

Inventory Management of Pharmacy Store

By

Shubham Ashokkumar Borana

*Dissertation submitted for the partial fulfillment of the
MBA Pharmaceutical Management*

Academic year, 2017-2019



The IIHMR University, Jaipur

1, Prabhu Dayal Marg, Sanganer, Airport
Jaipur 302029, Rajasthan
Ph: 0141 3924700, Fax: 3924738
Website: www.iihmr.edu.in

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Ph: 0141 3924700, Fax: 3924738
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TO WHOMSOEVER MAY CONCERN

This is to certify that **Shubham Ashokkumar Borana**, student of MBA in Pharmaceutical Management from The IIHMR University, Jaipur has undergone internship training at **Bhagwan Mahaveer Cancer Research Hospital** from **19th February 2019 to 19th May 2019**.

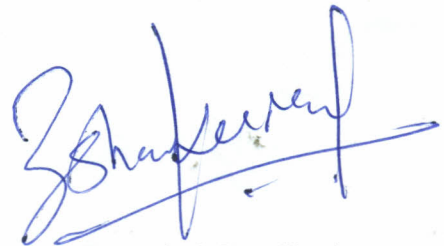
The Candidate has successfully carried out the study designated to him during internship training and his approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish him all success in all his future endeavors.

A handwritten signature in blue ink, appearing to read 'Sandeep Narula'.

Dr. Sandeep Narula
Dean, School of Pharmaceutical Management
IIHMR University, Jaipur

A handwritten signature in blue ink, appearing to read 'Ashok Peepliwal'.

Dr. Ashok Peepliwal
Associate Professor
IIHMR University, Jaipur



Bhagwan Mahaveer
Cancer Hospital & Research Centre
(Managed By K. G. Kothari Memorial Trust)



Jawahar Lal Nehru Marg, Jaipur 302017, Rajasthan
T: +91-141-2700107, 5107777 | F: +91-141-2702021 | E: info@bmchrc.org, bmchrc@hotmail.com | www.bmchrc.org

May 14, 2019

The certificate is awarded to **Mr. Shubham Ashokkumar Borana** in recognition of having successfully completed his Internship in the department of **Pharmacy** and has successfully completed his Project on **Inventory Management of Pharmacy Store** at Bhagwan Mahaveer Cancer Hospital and Research Centre on **May 13, 2019**.

He comes across as a committed, sincere & diligent person who has a strong drive and zeal for learning.

We wish him all the best for future endeavors.

Bhattacharya

Head – HR & Training

[Signature]

Executive Director

Tapti Bhattacharya
Head-HR & Training
BMCHRC, JAIPUR

THE IIMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **Inventory Management of Pharmacy Store** and submitted by **Shubham Ashokkumar Borana** Enrollment No**115** under the supervision of **Dr. Ashok Peepliwal** for award of **MBA in Pharmaceutical Management** of the University carried out during the period from **19th February to 19th May** embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.



Signature

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Introduction

Inventory management of pharmaceutical products is a critical and complicated process as patient life is at risk, thus giving the right medication to the right patient at the right time place an important role. The methods which are involved in inventory management of a pharmacy store are, purchasing of drugs or procurement, checking the items as per purchase invoice, monitoring of the purchase rate, the setting of sale rate, pharmacy store management, dispensing of items and purchase returns management. All these processes are essential in managing a pharmacy store.

Barcoding system is a part of store management where each pharmaceutical item like tablets, IV fluids, injectables, syrups, and surgical items are given unique identity by sticking barcodes on them. It is a very time-consuming backend process and has its pros and cons. The fundamental objective of implementing barcoding system in any store is to automate the existing process and to eliminate human error.

The model number of the printer used in pharmacy is GT800 by Zebra Technologies. A single barcode roll can print up to 10,000 barcodes, and there are seven scanners at the billing counter in the front pharmacy.

Requirements for implementing the barcoding system:

- Barcode printer
- Scanners
- Software
- Barcode label roll

Inventory Management in a pharmacy:

Inventory management in a pharmacy involves supervision of the flow of goods from the store to the point of sale, the critical function of inventory management is to keep detailed records of each new or returned product as it enters or leaves the store. Computer software is

used to track down all the movements of inventories in a pharmacy store. BMCHRC uses customized software for these purposes.

Features of Inventory Management in a pharmacy store:

- **Order Management:**

To avoid overstocks and stockouts, an adequate amount of inventory should always be present in the pharmacy store.

- **Asset Tracking:**

With proper and effective stock management methods, medications should be easily trackable by employees.

- **Inventory Optimization:**

Computer software should be utilized to its fullest potential for identifying reorder level and managing expiries and returns of medications

- **Optimum Utilization of resources:**

An inventory management system helps in performing the optimum utilization of staff and inventories.

- **Cost Optimization:**

Optimum utilisation of the cost will be helpful in achieving a continuous flow of revenue cycles in the store.

The primary motive of Inventory management:

- Helps in minimizing capital expenditure as there will not be the excessive stocking of medications.
- Uninterrupted business operations as it also make sure that there is no understocking.
- Use of the latest technology to get accurate data and results which helps in maintaining better stock levels.
- Avoids losses which occur due to expiries of medications.
- Better service to the customers by faster dispensing of medications.

Inventory Management of BMCHRC Pharmacy



Barcoding system influences store management, dispensing, managing returns and expiries processes in a pharmacy store

1. Purchasing

Minimum and maximum stock level is manually set by the purchase manager in the computer software, as soon as the current stock level falls below the minimum stock level, order quantity is generated in the software.

The setting of minimum and the maximum stock level is based on the consumption pattern of the item. It is different for different items as some items are consumed more or less depending upon the demand.

Computer order quantity is the difference between the maximum stock level and current stock level. It is not necessary that stock ordered by the purchase manager is equal to the computer order quantity; it can be more or less depending upon the consumption patterns. E.g., Suppose the consumption of drug 'X' in a month is 300 units, on an average per day consumption, is $300/30 \text{ days} = 10 \text{ units per day}$. Suppose the minimum order quantity is set on the basis of 7 days consumption which will be $10 \text{ units} * 7 \text{ days consumption} = 70 \text{ units}$ and maximum order level are set on two months consumption of drug 'X' which will be 600 units. Whenever the current stock level falls below 70 units, computer order quantity is generated. If the current stock is 65, computer order quantity will be $600 - 65 = 535 \text{ units}$; it is not necessary that the purchase manager will give an order of 535 units, it can be 550 or 500 depending upon the demand.

Format of Purchase Order Sheet

XYZ Pharmacy Basement Division

Min Stock 6/Apr/2019:10:10 PM

Sr No	Item Name	Email Id	Contact Number	Pack Size	Min Stock Level	Current Stock	Max Stock level	Computer Order Quantity	Ordered Quantity	Remarks
	Chaudhary Medical Hall	xyz@abc.com	4584368465							
1	Razo 20MG			Unit	90	89	315	226		
	Deeksha Enterprises	asd@ajk.com	48879543567							
1	Posid 10MG			Unit	4	3	13	10		
	Dhruvi Pharma Pvt. Ltd.	shd@uec.com	4863158974							
1	Omnikacin 250MG			Unit	257	219	901	682		
2	Farcan 200MG			1*4	4	0	13	13		
	Life Saver	hjs@uic.com	4795632145							
1	Altraz 1MG			Unit	2389	2303	8363	6060		

In BMCHRC purchase order sheet is printed every afternoon at approximately 2'o clock and ordered quantities are placed by the purchase manager. As most of the purchases in BMCHRC are made locally from Jaipur itself the lead time of the medicine is on the same day by 8pm or by the end of the next day.

2. Physical Check

When the goods are received by the pharmacy, the person-in-charge checks for the item name, pkg, quantity, batch number, MRP and expiry if all the fundamentals are valid as per purchase invoice, he/she signs both the copies, stamps the duplicate copy with 'BMCHRC Pharmacy', stamps the original copy with 'Goods Received' and gives the duplicate copy to the person who brought the goods. Items in need of cold storage are immediately stored in cold storage. If the purchase invoice amount is more than Rs 50,000 E-way bill is sent by the supplier. E-way bill is either printed on the backside of purchase invoice or on a separate page. If the bill is printed on a separate page, E-way bill number is written on the original purchase invoice on the top right most corner.

In case if the details on the purchase invoice are incorrect, necessary changes are made on both the copies of purchase invoice and person who brought the drugs is been told to bring a revised copy of the bill. Some suppliers send the revised copy of the bill on the same day while some take 3 to 4 days.

Purchase Bill receipt register is used for manually write down details of all purchase invoices serially. The details written down are a serial number, date of goods received, party name and quantity of drugs received, invoice number, invoice date and signature of the person who checked all the details of the items physically in pharmacy. The entry serial number in the register is written behind the purchase invoice.

Uses of Purchase Bill Receipt Register:

- In case if a purchase invoice is lost one can find party name and product quantity.
- The person writing in the register becomes confident enough of the items received as the entry is done as soon as the bills are stamped.
- In case details of any items were inaccurately checked, the person who received the order can be caught easily as he/she also have to sign while writing down the details.

Format of Purchase Bill Receipt Register

Sr No.	Receiving Date	Item Name	Invoice Number	Invoice Date	Sign
0025	7/11/2019	ABC Pharma	ABC123	6/11/2019	
		Drug A			
		Drug B			
		Drug C			
0026	7/11/2019	DOF Pharma	GHDS001	7/11/2019	
		Drug L			
		Drug M			
0027	7/11/2019	OEL Medicals	TUSK89	7/11/2019	
		Drug W			
0028	8/11/2019	TUSV Pharmaceuticals	REV14	8/11/2019	

Before the entry of purchase bill in the computer system rate checking takes place.

Before going to calculations, the rate is first directly checked with previous net rate, if they are similar, purchase manager directly calculates the sale rate, if not first net rate is calculated and then purchase manager calculated the net sale rate.

3. Purchase Rate Checking

If the MRP of drug 'X' is Rs 200 on the purchase invoice inclusive of 12% GST, the rate can be checked by the following calculations:

MRP - Tax (GST) percent - Margin given by the Supplier (Market Margin on a product by supplier)

$$200 - 10.71\% - 15\% = 151.79$$

The purchase rate given by the supplier on drug 'X' should be equal to Rs 151.79. If the amount exceeds than Rs 151.79, a revised copy of the bill is ordered by the pharmacy to the supplier.

Note 1. If we add 12% to 100, we get 112, but if we deduct 12% from 112, we get 98.56.

Hence 10.71% is deducted from MRP.

Note2. Margin given by the Supplier is different for different items.

4. Setting of Sale Rate

After checking the purchase rate given by the supplier, the sale rate is calculated by the following calculations:

Suppose in the above example pharmacy get a 6% additional discount; the net rate is calculated by deducting 6% from purchase rate which will be $151.79 - 6\% = \text{Rs } 142.68$.

Net rate + Pharmacy Margin + Tax = Sale rate

$142.68 + 18\% + 12\% = \text{Rs } 188.57$

Note 1. If scheme is provided for an item like 12 + 2, net rate can be calculated by using following calculations:

$(\text{Total quantity of item received} - \text{Quantity of scheme}) * \text{Sale rate} / \text{Total quantity of item received}$

Net rate = $(14 - 2) * \text{Sale Rate} / 14$

All other calculations remain same as above.

Note 2. Usually in pharmaceutical products, retailers' margin is kept at 16%, 18%, and 20% while stockist margin is kept at 8%, 9% and 10%.

After updating the purchase invoice in the computer system, the bill is passed by the purchase manager and three more details are written by the purchase manager, which are purchase number generated by the software, passing date (the day on which bill was passed) and the amount payable to the party. This bill is filed serially in purchase report index file. The new index file is used after every 10 days that is 3 files for a month. This index file is then sent to the accounts department on the 10th day of each month.

Barcodes are printed once the purchase invoice is stored in the system. Two full-time personnel are used to stick the barcodes on individual units of items. The items with barcodes are placed on their own place by 9pm at night. The whole above process from receiving the items to items going on their own place with barcodes on it takes approximately a day to complete.

5. Store Management

Pharmacy Stock Management:

- Drugs which are ordered in bulk are kept where wholesale stock is held, and just 1 - 3 boxes are kept in the front pharmacy.
- Drugs are stored alphabetically on shelves in front pharmacy, cold storage and the place where wholesale stock is stored.

- Shelves of high risk, sound alike, look alike, anti-cancer and narcotics drugs are marked and easily visible.
- Surgical, ointments, antibiotics, injectables and syrups are kept separately and can easily be found on their own place.
- FIFO system is used in the pharmacy.
- The products which are yet to be barcoded are kept in the red shaded area shown in figure 10 and which are already barcoded are kept on their respective place.

Storage Conditions:

- The temperature of cold storage is kept at 2 to 8-degree Celsius.
- The temperature of the refrigerator is maintained at 8 to 15-degree Celsius.
- The room temperature is maintained at below 30 degree Celsius.
- Power is backed up by generators in the whole pharmacy in case of power outages.
- Daily temperature recording takes place by pharmacy personnel.

Safety Measures:

- There are three fire extinguisher, eight smoke detectors and one fire water pump in case of fire emergencies.
- Surveillance cameras cover each part of the pharmacy.
- Protocols for a code red (fire), code blue (medical emergency), code yellow (external disaster), code black (internal disaster), code violet (violence likely) and code pink (child abduction) are clearly mentioned on a paper in front pharmacy.
- List of anticancer, narcotics, lookalike, soundalike and high-risk drugs are mentioned on a paper, visible in front pharmacy.

6. Dispensing

When the patients come to the pharmacy with prescriptions, the prescriptions are first collected and kept in the tray. Prescriptions are kept in such a way that the patient receives the drugs on a first come first serve basis. Personnel working in pharmacy takes the prescription removes all the items as per prescriptions and keeps it in a tray. This tray is taken to the billing counter, and the biller crosses checks all the items as per prescription, if there is full strip or syrup, it is scanned by the barcode scanner or else information is manually entered in the software. Sale bill is generated which is then exchanged for money at the counter.

Note 1. Prescriptions of chemotherapy patients come in preprinted format, with a physician just circling down the items and quantities required. If additional drugs are required for such patients, it is written on a separate page.

Note 2. There are two types of sale bills generated by the software depending upon the patients, cash bills and credit bills; credit bills are given to empaneled patients.

7. Managing Returns and Expiry

BMCHRC also accepts the return of the drugs at the same rate as sold. A patient comes with medicines he wants to return. Sale return bill is generated in the system. Only the items which were sold and mentioned in the bill are accepted, and the refunded amount is given to the patient.

Note 1. Cold storage items are not accepted by the pharmacy due to quality issues.

Note 2. Four copies of sale and sale return bills are generated for the empaneled patient; one copy is given to the patient, one is kept with the pharmacy, two copies are given to the accounts department, out of which one copy is sent to the concerned department by the accounts department.

For cash patients only two copies are removed, one for the patient and other for the pharmacy.

Expired products are collected and returned to the respective vendors within three months of its expired date. If the drugs are expired for more than three months and are not returned to the supplier, the loss is beared by the pharmacy.

Problem Statement

The new barcoding system was implemented by the pharmacy to improve customer satisfaction at the point of sale. Though pharmacy was successful in achieving that goal, the barcoding system also brought some problems in the pharmacy. There was a need in changing the existing operations with the new operations in inventory management to get the desired results.

Research Question

What is the impact of the barcoding system on inventory management in pharmacy store ?

Objectives

- To study the impact of the barcoding system in a pharmacy store.
- To identify the problems faced by personnel working in a pharmacy with the new system.
- To compare the old system with the new system.

Scope

This study is limited to BMCHRC pharmacy in Jaipur. The barcoding system was newly started from 1st February 2019 and is not at 100% capacity. The conclusions drawn from this report may or may not be valid for all pharmacies who have already adopted a barcoding system. The report is made to identify the impact of barcoding system in this pharmacy and draft the suggestions to improve the system. Respondents to the questionnaire were assured that their responses would not be shown to anyone.

Organisation Profile

Name: BMCHRC Pharmacy, Jaipur

Type: Non – Profit Organization

Date of Establishment: 22nd October 1999

Address: BMCHRC, Jawahar Lal Nehru Marg, Bajaj Nagar, Jaipur, Rajasthan 302017.

Working Hours: Stays Open 24/7

Number of total staff working as on 17th April 2019: 27

Chairman: Shri Navrattan Kothari

Pharmacy Head: MrMahendraGolecha

Mission: To provide “*Affordable Care with Human Touch*” to all sections of the society irrespective of economic considerations.

Message: Medicines are being dispensed on subsidized rates, and the considerable discount is offered to all. It is well equipped with modern infrastructure that facilitates proper storage of medicines and is efficiently managed by a team of professionals. Moreover, to ensure access to and appropriate use of medicines with the ultimate aim of the well-being of the patient, the department has employed well trained and educated pharmacists. To fulfil the norms and regulations of the concerned government departments, all necessary required licenses are maintained at all times

Literature Review

Year	Author	Country	Objective	Data	Methodology	Conclusion
Jan 1, 2015	Alan R. Oldland Larry K. Golightly Sondra K. May Gerard R. Barber Nancy M. Stolpman	Aurora, Colorado	To measure the effects associated with the sequential implementation of electronic medication storage and inventory systems and product verification devices on pharmacy technical accuracy and rates of potential medication dispensing errors in an academic medical centre.	Technical error rate with conventional Unit dose drug delivery system = 0.157% Technical error rate with barcoding system = 0.137% Technical error rate with intensified staff training in the use of barcoding system = 0.0050%	During four 28-day periods of observation, pharmacists recorded all technical errors identified at the final visual check of pharmaceuticals before dispensing.	Pharmacy Barcoding systems provide complementary effects that improve technical accuracy and reduce the incidence of potential medication dispensing errors if this technology is used with comprehensive personnel training

April 28, 2014	Chaowalit Monton Laksana Charoenchai Jirapornchai Suksaeree	Pathum Thani, Thailand	The study aimed to improve the purchasing and inventory management system to a checkable and transparent manner.	Retrospective data was collected from January 2010 to December 2012. After identifying problems and solving them, key performance indicators from January 2012 to May 2012 were collected, and results were compared.	Data of the rate of approved purchasing documents, rate of correct received products, destroyed, expired products, reserved products, and product shortages were taken into study	The improved stock management and purchasing system, which was developed by the pharmacists was successful. Rate of correct received products was increased, the rate of destroyed or expired products and rate of shortages were decreased, the rate of reserved products was not more than three months.
Januar	OgwoEme	Unwana,	The study was	Customised	Rapid	The work has

y 8, 2018	Uchenna Ugboaja C.A. Faustina Odinakachi Uwazuruike Chukwu UkaUkpai	Nigeria	based on computerising the existing manual sales and inventory system of pharmaceutical stores, thereby in the timely generation of information for effective decision making of the pharmacy management	application as per pharmacy needs was developed and used by the pharmacy	Application Development	proved that for effective and efficient use of a computer- based drug sales and inventory control system, an intuitive and flexible user interface plays an important role.
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Research Methodology

Study Design: Descriptive Research

Sample Size: 24 Staff Members (88.89% of total staff)

Sampling Method: Convenience Sampling

Methods of Data Collection: A questionnaire is used to collect the primary data, and secondary data was collected by browsing various articles and publications on the internet.

Sample Design

Sampling Units: Staff working in BMCHRC pharmacy

Sampling Area: BMCHRC Pharmacy, Jaipur

Time: 19th February 2019 to 19th May 2019

Data Analysis and Interpretation

Q.1 Do you think there was a need for barcoding system in the pharmacy?

Responses	Respondents
Yes	18
No	6
Total	24

Table 1. Need for barcoding system

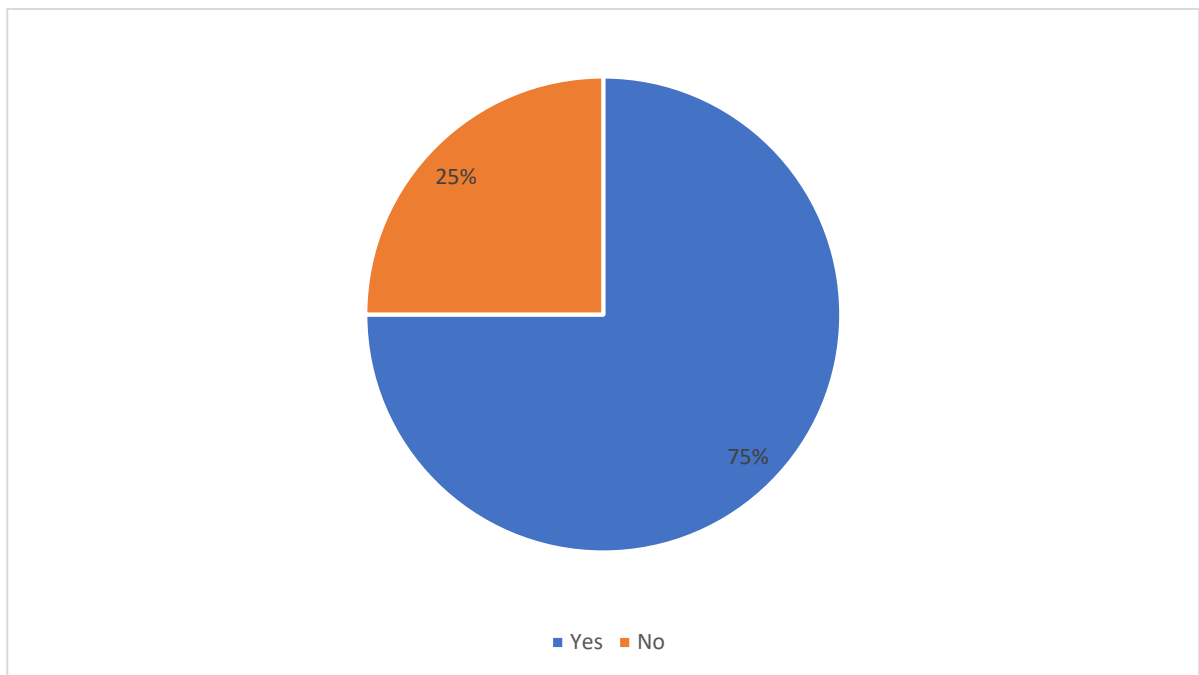


Figure 1. Need for barcoding system

Interpretation:

Three-quarter of the respondents responded to the need for a barcoding system in the pharmacy

Q.2 Rate the inventory management system before and after adopting a barcoding system

Before

After

Responses	Respondents	Responses	Respondents
Very Poor	4	Very Poor	0
Poor	8	Poor	6
Fair	10	Fair	4
Good	2	Good	13
Excellent	0	Excellent	1
Total	24	Total	24

Table 2. The overall inventory management system

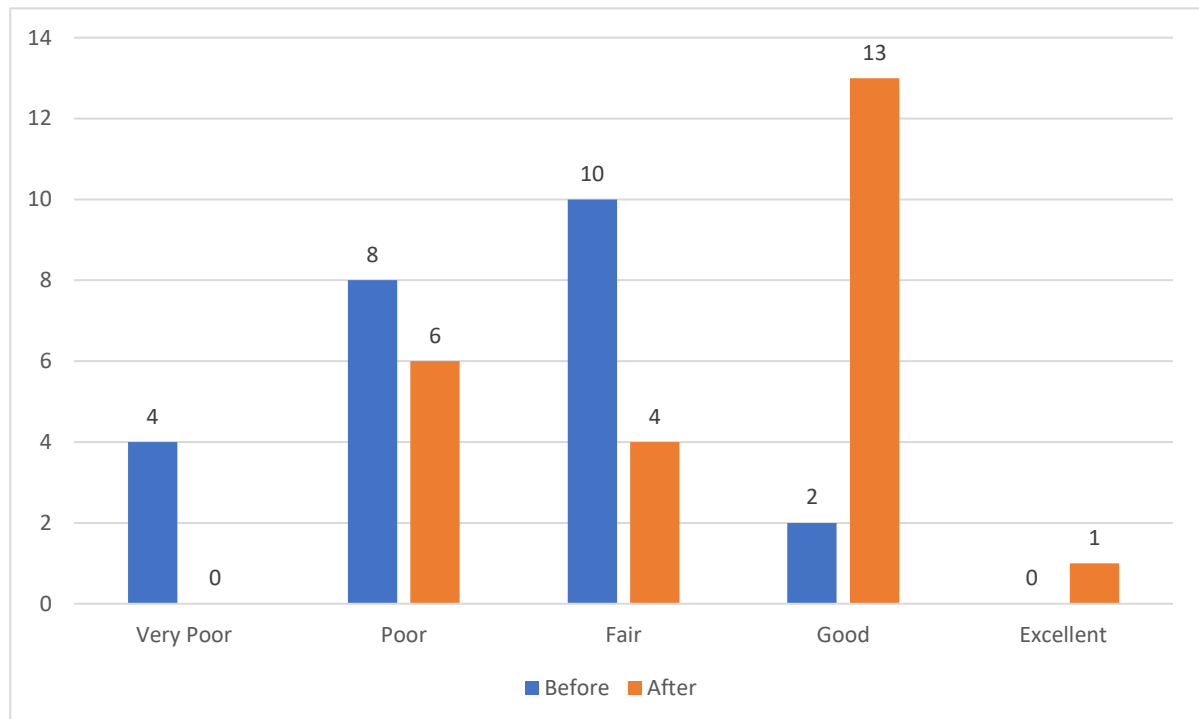


Figure 2. The overall inventory management system

Interpretation:

More than half of the pharmacy staff had a positive review of inventory management with a barcoding system.

Q.3 Rate the effectiveness of managing virtual and actual stock before and after adopting a barcoding system

Before

After

Responses	Respondents	Responses	Respondents
Unacceptable	1	Unacceptable	0
Does Not Meet Expectations	17	Does Not Meet Expectations	9
Meets Expectations	6	Meets Expectations	15
Exceeds Expectations	0	Exceeds Expectations	0
Total	24	Total	24

Table 3. Effectiveness of managing virtual and actual stock

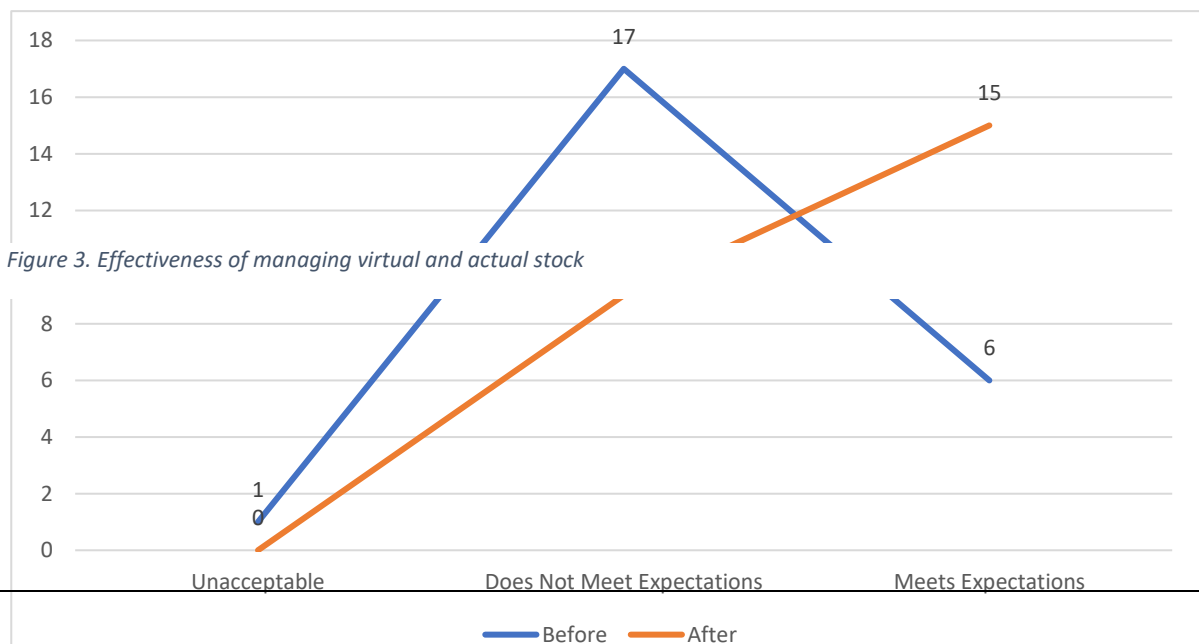


Figure 3. Effectiveness of managing virtual and actual stock

Q.4 Rate the overall quality of service to the customer at the point of sale before and after adopting the barcoding system

Before

After

Responses	Respondents	Responses	Respondents
Dissatisfied	7	Dissatisfied	3
Less Satisfied	13	Less Satisfied	9
Satisfied	4	Satisfied	10
Very satisfied	0	Very satisfied	2
Completely Satisfied	0	Completely Satisfied	0
Total	24	Total	24

Table 4. Quality of service to the customer

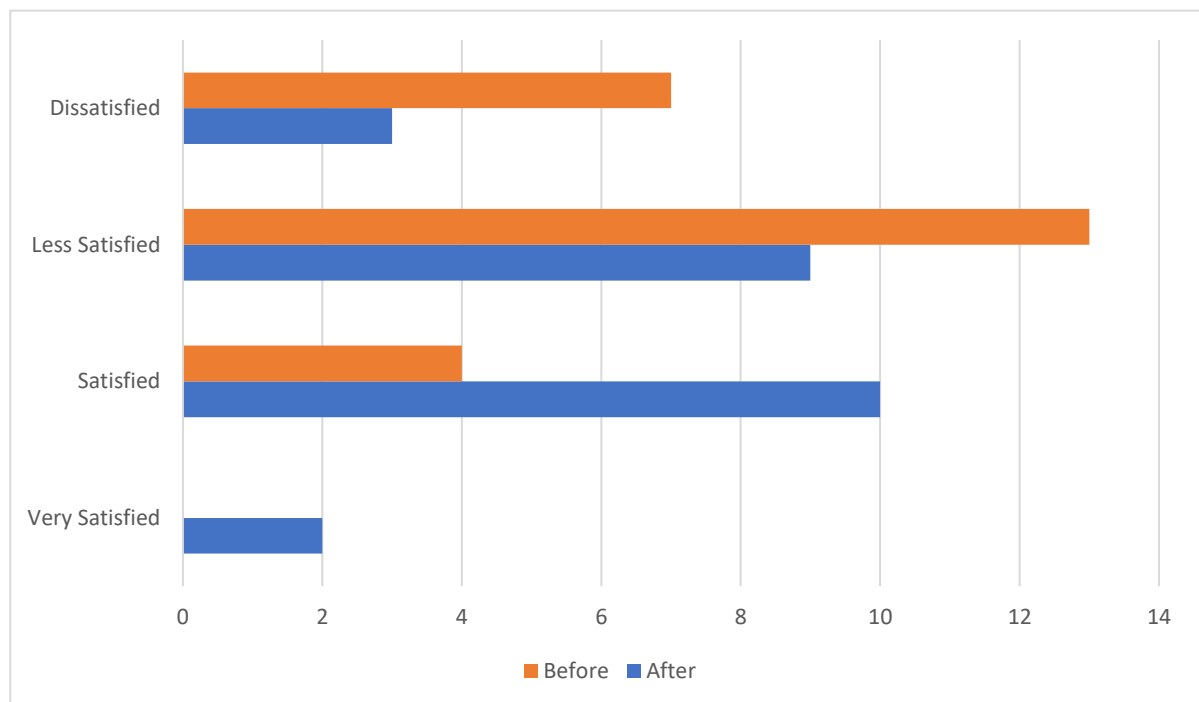


Figure 4. Quality of service to the customer

Interpretation:

50% of the respondents think the quality of service to customer improved after implementing new technology compared with 16.67%.

Q.5 Rate the workload capacities on the front end and backend processes, before and after implementing barcoding system

Before

After

	Frontend	Backend	Frontend	Backend
Low	0	17	8	0
Medium	5	5	16	2
High	19	2	0	22
Total	24	24	24	24

Table 5. Workload capacities on the frontend and backend

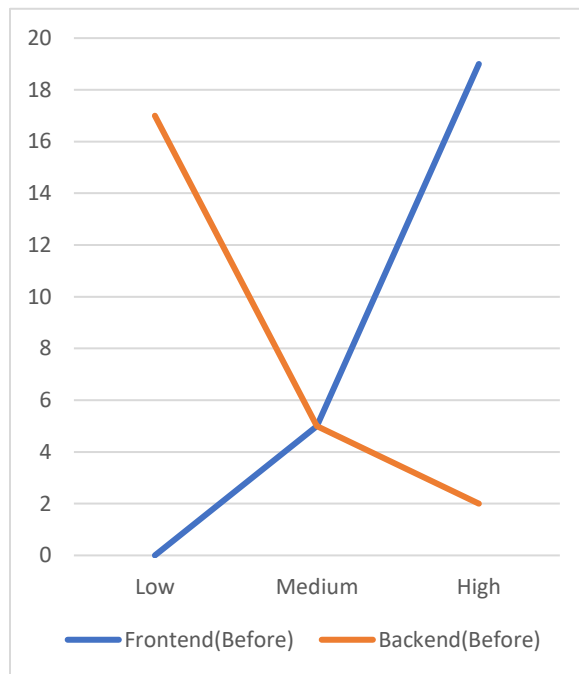


Figure 6. Workload capacity on frontend and backend before adopting barcoding system

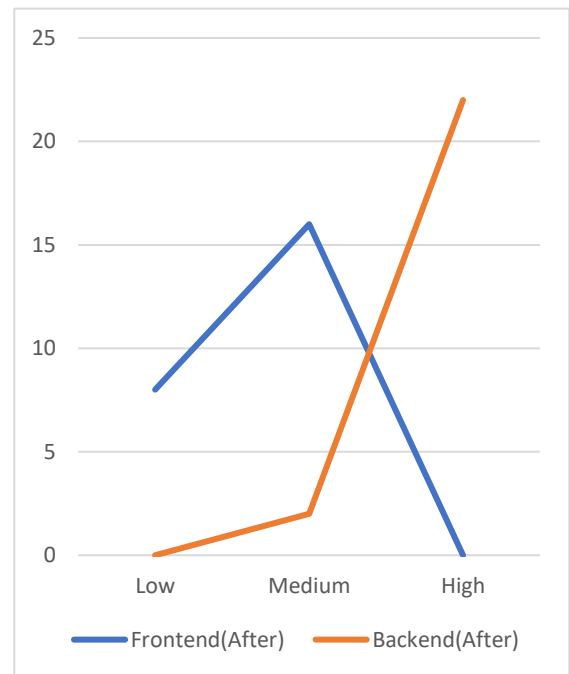


Figure 5. Workload capacity on frontend and backend after adopting barcoding system

Interpretation:

There was a high workload seen in the backend process of inventory management compared to low workload in the frontend after adopting the barcoding system and vice versa before adopting it.

Q.6 Rate the overall sales return process before and after adopting the barcoding system

Before

After

Responses	Respondents	Responses	Respondents
Very Poor	0	Very Poor	0
Poor	2	Poor	0
Fair	15	Fair	4
Good	7	Good	18
Excellent	0	Excellent	2
Total	24	Total	24

Table 6. Rating of sales return process

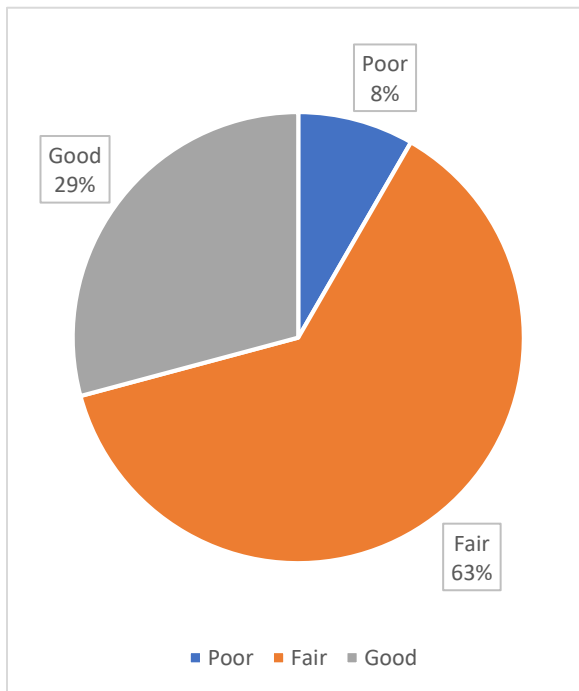


Figure 8. Rating of the sales return process before implementing barcoding system

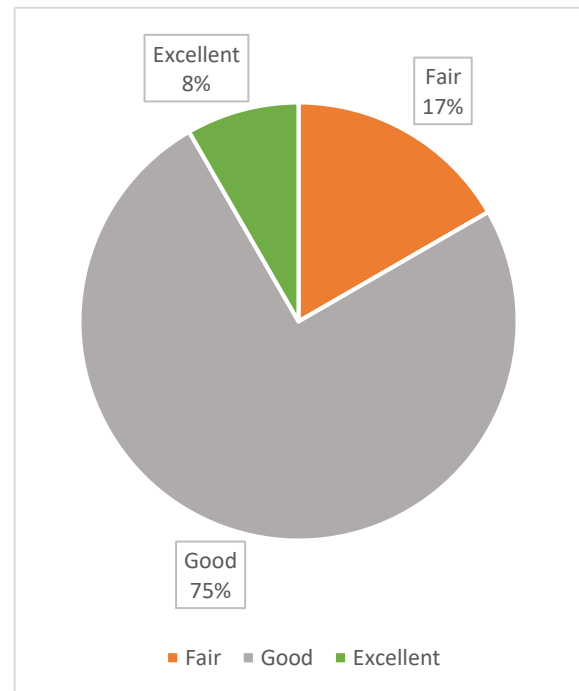


Figure 7. Rating of the sales return process after implementing barcoding system

Interpretation:

83.33% of respondents gave positive feedback in the sales return process after implementing barcoding system compared to 29.17%, an improvement of 54.14%.

Change Analysis

Criteria	Positive Change	Neutral	Negative Change	Total
Inventory Management System	17 (70.83%)	6 (25%)	1 (4.17%)	24 (100%)
Effectiveness in Managing virtual and actual stock	10 (4.17%)	14 (58.33%)	0	24 (100%)
The overall quality of service to the customer at the point of sale	12 (50%)	12 (50%)	0	24 (100%)
Workload Frontend	24 (100%)	0	0	24 (100%)
Workload Backend	0	2 (8.33%)	22 (91.67%)	24 (100%)
Sales Return Process	15 (62.5%)	9 (37.5%)	0	24 (100%)
Total	78 (54.17%)	43 (29.86%)	23 (15.97%)	144 (100%)

Table 7. Change Analysis

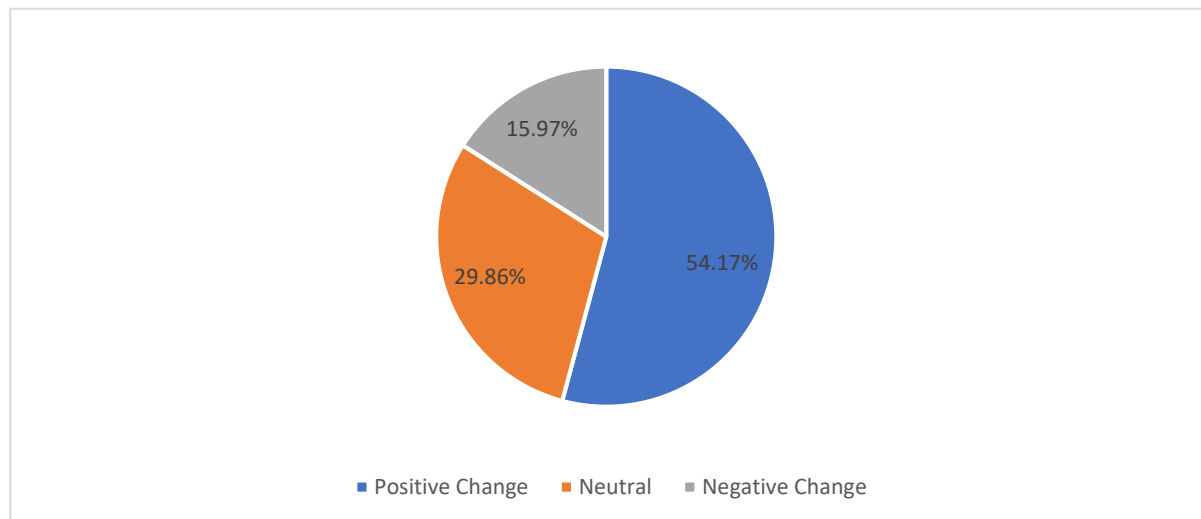


Figure 9. Change Analysis

Interpretation:

A total of 54.17% positive change was seen in the responses.

Observations and Conclusion

- The inventory management in the store improved by adopting new technology.
- There were fewer errors while checking actual and virtual stock by implementing barcoding system.
- The new system improves the quality of service to the customer at the time of point of sale.
- The workload on the frontend and backend processes of inventories has vice versa effect.
- The sales return process was seen to improve by using a barcoding system.

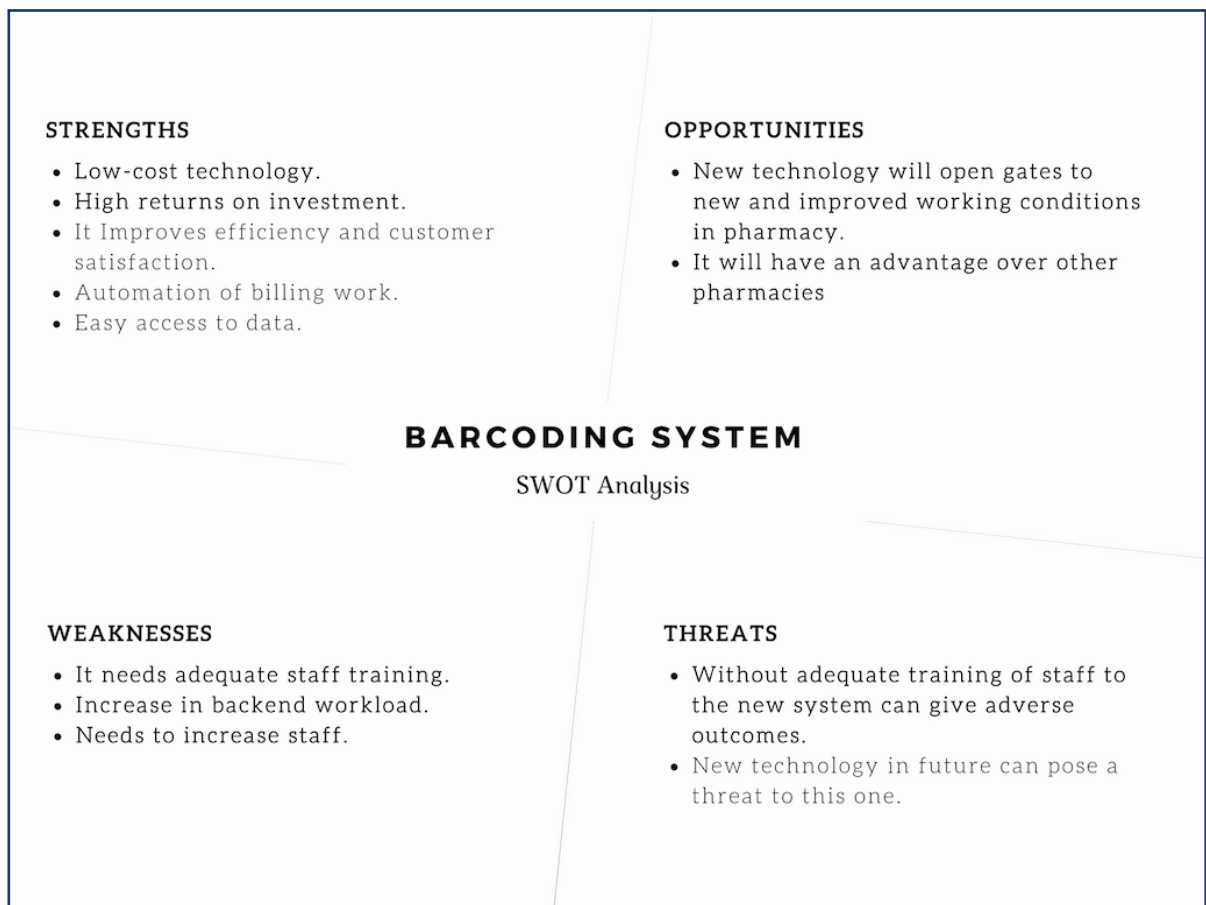


Figure 10. SWOT Analysis of Barcoding System

Suggestions

- Changing the place of barcoding operations

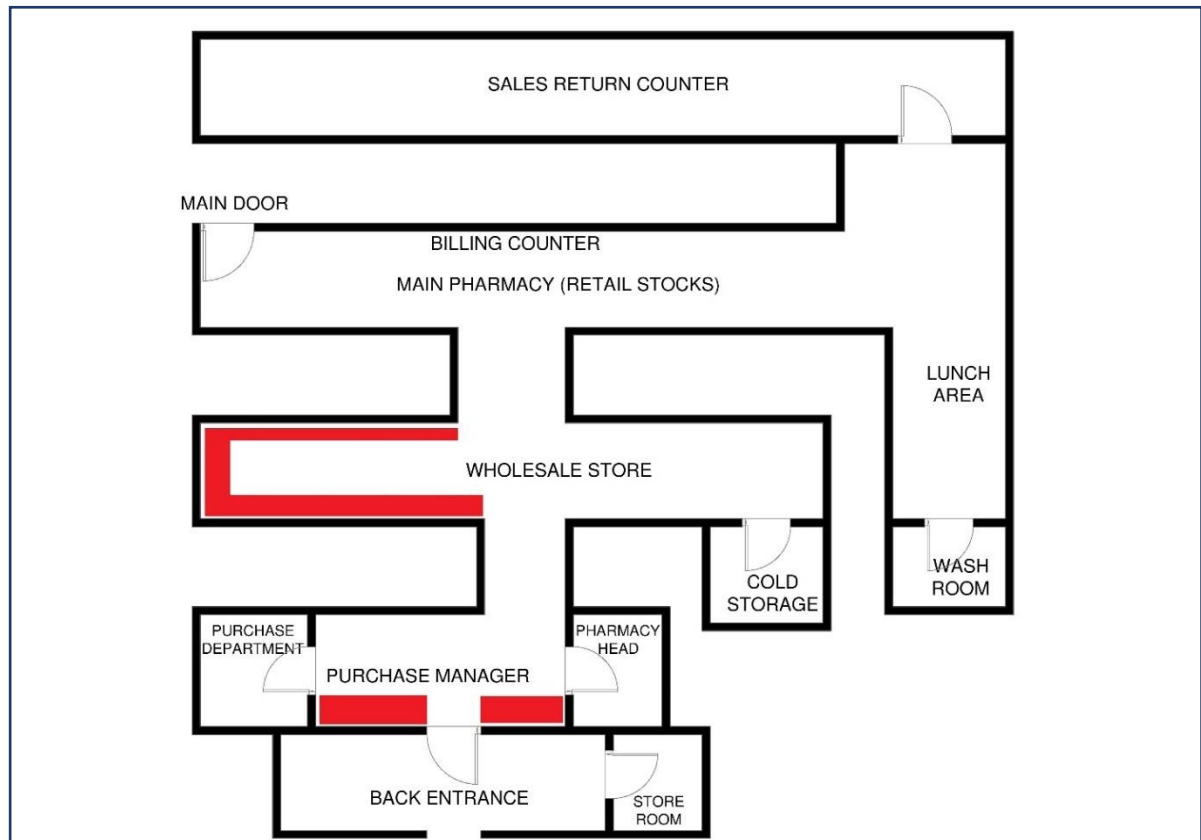


Figure 11. Pharmacy Layout

Currently, the operations are taking place in the red area, but there is enough place to carry out all the operations in the back entrance area.

- The number of staff should increase to five people from two
- People assigned to the task of barcoding should only perform that task daily.
- Employees assigned to the barcoding should be trained appropriately, to avoid mistakes like sticking barcodes of false batch number or sticking the wrong barcode on the wrong product.
- The autonomy of performing the tasks like collecting money should be given to the employees working at the point of sale and customers or patients should be appointed to counter numbers, it will improve the effectiveness in the dispensing of medicines to the patients.
- It should be made sure that the barcoding of products is at 100% capacity.

Appendix

Impact of Barcoding System in Inventory Management of Pharmacy

Q.1 Do you think there was a need for barcoding system in the pharmacy?

☐ Yes

☐ No

Q.2 Rate the inventory management system before and after adopting a barcoding system

Before

☐ Very Poor

☐ Poor

☐ Fair

☐ Good

☐ Excellent

After

☐ Very Poor

☐ Poor

☐ Fair

☐ Good

☐ Excellent

Q.3 Rate the effectiveness of managing virtual and actual stock before and after adopting a barcoding system

Before

☐ Unacceptable

☐ Does Not Meet Expectations

☐ Meets Expectations

☐ Exceeds Expectations

☐ Far Exceeds Expectations

After

☐ Unacceptable

☐ Does Not Meet Expectations

☐ Meets Expectations

☐ Exceeds Expectations

☐ Far Exceeds Expectations

Q.4Rate the quality of service to the customer at the point of sale before and after adopting the barcoding system

Before

- ☐ Dissatisfied
- ☐ Less Satisfied
- ☐ Satisfied
- ☐ Very Satisfied
- ☐ Completely Satisfied

After

- ☐ Dissatisfied
- ☐ Less Satisfied
- ☐ Satisfied
- ☐ Very Satisfied
- ☐ Completely Satisfied

Q.5 Rate the workload capacities on the front end and backend processes, before and after implementing barcoding system

Frontend (Before)

Backend (Before)

Frontend (After)

Backend (After)

☐ Low

☐ Low

☐ Low

☐ Low

☐ Medium

☐ Medium

☐ Medium

☐ Medium

☐ High

☐ High

☐ High

☐ High

Q.6 Rate the overall sales return process before and after adopting the barcoding system

Before

- ☐ Very Poor
- ☐ Poor
- ☐ Fair
- ☐ Good
- ☐ Excellent

After

- ☐ Very Poor
- ☐ Poor
- ☐ Fair
- ☐ Good
- ☐ Excellent

Q.7 Any Suggestions

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