

AUTOMATION IN HEALTHCARE USING RPA

Komal K. Lahane*¹, Ankita A. Sutar*²

*^{1,2}Department of MSc-IT, SIES (Nerul) College of Arts, Science & Commerce,
Mumbai, Maharashtra, India.

ABSTRACT

Robotic Process Automation (RPA) is a new revolution in technology and its basic goal is to reducing repetitive process from people's organizational tasks. Robotic process automation contains different types of technology together. RPA is a newly invented and speedy technology of Robotics. The researchers do lots of research on this criterion. This paper highlights the key concepts about RPA and define its usage in the healthcare organization. Clinic expenses are increasing every year, the expected increase in the number of patients needs more medical staff. This situation affects the quality of medical care. On the other hand, the system tries to find solution to decrease the expenses, increase work efficiency, and provide good services to patients. And hence companies need help of robotic healthcare automation since it can allow them to automate all complex and time-consuming tasks. This paper has found advantages of using RPA in healthcare. Healthcare became one of the most demanding and challenging sectors especially due to the coronavirus pandemic. Each and every effort are directed to solving as many problems as possible. In case of healthcare, 30 percent of tasks can be automated. The use of RPA technology can be a great benefit as it can be used.

Keywords: RPA, automation, technology, healthcare, robotics.

I. INTRODUCTION

Robotic process Automation simplifies rigid processes, leading to better outcomes for patients. It also leads to cost savings of work in healthcare. Robotic process automation is an important for automating business process based on the software robots. RPA is software-based automation approach which automates the business processes by understanding the existing procedures. it is software which performs the human action and performs the tasks and activities which are mostly repetitive. This system reduces the involvement of human in the process. In today's environment whole world is doing competition with other organization for that purpose the RPA technology is providing more profitability than others, efficiency in the work when certain rigid processes are automated. This type of automation helps the human workers to focus on more complex tasks, be more innovative, and spend their precious time to enhance their skills and knowledge. Planning, Implementation and Monitoring are the three major phases of all processed task. RPA is surveyed as a scalable, significant and safe way to make automated project more conveniently use in large organizations. Researchers are said that RPA will be a great evolution in technology in last decade and this technology will be more helpful and powerful in next years. RPA is proving to be the technology of future and its goal is to provide solution that reduces costs and time, improves quality, speed and efficiency of operational processes.

RPA in healthcare helps to automate processes and improve operations in healthcare as a result, the healthcare organizations have the ability to save billions of dollars in coming years RPA in healthcare should take full advantage of, providing adequate medical care to a larger number of people at same time. And of Course there is more than this quantitative issue; we should not forget the qualitative aspects of RPA in healthcare The Robotic Process Automation is unmanageable Technology and is finding its applications in the domains where task is repetitive. RPA results in cost management and work efficiencies for the enterprises who are deploying projects in RPA. It helps in improving the accuracy in process by reducing the errors. It works 24/7 throughout the year without any break and eliminate risks also.

II. LITERATURE REVIEW

Rishabh Jain and Roheet Bhatnagar (2007) in "Robotic process automation in healthcare-a review", They had described how the robotics process automation are used in healthcare. In these, how system can work automatically such as to maintenance balance between increasing number of patients and reduce paperwork and insurance process. Authors have different task that automatically work through software automation.

Ram D. Sriram (Aug 22,2009) in “The Role of Standards in Healthcare Automation” have specify that there are two aspects in this paper healthcare informatics and medical device. Healthcare informatics containing all system related processes or software related and in medical devices deal with hardware-based work. In this paper authors describes standard role of healthcare such as electronic health records, simulation, medical device integration and bio imagine.

Suleiman A. Yahaya and Lydia J. Jilantikiri (June 2019) had write research paper on “Development of an Automated Healthcare Record Management System”.in this paper they described evolution in an electronic health record monitoring system with smartcard to improve management system of health record .in this case uses different tools to create software such as XAMPA platform and QR code, HTML and PHP. Smart cards were produced for the patient, doctor, laboratory attendant, record attendant, pharmacist, and accountant to access their various sections.

James Dias (July 2014) had described the 6 Big Benefits of Applying Automation to Healthcare. In this article he told benefits in healthcare and how robots taking place of human. This robotics automation cannot take place of doctors or nurses but software- based work can do. He further added that there are six benefits they are “Labour saving” Using robotics automation, automation can replace manual work that done through machine. “Improved Quality and Consistency” Automation tools are not subject to human error. “Reduced Waste”, minimum use of paper work because all data store in system. Increased Predictability of Outcome. Higher Throughput, the system can handle large number of populations at single time, Data-Driven Insights that is how accurate data is collected and store.

“Yan chow” (24 Feb. 2020) “preparing for the future of Healthcare in light of Automation” in this article he described the impact of Automation process on Healthcare and how Robotics Process Automation and Artificial Intelligence can work together there are different impact such as Learning and Understanding, Emotions, Natural interaction, Judgment, complex problem solving and creativity.

In this above first paper, author had described different things related to healthcare and how to handle these things through robot. In second paper they describe how software and hardware are work in healthcare. In third paper, author had specified how different databases are used for automatically storage data and in last review they describe benefits of healthcare automation. According to our assumption there is no any software fully based on automation. we tried to make manual system more automated so it can reduce workload of employees and give expected outcome. we have tried develop and create system using UiPath studio in Robotics process automation. In the above first three paper that describes different automated task using different tool but we develop these all task using one tool. We create these things using UiPath Studio in Robotics process automation

III. METHODOLOGY

As we want to make project on automation of healthcare system so for further processing on project, we decided to take interview of some healthcare employee. We have visited the nearby healthcare and ask some questions to nurse, doctors, ward boys and administration department also. We also take interview of some patients also as they are the real users of this system.

We take interview of small group of patients we ask them some questions like how did you find the experience of appointment schedules? how long did you wait until the doctor attend you? how is the facility of healthcare billing system? And many more questions like this. We also ask them if they want any improvement in system. After interview we have found many issues and challenges in the present healthcare system. There are problems in appointment scheduling- there is no updates in system if any appointment is cancelled or any new one is added, billing procedures-there is no automated generation of bills user have to wait for manual receipt. There are also many issues in payroll processing-failure in generation of payment of employees, no management of huge data in present system.

On the basis of this interview, we have found many challenges and try to overcome these challenges in our proposed system of healthcare automation. Healthcare industry in any region is one of the important firm, when it comes to profit generation in income and work utilization. It encompasses medical equipment's, medical tests,

health claims and insurance and clinical devices etc. To monitor and operate information distribute throughout number of internal and external sources, containing medical appliances, laboratory systems, insurance system, third party interface, scheduling tasks, administration management is a challenging issue in most of healthcare system. integration of all these systems is mostly congested, healthcare enterprises have to depend on humans to perform all tasks manually to process information.

The important objects of healthcare are patients, doctors, nurses, ward boys, administrators, insurance system etc. To manage the large number of patients and lots of paperwork that is needed for follow up, payment procedure and insurance claim processing etc., there is an immediate need of a more accurate and effective back office process. In this condition, advanced automation technology such as Robotic Process Automation (RPA), can help healthcare industry enhance operational accuracy, reduce costs and less or no human error when performing operation on information involving user’s data security, Enrolment of patient, Patient appointment scheduling, Claims processing, medical documentation, billing and payroll, Secondary claims maintenance, Accounts recovery, and user’s self-pay portal. Also, the healthcare organizations are facing many issues in bringing new medicines to the market as they need to maintains quality with profitability. The innovative procedure in the healthcare system may have regulatory challenges which can be overcome by using the process automation. The automation system enables the healthcare organization to improve safety.

Robotics Process Automation:

RPA is technology that helps to automate process by mimic human action on computers. In today’s digital world RPA is rapidly increasing technology. Ui path is leading RPA platform & is faster way to automating process. The term automation is form Greek word auto means self, motos means moving

Ui path:

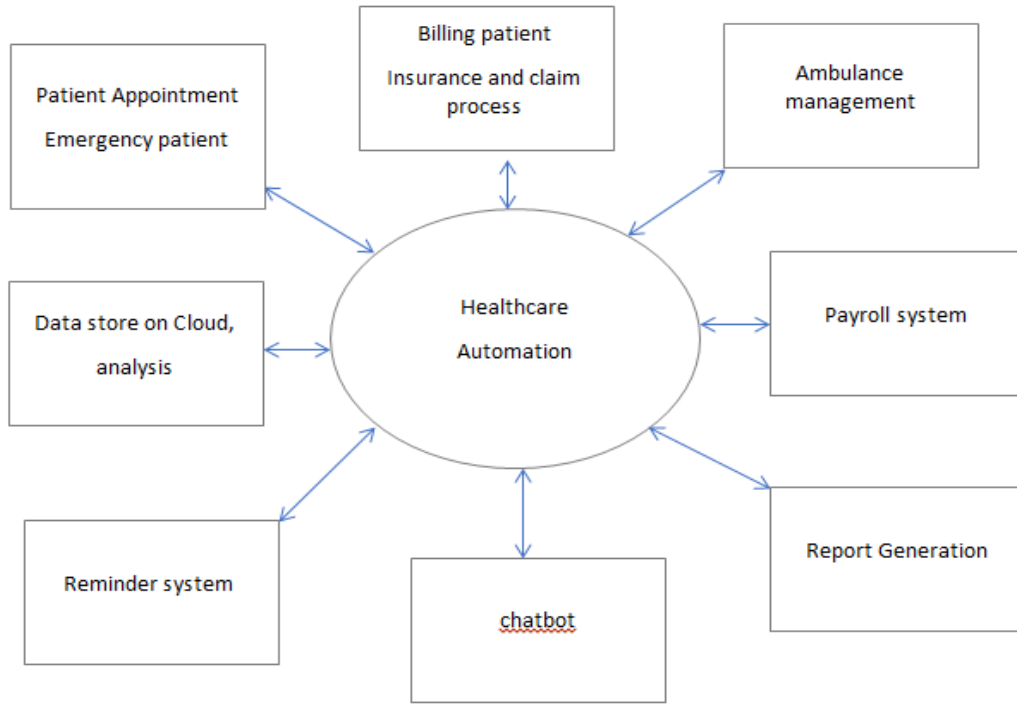
Ui path is an RPA platform helps to design & delivers software to automate process. Ui path was found by Daniel dines. Component of Ui path platforms is Ui path studio, Ui path Robot & Ui path orchestrator. With the help of these all three techniques we can develop healthcare automation system.

As robotic process automation is newly invented and widely used in various industry. Following figure shows how RPA is taking over all the area of development in 10 years. we can see there is rapid increase in usage of RPA in market. UiPath, Blue Prism, work fusion, KOFAX are certain platforms of RPA.



Figure I Global robotic process automation market by services, 2014-2024 (in USD Millions).

Overall Design-



In healthcare the automated system needs to perform the following tasks to reduce the complex process and helps the healthcare staff to take care of patients only.

Task1: - Patient Login and Appointment

For login of patient and appointments of patients the system needs to create form in control panel of UiPath Studio. The process will automate the form filling and schedule appointment, after successful completion of this process bot should send message to the patient.

Task2: -Appointment Schedule

Secondly the system will update and delete appointments for specific doctor schedule. In case of emergency the system can automatically manage schedule of appointments.

Task3: -Bill process

After all the treatment complete the system needs to generate billing payment of user and claim processing and send message to patient, then patient can pay bill either online or offline mode.

Task4: -Remainder System

The system also has to give remainder of appointment and time of medicines so that no one on miss any appointment and medicines time.

Task5: -Healthcare chatbot

There will be chatbot section in the automated system, with the help of this section patients can ask any queries and bot will solve it.

Task6: -Store data in database

The automated system has to store medical history and report of patients automatically in the database for retrieving these data later on. Transfers data of medical reports from one system of healthcare to another system to making correct decision.

Task7: -Report process

System needs to generate reports accurately and send documents via mail. this whole process will be accurate and there will be no delay in report generation to detect any disease.

Task8: - Discharge process

Automatic alert of discharge of patient based on patient's recovery. In this process system will delete patients' stage if they are inactive in healthcare.

Task9: - Insurance and claim processing

The system will have to automate procedure of Insurance refund and claim processing of patient

Task10: - Remainder for ambulance

Automation in alert system for ambulance to reach particular place at time in the emergency cases. This system needs to give message to particular drivers of ambulance who is available on time so that ambulance can arrive at time.

Task11: -Payment Process for staff

The system needs to have payroll processing for all the staff of healthcare. This can automatically generate payment of each employee on the basis of working days in month.

Task12: - Store data on Cloud

The storage of huge number of reports, data and complete documents are should be over the cloud system, so we can retrieve this data any time. By using cloud service for storage, system will enhance security and maintenance of user's data.

Benefits of RPA in healthcare:

- Increased regularity as processes is monitored and documented by bots
- Increased accuracy as human errors are decreased.
- Reduced processed costs
- Increased cycle period
- Better efficiencies as robots three times more than human.
- enhanced productivity as there will be no repetition of tasks.
- Increased client satisfaction as less errors make better customer relationships, maintains them and attract new clients.
- management is better than manual system as it is easier to scale automated system.
- Automation minimizes or eliminates complexities in healthcare operations.
- RPA helps in reduced complexities.

IV. CONCLUSION

RPA have vast number of programs in different industries including healthcare and medicine and it delivers much convenient results, but as it is a new technology, it contains various challenges and issues. It has the capability to remove complex tasks throughout a huge number of roles, systems, functions, administrations, enterprises, departments and technical implementation with learning curve for those in the organization who rely on it.

As various industries accepting RPA, a configuration that works for one user may not work for other user, from enterprise-wide setups where every module is incorporated, to deployments of tiny unit with more limited scope. There is also trust related problem involve in the process as most of people are still not convinced to include automated bots in surgeries. Then there is rules and regulations, policy issue as there is no proper guidelines to completely deploy RPA in healthcare and medicine. It is clear that with the development in RPA and its adoption can establish greater number of IT jobs for Young peoples to manage and monitor the software programs but on the other side the fact that can't be ignored is this automated system will produce

unemployment for a lot of people. Some people can lose their job as robot will replace them. one robot can perform three employees work 24/7 without break, so there will be possibility of unemployment.

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