DTIL PROJECT REPORT

ON

Medicine Tracking And Distribution

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F.Y. BTech CY (Cyber Security)

GUIDE

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CERTIFICATE

This is to certify that

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(F.Y. BTech CY (Cyber Security))

Have successfully completed their DTIL project report On

Medicine Tracking And Distribution

Toward the partial fulfillment of Bachelor's Degree
In Cyber Security During academic year
2024-2025

Prof. Pravin Chokakkar. Dr. Ajit Muzumdar.

ACKNOWLEDGEMENT

We extend our heartfelt gratitude to all who in various manner contributed to making our project effort possible as well as successful, from there sounding support and invaluable guidance received from friends .

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We shall also thank Sanjivani University,kopargaon for making our essential resources and encouragement available to us through its environment. The boost and commitment of the university to innovative work motivated the current literature.

We owe a sincere thanks to everyone for the collective efforts involved. They have ensured the success of the project and have earned deep gratitude.

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SDG: TOPIC SELECTION

The SDGs do play a great role in shaping a vision for the better future; good health and well-being is definitely one of the key priorities (SDG). Our group has chosen this critical challenge to address as "Medicine Tracking and Distribution," realizing that improving access to effective and safe medicines has a vital importance for all stakeholders. The availability of basic drugs is a global issue. Its lack in underserved regions leads to shortages and a high rate of counterfeits and wastage as a result of ineffective systems of distribution.

As an answer to this challenge, we are developing a prototype machine: an Automated Tracking Machine (ATM) for drugs. This innovative solution is looking into streamlining the distribution of medicine, ensuring that these products are tracked efficiently from point of manufacture to end-users. The device will have the latest technological advancements in real-time monitoring of the inventory, alert systems for automated restocking, and secure dispensing to avoid misuse and authenticate products. The integration of data analytics will also allow our device to predict demand patterns to cut waste and enhance supply chain efficiency.

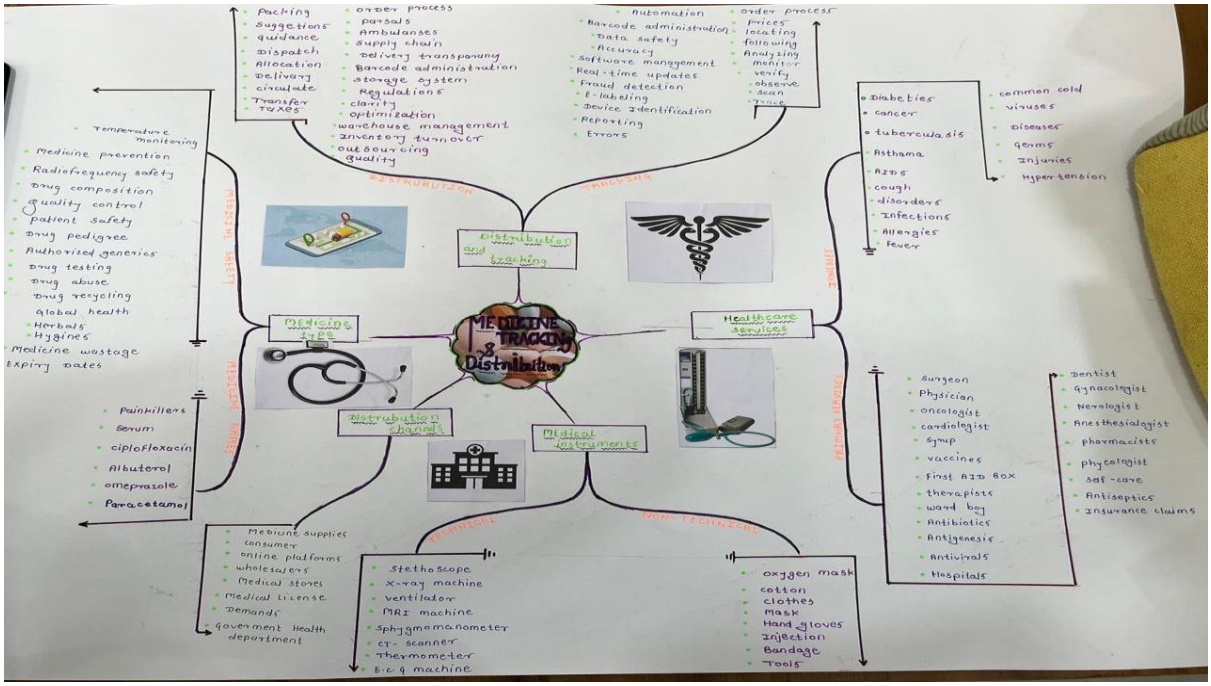
Our project seeks to be a discovery platform of new, more efficient ways to distribute medicines, especially for those remote or resource-poor areas. By using automation and data-driven insights, we are working to improve the availability and distribution of quality medicines, thereby improving healthcare outcomes and saving lives. We are contributing to the global efforts of achieving SDG by fostering healthier communities and ensuring that no one is left behind in the pursuit of good health.

MIND MAP

A mind map is a visual representation of ideas, concepts, and information that are connected to a central idea or topic. It is a diagram that uses words, images, colors, and shapes to create a map of thoughts and ideas. Our mind map for medicine tracking and distribution begins with the central idea, branching out into five main areas:

- 1.Distribution and Tracking .
- 2.Instruments .
- 3. Distribution channels .
- 4.Types of medicine .
- Healthcare Services .

We writing related words to the main topics and also a subtopics and that also related to the our end-users.



5W1H MATRIX

The 5W1H (who, what, when, where, why, how) questions provide a broader picture of the project requirements, such that they make it easy to focus on any specific detail.

- Who: Builds and defines the audience, stakeholders and team members of a project.
- What: Determines the general goal of the project alongside its parameters and span.
- When: Provides a schedule for the project, including the relevant details of its milestones and timelines.
- Where: Shows the geographical area where the project will be executed, its resources and ecological factors.
- Why: Explains what is the need for the project and what the objectives and outcome for the project are.
- How: Presents the strategy, methodology, and technical specifications of the project.

These 5W1H Questions also stand in the matrix form in such categories as Distribution And Tracking , Medicine Type , Healthcare Services .

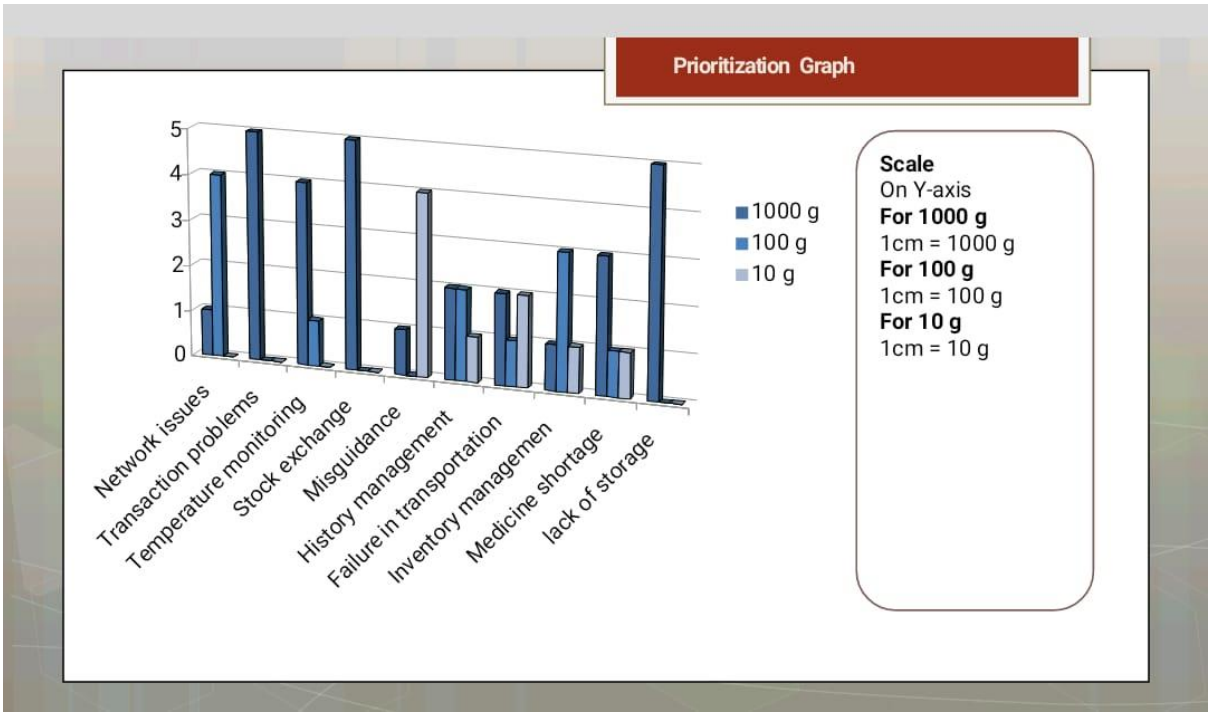
QUESTIONS/CHATEGARIES	DISTRIBUTION AND TRACKING	MEDICINE TYPE	HEALTHCARE SERVICES
WHEN	When should we replace or restock expired medicines. Ans : every month ending	When should I take this medicine, before or after meals	When should a patient seek emergency healthcare services Ans : in serious conditions
WHERE	Where are the medicines are stored before distribution Ans : Isolated rooms	Where can I find information about the different types of medicine available Ans : on medicine ATM app	Where can patients find information about available healthcare services in their area Ans : on medicine ATM app
WHOM	Whom should we assign for tracking and deliveries Ans : delivery boy	Whom should I consult before starting a new type of medicine Ans : healthcare provider	Whom should patients contact to schedule a healthcare service appointment Ans : To receptionist
WHAT	What tools can help in tracking medicine Ans : mostly Google maps	What types of medicines are available in market	What types of healthcare services are available
WHY	Why is important to track the medicine Ans : To deliver medicines on time	Why was this type of medicine prescribed for my condition	Why are healthcare services essential for public health
HOW	How we can identify the expire medicine	How does this type of medicine work in the body	How do healthcare services differ between urban and rural

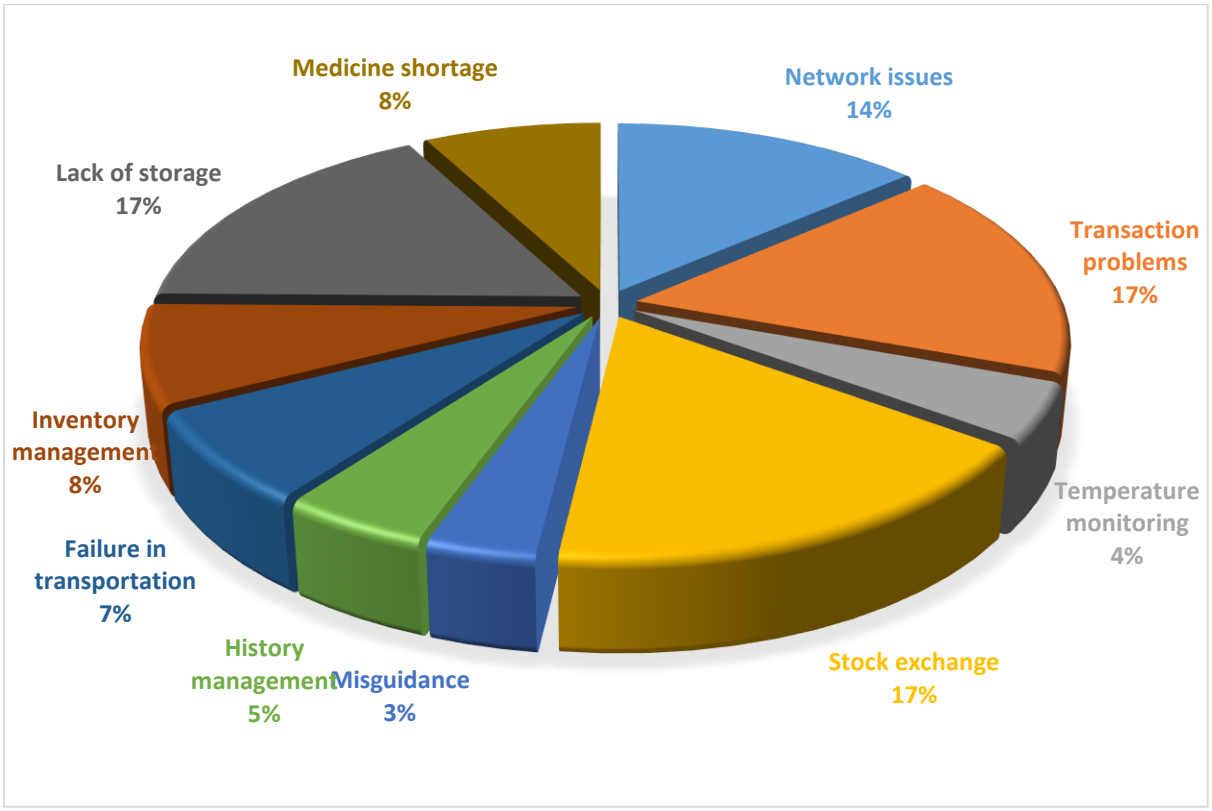
THEORY OF PRIORITIZATION

The theory of prioritization refers to the evaluation and ranking of tasks, features, or requirements based on their relative importance, urgency, and impact.In the project (Medicine tracking and distribution) we identify 14 problems and allocate weights like 1000, 100, 10, and then we select the highest-ranking problems and work on that Problems -

- 1.Lack of storage
- 2.Stock exchange
- 3.Transaction problems

	1000 g	100 g	10 g	Total
Network issues	4000	0	10	4010
Transaction problems	5000	0	0	5000
Transportation updates	3000	100	10	3110
Temperature monitoring	1000	300	10	1310
Lack of storage	5000	0	0	5000
Medicine shortage	2000	300	0	2300
Misguidance	1000	0	40	1040
History management	1000	400	0	1400
Failure in transportation	2000	100	20	2120
Quality maintaining	0	0	50	50
Stock exchange	5000	0	0	5000
Inventory management	2000	300	0	2300
Lack of accuracy	0	500	0	500
Lack of knowledge	3000	0	20	3020


Prioritization Graph
5
4
3
2
1
0
1000 g
100 g
10 g
Network issues
Transaction problems
Temperature monitoring
Stock exchange
Misguidance
History management
Failure in transportation
Inventory managemen
Medicine shortage
lack of storage
Scale
On Y-axis
For 1000 g
1cm = 1000 g
For 100 g
1cm = 100 g
For 10 g
1cm = 10 g


Medicine shortage
8%
Network issues
14%
Lack of storage
17%
Transaction
problems
17%
Inventory
management
8%
Temperature
monitoring
4%
Failure in
transportation
7%
History
management
5%
Misguidance
3%
Stock exchange
17%

PROBLEM STATEMENT

From the theory of priorization we identify three main problems

- How we can provide safety in transactions to users with medicine ATM.

Ensuring transaction safety in a Medicine ATM is crucial to protecting the sensitive information of users, financial data, and keeping trust in the system. Secure transactions prevent unauthorized access, ensure personal health data, and reduce the risk of fraud. A well-protected system enhances user confidence, ensuring compliance with data protection regulations and fostering broader adoption. By maintaining data integrity and ensuring privacy, transaction security plays a vital role in delivering reliable healthcare services through automated systems. Without it, the risk of breaches and financial loss increases, potentially undermining the effectiveness and trustworthiness of the Medicine ATM.

- How we can increase storage capacity in medicine ATM

Increasing the capacity of storing medicines in a Medicine ATM has been important for improving the efficiency, availability, and serving more users. An increased capacity allows for stockpiling of a large number of medicines, with less chance of shortages and a greater ability to access a wide range of medications. Furthermore, it reduces the interval of restocking, meaning lower operational costs and also downtime. With optimized use of space, the ATM can serve different user requirements while being compact, so service delivery is consistent within high-demand areas.

- How we can remove expired medicines with the help of stock exchange

Removing expired medicines through a stock exchange ensures efficient inventory management by allowing real-time tracking and trading of surplus or near-expiry medicines. This encourages redistribution to areas where demand exists, thereby avoiding waste and maximizing resource utilization. Through the use of stock exchange mechanisms, pharmacies and healthcare providers can identify and offload excess inventory before expiration, ensuring continuous supply chain efficiency. This is supportive of regulatory compliance, reduces environmental impact, and enhances overall public health outcome

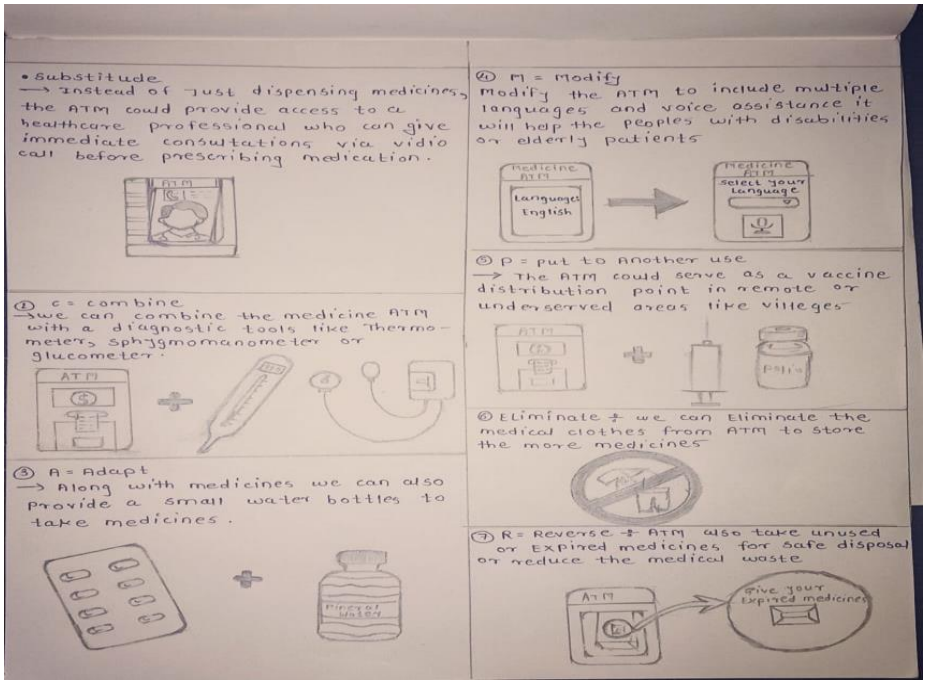
SCAMPER ACTIVITY

SCAMPER is a creative thinking technique that is used to find new ideas and solutions, modifying or enhancing some other ideas or solutions. SCAMPER is an acronym for the following terms :

- S - Substitute
- C - Combine
- A - Adapt
- M - Modify
- P - Put to Another Use
- E - Eliminate
- R – Rearrange/Reused

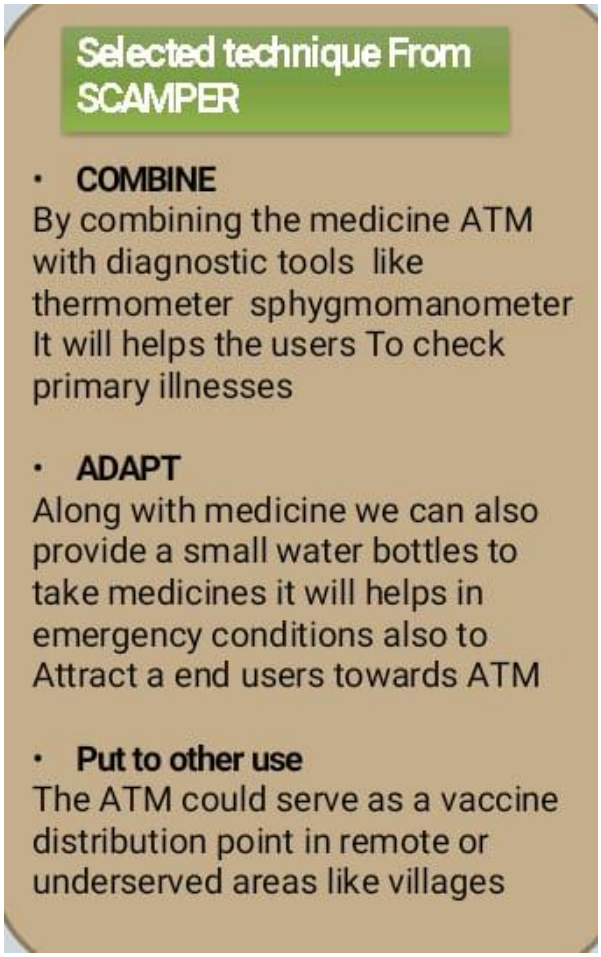
a) Substitute: Replace some component or element with something new.
b) Combine: Merge two or more ideas or products or services.
c) Adapt: Refine an existing idea or solution so that it fits a new context.
d) Modify: Alter an existing idea or solution in some way.
e) Put to Another Use: Apply an existing idea or solution to a new application.
f) Eliminate: Remove superfluous elements or simplify an existing idea.
g) Reused: Reorganize or restructure an existing idea or solution.

h)



For our project we choose three -

- 1.combine
- 2.Adapt
- 3.Put to another use



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END USER PERSONA

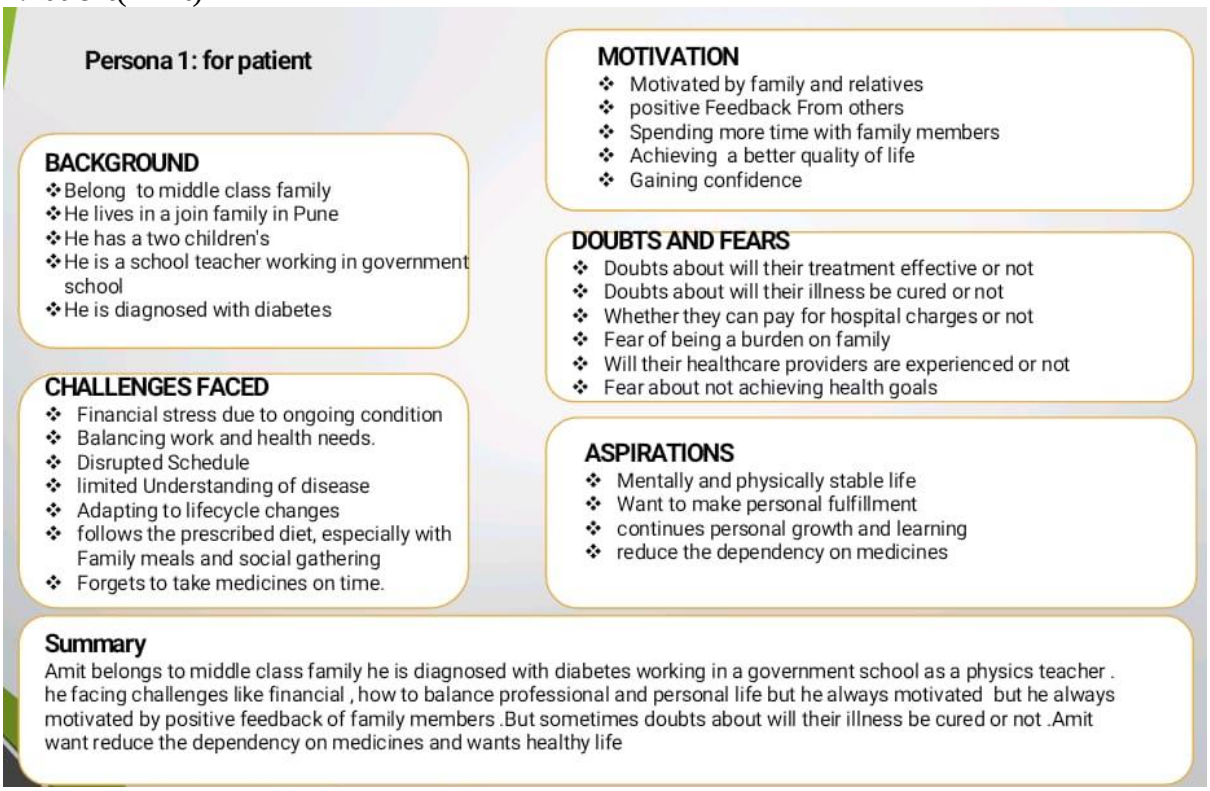
A persona is a detailed profile that represents a specific segment of a target audience, often used in marketing, design, or product development. Personas help teams understand their users or customers better by defining their characteristics, needs, goals, and behaviors.In persona we add points like

- 1.Background
- 2.Challenges Faced
- 3. Motivation
- 4.Doubts and Fears
- 5.Aspirations

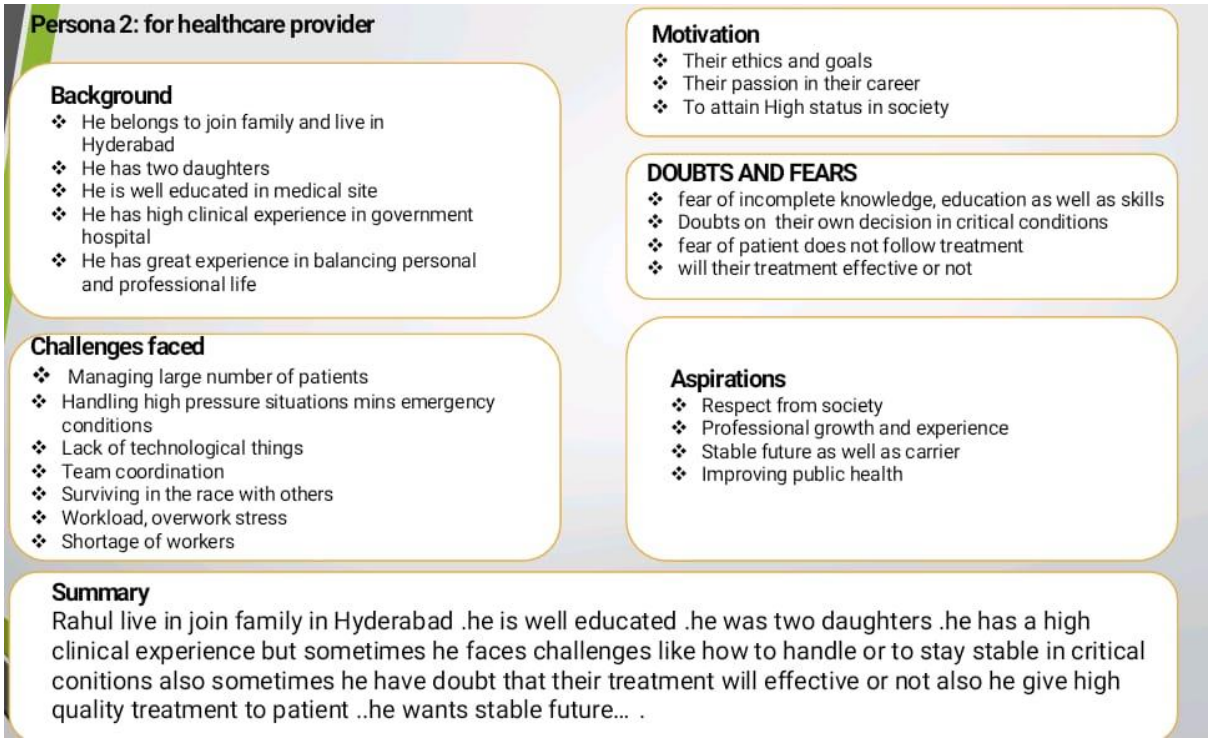
After there is a short summary of the end-user

We created two persona for end-users

- 1.Patient(Amit)



- 2.Healthcare Provider(Doctor)-(Rahul)

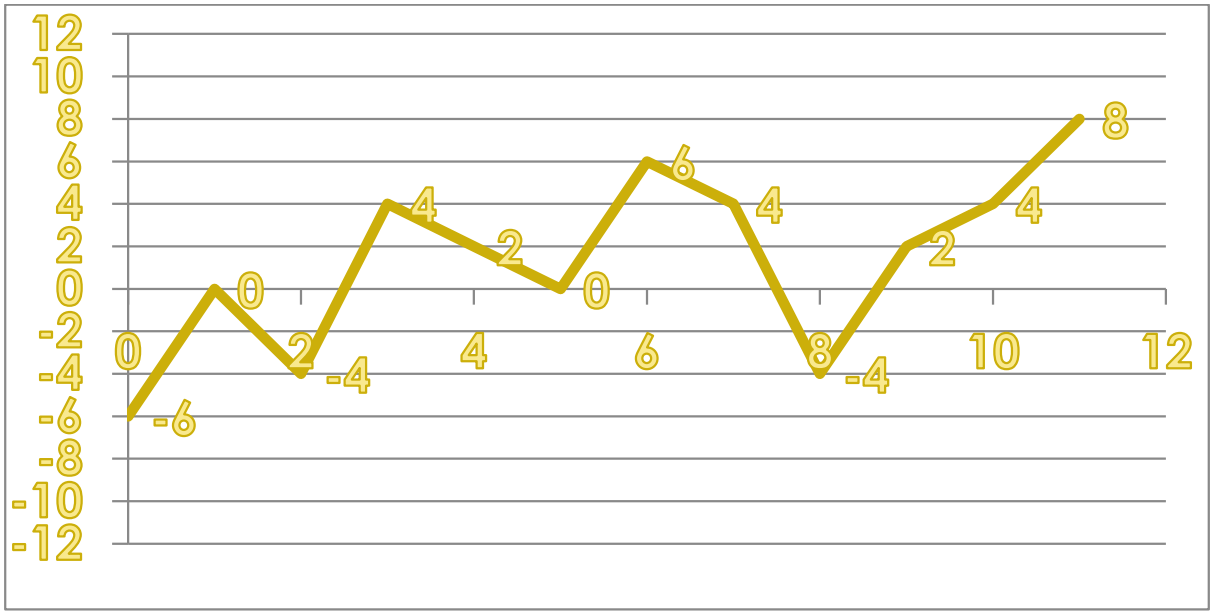


Journey Map

A journey map is a visual representation of the users experience, showcasing their interactions with a product, service, or system over time. Journey map is based on confidence level that where the end-user confidence is high or low. It will showing difficulty in using solutions and how we can solve this difficulty using journey map. Our team constructed two persona first is for old man as well as for young man.

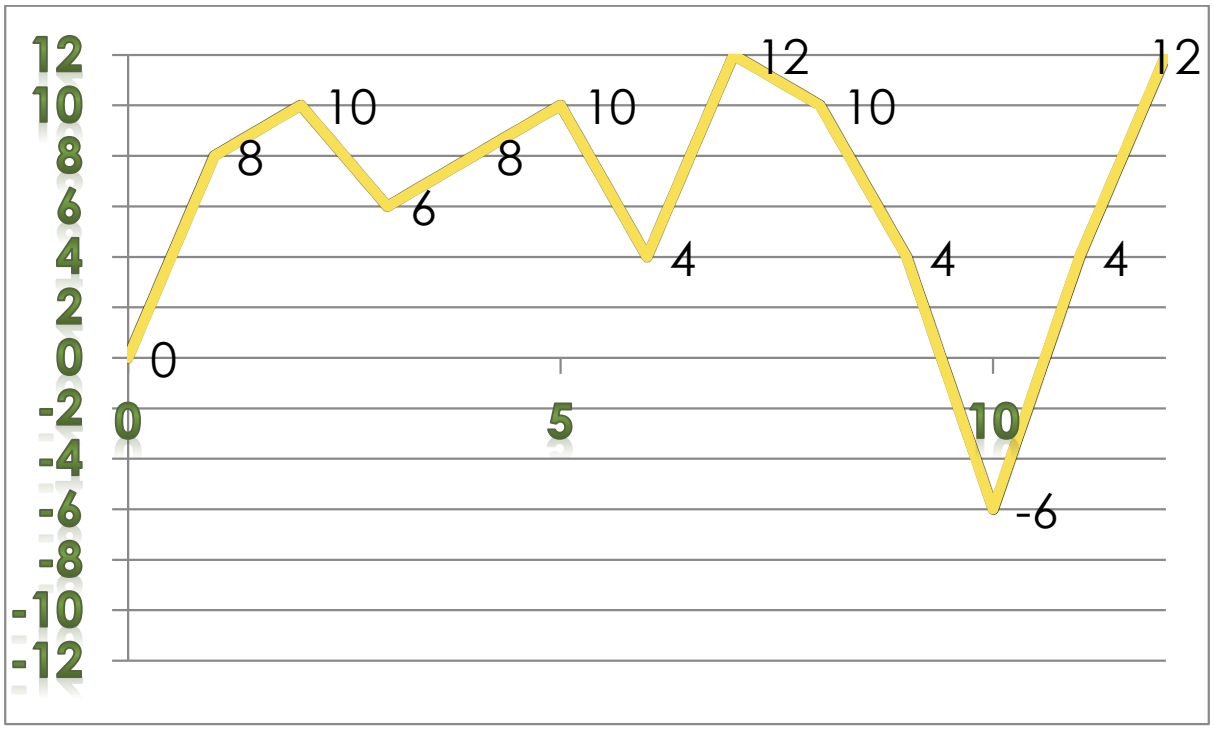
1.old man

- He felt dizzy because of overtime travelling through metro
- Saw the Medicine ATM on Metro station
- Asking to peoples how to use ATM
- Finally one boy told them about app
- Find sphygmomanometer over their
- Don’t know How to use sphygmomanometer
- Saw in the app
- After some time results will come
- Their reports are positive
- ATM suggest some medicines
- Get medicines from ATM
- After some time he feels good

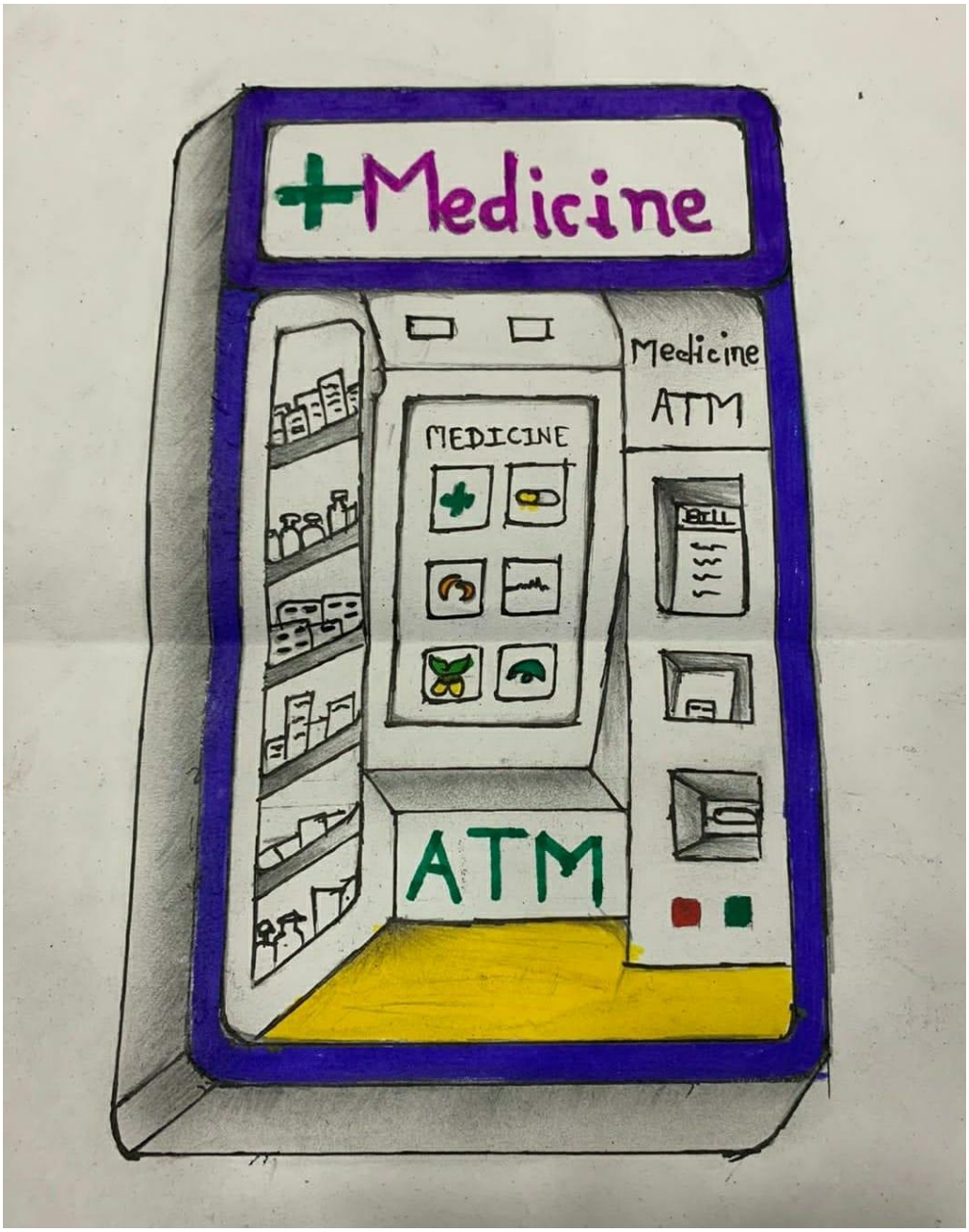


2.Young Man

- Amit approaches the medicine ATM for the first time.
- Call his friend and get positive review about ATM
- Try to get medicines from the ATM
- Saw the advertisement poster about medicine ATM instruction app
- Check the app first time and get all instructions about how to use ATM
- Fear about is their medicine available or not in the stock
- Check the stock in the APP
- Want to check oxygen level
- Find oximeter their
- Check for the cash payment
- Successfully did there payment
- Finally return to their home



Model prototype or Design



Working of the Model

- Medicine Display Section:
  The central area shows labeled buttons/icons with types of medicines or categories (e.g., tablets, capsules, syrups).Users likely select their desired medicine through these buttons.

- Inventory Storage Area:
  There are shelves on the left side, which are used to store medicines in an orderly manner.This section is probably automated for dispensing chosen items.

- Bill Generation Slot:
  A slot with the label "Bill" indicates that the machine can produce and print a receipt for the purchase.

- Collection Slot:
  A slot at the bottom right where the dispensed medicine can be collected by the user.

- ATM Labeling and Indicators:

The "ATM" label implies it functions like an automated teller machine, offering self-service.

work:

1. Selection:

The user interacts with the screen/buttons to choose the medicine they need.

2. Verification (Optional):

There could be an interface for entering a prescription code or verifying identification if prescription medications are involved.

3. Payment:

Payment may be made through cash, card, or digital wallet before dispensing.

4. Dispensing

The machine automatically takes out the selected medicine from the storage and dispenses it through the collection slot after confirmation.

5. Billing

A bill or receipt is printed with details of the transaction.

Discussion on the usability of the model

1. Advantages:

24/7 Availability: Provides around-the-clock access to essential medicines, particularly beneficial in high-traffic locations such as airports, railway stations, and hospitals.

Ease of Use: Simple interface with categorized buttons makes it easy for users to select the required medicine.

Convenient Access: Offers quick and convenient access to over-the-counter (OTC) medicines without needing to visit a pharmacy.

Automated Billing: The inclusion of a bill printing feature ensures proper transaction records and transparency.

Inventory Management: The model may allow for automated inventory tracking, enabling restocking alerts and minimizing stockouts.

2. Potential Challenges:

Prescription Validation: For prescription drugs, there is a need to restrict the use of specific drugs to authorized users. This can be achieved through features such as scanning prescriptions or using specific codes.

User Training: Users who are not conversant with the machine may need guidance or instruction on how to use it correctly.

Servicing and Refilling: Maintenance of the machine and replenishing stocks in due time ensure proper functionality, which might involve some logistical hassle.

Limited Medicine Variety: Due to space constraints, the ATM may only stock a limited variety of medicines, focusing mainly on common OTC drugs.

Technical Reliability: Ensuring that the machine operates without technical glitches is vital, especially in critical locations.

3. Suggested Improvements:

Multilingual Support: Adding language options to cater to diverse users in public spaces.

User Assistance: Including a help button or voice assistant for users who need guidance during the process.

Inventory Display: Showing real-time inventory updates so users can know which medicines are available before starting the transaction.

4. Use Case Scenarios:

Public Transportation Hubs: Travelers can quickly purchase necessary medicines during emergencies.

Hospitals or Clinics: Prescription filling after consultations.

Remote or Rural Areas: In areas where access to pharmacies is limited, basic medicines are available.

CONCLUSION

The Medicine ATM project revolutionizes the process through which prescriptions are accessed. The innovation aims at bringing a convenient, secure, and efficient solution that solves several pain points about the pharmacy experience, resulting in improvements in healthcare outcomes, patient satisfaction, and pharmacy operation efficiency.

The Medicine ATM reduces the waiting time, eliminates human errors, and avoids time-consuming manual processing by granting patients automated access to their prescribed medication. Patients can get their medication easily at any time, 24/7, through a user-friendly and secure interface.

The impact of the Medicine ATM is not only about the convenience of the patients but also on the management of patient care by healthcare providers. This is because by ensuring timely and accurate access to medication, healthcare providers can improve treatment outcomes, reduce readmissions, and enhance overall patient satisfaction.

The Medicine ATM has the potential to revolutionize the pharmaceutical industry, as it will affect healthcare management in a meaningful way. It addresses complexities and inefficiencies in the traditional model of pharmacies by offering a new solution, hence changing the face of delivering healthcare - more patient-centered, efficient, and effective.

Thank You