

Process suggested by the lecturers

The Company

Caring pharmacy is a well-known pharmacy in Portugal. This pharmacy was found in 1998 and exists in Lisbon, Porto, Faro, Coimbra, Santarém, Torres Vedras, Braga and Évora. Presently, Caring pharmacy has more than 80 employees working in different departments.



The focus of this project will be the process of attending the customers. Some dissatisfaction of customers and employees, as well as the inability to deal with some of the work, led the top managers to decide to analyse their processes in order to overcome these difficulties and increase its efficiency.

Order-to-cash (O2C)

The scope of this project is to understand, model, analyse, and redesign caring pharmacy order-to-cash (O2C) process. Other processes exist within the company, however outside the scope of this project. However, you may consider those in your project, making the proper assumptions. It is expected that you combine IT/IS with management changes that allow a redesigned O2C process.

In one month, thousands of orders are made. In this specific case, we will focus on the Lisbon pharmacy (as representative of the others). The Lisbon pharmacy receives around 220 customers per day. Each pharmacy is open from 10:00 am to 6:00 pm every day.

After a conversation with the managers, some information was collected regarding the problems of the pharmacy. The company registered some customer dissatisfaction, namely in the inefficient and slow process. Sometimes, the employee is unable to serve all customers during regular work hours, having to make more time to be able to serve customers or sometimes does not even attend them.

The pharmacy has 4 technicians and 3 pharmacists, receiving each 1000€ and 1300€ respectively.

Receive client

When the customer enters the pharmacy to fulfil his order, there are 2 ways to do it: he can take a medical prescription or not. The technician who is responsible for serving the customer, requests the order and if there is a medical prescription, the technician receives it (in paper format or in a message that the customer shows on his cell phone), which takes about 1.2 minutes to do. In the case of customers without a medical prescription, that represents about 20% of the customers, the technician takes note of the order (about 0.4 minutes to do it). Since certain drugs cannot be picked up without a prescription, the technician must check in the system if the ordered drug can be picked up by the customer (about 0.7 to 1 minute to do it). If so, the order is registered (85% of the time). Otherwise, the order cannot be fulfilled, and the customer will have to leave without the order.

On average, this process takes about 1.5 minutes to be performed, per customer.

Enter and Check Prescription

For customers who take a medical prescription, it is necessary to check in the system if the prescribed drugs can be picked up by the customer, because sometimes certain medicines can have interactions with each other, making their potentially unfavourable to the customer's health. Therefore, in cases where the client has delivered the prescription to the pharmacy technician, this enters the details of each prescription (e.g. doctor details, patient details and medication details) into the pharmacy system, which takes about 0.7 minutes, but is very flexible. As soon as the details of a prescription are entered, the pharmacy system performs an automated check called Drug Utilization Review (DUR). This check is meant to determine if the prescription contains any drugs that may be incompatible with other drugs that had been dispensed to the same customer in the past, or drugs that may be inappropriate for the customer taking into account the customer data maintained in the system (e.g. age). Any alarms raised during the automated DUR (that represents 40% of the prescriptions) are reviewed by a pharmacist who performs a more exhaustive check.

The pharmacist must check the customer historic (which takes about 1 minute), in order to understand if the treatment prescribed is already something routine and, despite triggering the alarm, the benefits of this treatment are higher for the situation of the patient, than the problems that may arise. In these situations, the pharmacist must insert a note in the system with a justification to proceed with the prescription (which takes about 30 seconds). However, there are cases where the alarm turns on and even analysing the client's history, the pharmacist finds no reason to deliver the medication to the client. In such cases, the pharmacist will have to call the client's doctor in order to try to clarify the situation (which happens 20% of the time). However, doctors do not always answer the call immediately (40% of the time), so the client will have to leave without his prescription and return another day. In cases where the call is answered, the pharmacist discusses the situation with the doctor (which takes about 5 minutes usually, but can be inconstant). About 10% of the cases, the doctor was really wrong in the

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prescription and in these cases, either the client leaves without the medication or, if he has an electronic prescription, the doctor sends a new prescription to the client's mobile phone (85% of the time). In such cases, both the customer and the pharmacist wait about 2 minutes until the prescription reaches the customer's mobile phone. After this, the customer goes back to the pharmacy technician who starts the prescription verification process again. In cases where electronic prescription is not an option, the customer will have to leave the pharmacy without his order and return the other day with the new prescription. In the situation where the doctor was not mistaken and it is really necessary for the client to take all the prescribed drugs, the pharmacist has to insert the justification for such a prescription into the system.

After the DUR check, the system performs an insurance check in order to determine whether the customer's insurance policy will pay for part or for the whole cost of the drugs. In most cases, the output of this check is that the insurance company would pay for a certain percentage of the costs, while the customer has to pay for the remaining part (also called the co-payment). The rules for determining how much the insurance company will pay and how much the customer has to pay are very complicated. Every insurance company has different rules. In some cases, the insurance policy does not cover one or several drugs in a prescription, but the drug in question can be replaced by another drug that is covered by the insurance policy. When such cases are detected (85% of the time), the pharmacist generally calls the doctor and/or the patient to determine if it is possible to perform the drug replacement. If it is just necessary to discuss that replacement with the patient (80% of the time), it is easy and takes about 2 minutes to do it, but if necessary to call to the doctor, it is more difficult, since the doctor doesn't answer the calls every time. In the cases the doctor does not pick up the phone (40% of the cases), the client can decide to go another day or pay for the medicine prescribed (20% of the cases). When the doctor answers the phone, the pharmacist discusses the situation with him (which takes about 5 minutes to do it). After this, the prescription was checked and can be fulfilled.

On average, this process takes about 3.5 minutes to be performed, per customer.

Fulfill order

When the prescription was checked or the order without prescription can be fulfilled, the technician must check if the pharmacy has the medicines in stock, which takes just 30 seconds. When there is stock (75% of the time), the technician will have to go and get it, which takes about 45 seconds (depending on the medicine). Then, the pharmacist checks again if the medicine is correct (in about 30 seconds) and if so (95% of the times), the technician packages the medicines rapidly. If it is wrong, the process with stock verification of the right drug will have to be started again. When there is no stock of the chosen drug, the technician passes the information to the pharmacist who will have to choose alternatives, which takes about 1 minute. If there are no other options (35% of the time), the pharmacist informs the technician and the latter notifies the customer of the situation and orders the medicine from the supplier, which takes about 1.5 minutes (the customer leaves without the order). If there is an alternative, the pharmacist will have to choose the new product discussing with the client or the doctor (depending on the situation), as he did in the case of drug replacement in the enter and check prescription process.

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In case an alternative is reached, the technician will try to get the medication, following the same process in the case where there was stock.

On average, this process takes about 2.2 minutes to be performed, per customer.

Deliver and Payment

When the order is packaged, the technician must receive the payment from the client (30 seconds) and deliver de order.

On average, this process takes about 35 seconds to be performed, per customer.

