number, as well as the products they sell and what will be pharmacy's acquisition cost.

Once the items to be ordered are finalized, a purchase order, which includes the purchase order date, items ordered, acquisition price per item, and quantity, is created and sent to a distributor. A copy of each purchase order is left in a designated tray on the desk of the purchasing assistant.

The purchasing assistant handles the receipt of stock, which are always accompanied by an invoice. The assistant utilizes the copy of the purchase order to verify that the items were indeed ordered and if so, makes the payment to the distributor, and updates the inventory spreadsheet to reflect the additional items.

Scope

The client is requesting that you design and code a new **pharmacy management system**. It is obvious that Paisano would benefit from putting all of their data in digital form. Your job is to go well beyond that and design a high quality system that includes innovative ideas to improve the service provided to the customer as well as to improve the business process at Paisano.

New data requirement

In the new system, please make sure that you represent an "order" which includes all prescriptions that were ordered at one time. An order can have many prescriptions and a prescription can be on many orders (e.g. refills).

Development Approach

You are expected to work quickly and efficiently and use an approach that allows for the overlapping of phases. Make sure that you plan ahead and ask questions of your client in a timely manner whenever assistance is needed. A somewhat agile approach will be followed and thus changes will be welcomed (yet, managed).

Application Requirements

Any software designed for use by employees at the main office must run on desktop computers utilizing a traditional software application interface designed and coded using Visual Studio.