PHARMANEXT-INTELLIGENTAUTOMATIONFORHASSLEFREE MEDICINEDELIVERY

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Abstract:
PharmaNext is a pioneering project aimed at revolutionizing the medicine delivery process through intelligent automation. By integrating Artificial Intelligence (AI) and Robotic Process Automation(RPA), PharmaNext seeks to streamline healthcare logistics, enhance the accuracy of medication dispensation, and improve patient experience. The system leverages AI algorithms to predict and manage Inventory needs, ensuring timely delivery of medications while minimizing errors. RPA components automate repetitive tasks such as Order processing and tracking, allowing healthcare providers to focus on patient care. This project emphasized the importance of a hassle-free medicine delivery system, ultimately leading to greater efficiency in pharmaceutical services and better health outcomes for patients. By leveraging AI and RPA to optimize healthcare data and medicines supply which help to reduce waiting time of consumers and also avoid congestion over peak outpatient hours.

Keywords: **API Integration, Robotics in Automation, Real-time Data processing, Machine learning , QR Code scan, Medicine dispenser.**

I.INTRODUCTION

Nowadays, Patients suffers lot due to lack of medicine delivery on time due to peak hour congestion at pharmacy, this may lead to increasing waiting hours of patients due to stampede during emergency . It can also cause increase in workload of the Pharmacist to handle traffic and supply medicines to the customers especially at peak outpatient hours. To tackle these Problems this Pharmanext project come with the optimum Solution.To avoid congestion

as well as save the patients health by constantly Supplying the medicines with the help of AI and RPA to efficiently of medicine delivery on time based on constraints using QR Code Scanning . In this era,the world of piracy and counterfeiting has touched nearly every Product including medicines. The challenges of counterfeit medicine has increasing across the globe over the past many years. According to a WHO report, around 10.5% of the pharmaceutical Medicine in the markets of low or middle- income countries are fake.Hence, there is a need to develop a strong model to overcome the issues of counterfeit medicines. Moreover, the current industry Lacks clear visibility over the delivery of the drugs from the pharmaceutical company to the patients Keeping the challenges in Mind, we aim to develop a QR Code based model that can prevent Medicine counterfeiting and keep track of the drugs to the customer without any side effects. Thereafter, the distributor scan Medicine using QR Code, then deliver to the customer after receiving the correct prescription from the doctor which got already been acknowledged by the doctors based upon the constraints of the Pharmanext. The integration of digital technologies is transforming every aspect of Pharmacy practice. From electronic prescribing and automated dispensing to Telepharmacy and personalized medicine,these Innovations are creating a more efficient and patient-focused Pharmacy environment. ADS minimizes human error, reduces Medication waste and

leverage the use of these technologies for healthcare to harness the full potential in the role enhance inventory management. This Software streamlines workflows, enhances data accuracy, and improves overall efficiency.By leveraging AI and RPA to optimize Healthcare data and medicines supply which help to reduce Waiting time of consumers and also avoid congestion over peak Outpatient hours.

II.LITERATURE REVIEW

Many researchers have contributed to the field of Medicine delivery using automation with the help of AI tools in harnessing medications for patients.The optimum solution for the problem is carried out by reviewing the following prototype and its challenges in Mobile medicine supply over AI processing and automation system for drug delivery.

1. Develops a stochastic model to evaluate and analyse the Medicine delivery process by such an automated medicine delivery system. It model the automated medicine delivery by the Telelift AMD system using Queuing networks. But the analysis methods are particularly appropriate for the type of network and the objective chosen. Performance Evaluation of automated medicine delivery systems[1]

2. Automatic dispenser that could be controlled by an android phone,while also considering the importance of a

proper intake scheduler,remainder,and monitoring systems. As the hardware which refers to the Medicine dispenser and the software module for controlling using Mobile apps. To make the framework more user-friendly, it is intended to create a multi-user app and redesign the mobile Interface. An automated and online-based medicine remainder and dispenser [2]

3. To perform a variety of tasks, including compounding,dosing, forming, filling of medicinal products. Personalized medicine and rapid prototyping of drug for delivery. While 3D printing holds, there are still challenges to be addressed, such as regulatory issues, quality control, and the scalability of the technology. Innovative Robotic technologies and AI in pharmacy and Medicine : Paving the Way for the future of health[3]

4. CareFlo modules are Pre-built solutions which are designed to streamline manual processes, improving from electronic health record management and patient scheduling. Solutions enables the healthcare organizations to achieve digital transformation Quickly and efficiently, reducing manual efforts and maximizing Productivity within a short Time frame. securing sensitive data. Addressing this demands requires substantial investment in Skilled personnel, advanced technology, and efficient clinical and business processes. AI and RPA in healthcare-trends,

Use cases and benefits[4]

5. The elements of the smart Artificial Intelligence-based analysis and fundamentals further support the Medical 4.0 Culture with all the possible care providing units to the end patients. Medical 4.0 decreases the healthcare burden in the affluent Nations and offers good services to less developed countries, providing comprehensive and high-quality treatment. As a result, Healthcare institutions may no longer require physical location for everyday operations such as check-ups. Medical 4.0 technologies for Healthcare [5]

6. By leveraging cloud computing, healthcare providers can extract valuable insights from diverse and complex data sources. AI algorithms can analyse genomics, economic, demographic, clinical and Phenotypic data relieve healthcare staff of routine tasks, allowing them to focus on more complex cases.This challenge can be addressed through the adoption of TeleHealth applications and other technical methods that empowers medical professionals to remotely supervise. AI in TeleHealth: Revolutionizing healthcare delivery to every patients home[6]

7. Digital transformation in the pharmacy sector is significantly reshaping healthcare delivery , driven by the integration of cutting-Edge technologies like AI and Block chain. Prescription accuracy and Drug

management are engaged by e-prescribing software like EPICs MyChart and digital health Apps like Medisafe. Deficiencies in resilience-oriented practices for patients safety. Organizational and managerial factors in digital healthcare transformations.The Digital Transformation in Pharmacy : Embracing online platforms and the cosmeceutical paradigm shift[7]

8. QR codes help in verifying the authenticity of medicines,reducing the risk of counterfeit products entering the market.Enables consumers to access information about the medicine, including dosage,usage instructions,and safety information by scanning the QR code.This method can be ineffective at time owing to bias,repetition and security concerns. Medicine Traceability using QR code [8]

9. Integrates various aspects of pharmacy operations,from prescription Processing and inventory.ADS minimize human error,reduce medication waste, and enhance inventory management. This may take large amount of data with Trail cases to ensure optimum efficiency within time.Pharmacy innovations: How technology is revolutionizing medication[9]

III. EXISTING SYSTEM

The existing system in medicine delivery is traditional online pharmacy and Manual medicine delivery. The current medicine delivery system relied on Traditional online pharmacy models where customers place orders through Websites or mobile apps. These platforms function with limited automation,depending largely on manual processes such as prescription verification,Stock management, and order fulfillment. The functionality of the existing system follows six steps to reach the medicine delivery to the patients.

FUNCTIONALITY OF THE EXISTING SYSTEM:

1. Order Placement: Customers upload prescriptions or select medicines manually through an online platform or by pharmacy.
2. Prescription Verification: Pharmacists manually review and approve prescriptions
Which can be time-consuming.
3. Inventory Check: Stock availability is verified manually or through basic Inventory management software.
4. Order processing: Human intervention is required for packaging and Dispatching medicines.
5. Delivery Management: Logistics are handled using third-party courier services, Leading to potential delays.
6. Customer Support: Customer queries are managed by human agents, increasing Response time.

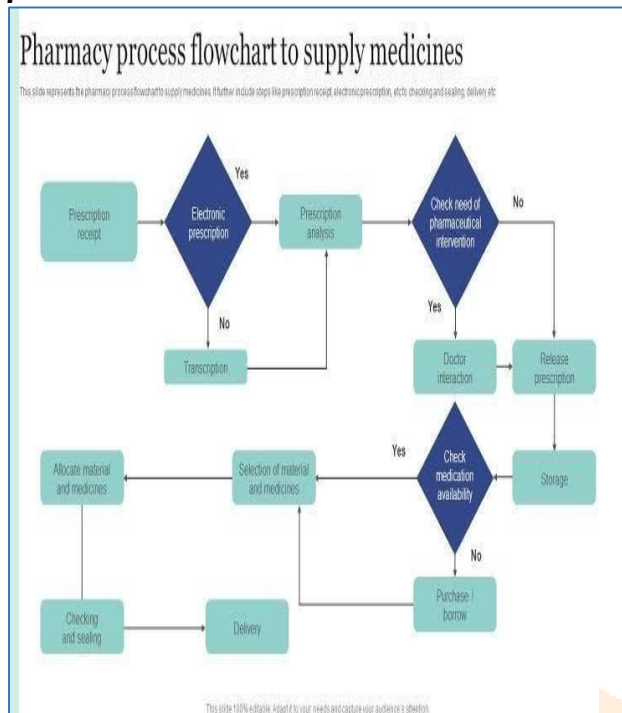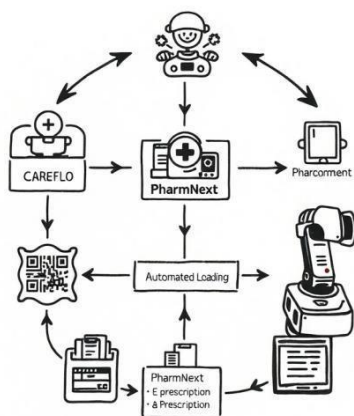*Flow chart of Pharmacy Management process:*

Fig1. Proposed System

Therefore, PharmaNext aims to integrate intelligent automation into the Medicine delivery system, addressing the challenges faced in traditional methods.Currently, the existing systems in pharmaceutical delivery are often manual, prone to errors, and inefficient due to the following reasons:

➢ Inefficient Order Processing
➢ Communication Barriers
➢ Lack of Optimization causing irrelevant medicine supply
➢ Difficulty in handling crowd over medicine distribution

IV. PROPOSED SYSTEMS

The proposed systems aims to transforms medicines delivery into a fully automated, hassle-free experience, minimizing delays and enhancing Customer satisfaction. PharmaNext enhances the existing systems by Integrating **Robotic Process Automation [RPA] and Artificial Intelligence [AI]** With the electronic core components to improve efficiency and accuracy.

AI powered Inventory Management uses predictive analytics to forecast Demand for medicines by preventing stock shortages and overstocking by dynamically adjusting inventory. RPA handles prescription verification reducing manual workload. AI cross-checks prescriptions with patient history to avoid incorrect dispensation. Smart dispensing robotic arms ensure precision in medicine packaging. Chat bot assists patients with medicine inquiries and order status updates. AI-based symptom checker for medicine recommendations (under regulatory compilance).

Integration with **Electronic Health Records [EHRs]** ensures prescriptions are automatically validated and updated in patient records. Automated Medicines fulfillment reduces long queues at pharmacies. AI scheduling Prevents excessive crowding during peak outpatient hours and also prevents unauthorized prescriptions by regulatory guidelines.

Flow Diagram of the proposed System:

Fig2. Proposed System

V. METHODOLOGY

The methodology involved in this project is integrating medicine supply with the Automation systems in the hospitals especially for outpatients. The design of the project looks like a ATM setup with the automation techniques involved in Dispensing drugs based on the insights fed by the Modules to perform respective tasks to satisfy the needs of the customer over the applications of AI tools and RPA technology which ensures efficient automation thereby robotic arms inside the PharmaNext Machine will function for prescribed drug supply based on QR code scanning of the E-prescription generated by the respective doctors for treating the patients during outpatient hours.

Modules needed:

- ✓ CareFlo Modules
- ✓ Electronic Prescribing and Medicines Administration [EPMA]
- ✓ Pharmacy Procurement Modules
- ✓ Automated Loading Modules [ALM]

VI. FUTURE ENHANCEMENTS

Since the project supports for the small-level supply of medicines in the hospital Pharmacy section especially for outpatients. But in future, with the help of upcoming technological support systems, it can possible to connect with Multiple hospitals and clinics for seamless prescription management and drug Supply. By enhancing the current system with block chain for drug authenticity,So that RPA bots to check compliance with healthcare regulations and prevent Counterfeit.

VII. CONCLUSION

Pharmanext is specially designed to reduce time loss and avoid congestion on emergency, it can supply medicines under the support of **AI AND RPA** by securely scanning **QR code** for E-prescription and provide necessary Medicines and also providing billing through online where cash collection Is undertaken. It enhances order processing, prescription verification,and Logistics,reducing human errors and improving accessibility. It also aims to redefine the medicine supply chain for seamless healthcare experience.This innovation not only ensures timely

access to medicines but also fosters patient-centric, reliable and scalable pharmaceutical Ecosystem. Because, **PharmaNext is not just a project--it's a vision for the future of intelligent healthcare Automation**.

VII. REFERENCES

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