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Utilization of Robotic Process Automation in Healthcare Industry

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Abstract— Robotic Process Automation (RPA) is a new technological revolution whose main purpose is to eliminate repetitive processes from people & organizational tasks. Different forms of technologies are combined in robotic process automation. RPA is a relatively new and fast robotics technology. This criterion is the subject of extensive research by the researchers. The basic concepts of RPA are highlighted in this paper, as well as its use in the healthcare industry. Clinic costs are rising every year, and the predicted increase in patient numbers necessitates the hiring of additional medical personnel. This circumstance has an impact on medical treatment quality. On the other side, the system seeks to identify ways to cut costs, improve job efficiency, and deliver excellent patient care. As a result, businesses require the assistance of robotic healthcare automation, which allows them to automate all difficult and time-consuming processes. The benefits of adopting RPA in healthcare were discovered in this research. Due to the coronavirus pandemic, healthcare has become one of the most demanding and hard industries. Every attempt is being made to solve as many problems as feasible. In the healthcare industry, 30% of tasks can be automated. RPA technology can be a huge help because it can be used in a variety of ways.

Keywords *— Robotic Process Automation; RPA; Automation; Technology; Healthcare; Robots.*

1. Introduction

The purpose of providing a solution that saves money and time while also improving the quality, speed, and efficiency of operational processes. RPA in healthcare automates processes and improves operations in healthcare, allowing healthcare organizations to save billions of dollars in the next years. RPA in healthcare should be fully utilized, allowing proper medical care to be provided to a larger number of patients at the same time. There's more to RPA in healthcare than just the numbers; we shouldn't overlook the qualitative aspects as well. Robotic Process Automation is an unmanageable technology that is finding applications in domains where repeated tasks are required. For businesses that use RPA to implement projects, it results in cost savings and increased productivity. It aids in the improvement of process accuracy by decreasing errors. It operates without interruption throughout the year and eliminates dangers as well.

2. Literature Review

Rishabh Jain and Roheet Bhatnagar (2007) detailed how robotic process automation is employed in healthcare. How can a system work automatically to maintain a balance between a rising number of patients and a reduction in paperwork and the insurance process? Authors have a variety of tasks that are completed automatically thanks to software automation. Ram D. Sriram (August 22, 2009). "The Role of Standards in Healthcare Automation specifies that there are two parts in this paper: healthcare informatics and medical devices. Healthcare informatics encompasses all system- or software-related operations, while medical devices deal with hardware-based tasks. The authors of this study discuss common healthcare functions such as electronic health records, simulation, medical device integration, and bio-imaging.

Suleiman A. Yahaya and Lydia J. Jilantikiri wrote a research paper titled "Development of an Automated Healthcare Record Management System" in June of 2019.They reported the evolution of an electronic health record monitoring system with smartcard to improve the health record management system in this study. In this scenario, various tools are used to construct software, including the XAMPA platform, QR codes, HTML, and PHP. To gain access to their respective parts, smart cards were created for the patient, doctor, laboratory attendant, record attendant, pharmacist, and accountant.

James Dias (July 2014) were stated, The 6 Big Benefits of Applying Automation to Healthcare. In this post, he discusses the benefits of robotics in healthcare and how they are replacing humans. Robotics automation will not be able to replace doctors or nurses, but software-based work will. He went on to say that there are six advantages. “Labour\saving” Robotics automation can be used to replace manual tasks performed by machines. "Improved Consistency and Quality" Human error is not an issue with automation tools. Because all data is stored in the system, there is less waste and less paper work. Increased Outcome Predictability Higher Throughput: the system can manage a high number of people at once; Data-Driven Insights: the system collects and stores reliable data.

"Yan chow" (24 February 2020) "preparing for the future of Healthcare in light of Automation" in this article he described the impact of Automation on Healthcare and

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how Robotics Process Automation and Artificial Intelligence can work together. There are various impacts such as Learning and Understanding, Emotions, Natural interaction, Judgment, complex problem solving, and creativity.

The author of the preceding initial paper outlined several aspects of healthcare and how to tackle them with robots. They describe how software and hardware operate in healthcare in the second paper. In the third study, the authors described how various databases are used to automatically store data, and in the final review, they discuss the advantages of healthcare automation. According to our assumptions, there is no programme that is entirely automated. We attempted to automate manual systems in order to reduce staff workload while delivering promised results. In Robotics process automation, we attempted to construct and create a system utilizing UiPath studio. In the first three papers, distinct automated tasks are described using separate tools, but we construct all of these tasks using the same technology. In Robotics process automation, we use UiPath Studio to make these items.

3. RPA in Health Care

In terms of digital technology adoption, the health-care industry lags behind other industries. Robotic process automation is a first step in accelerating hospital digital transformation, as it offers a quick return on investment while allowing medical staff to focus on patient care.

3.1 RPA is to Improve Hospital Operations

Robotic process automation has emerged as a powerful technology that companies may utilise to quickly improve operational efficiency. It can, however, be utilised as a first step toward higher data quality, laying the groundwork for artificial intelligence and machine learning systems. It can't come soon enough for hospitals, which are grappling with changing revenue and cost dynamics in an industry that relies on the processing of vast amounts of sensitive personal data. Indeed, the cost of health-care data breaches is at least double that of other industries, with an average of $408 per record (see Figure 1). The high cost of a breach is partly due to the high notification expenses and harsh fines in the United States for mishandling health care information. Better management and automation would go a long way toward lowering the danger.

In general, the health industry lags behind other industries in terms of digital technology adoption. The health care industry scored 41.25 out of 100 in our Digital Maturity Index, according to our recent Digital Radar analysis. This score compared to a technology company average of nearly 70. The health-care industry isn't seen as a natural choice for automation. It's a human-centered service in which the personal touch has a big impact on the patient's experience and outcomes. Given the extent to which data drives decisions and underlying systems, there is still a lot of room for automation. According to McKinsey, 36 percent of health-care activities might be automated, with data collection and processing being the most common areas for automation.

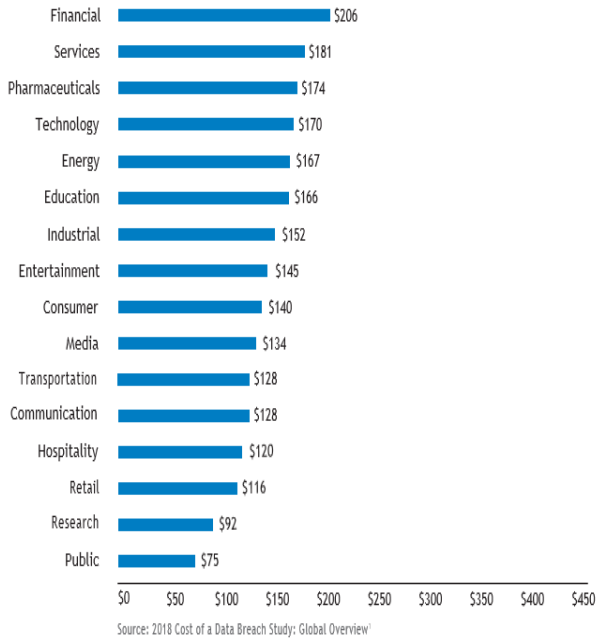

Fig.1: Data breaches cost the health industry the most per capita

By increasing data quality and consistency, as well as providing standardised data formats that can give a single perspective of performance throughout a hospital, automation can help minimise today's data-related inefficiencies. RPA has provided major benefits to hospitals who have used it. An integrated medical record and practise management system was implemented at a multiunit medical services centre in Kentucky, saving over 2,000 hours of manual labour. The RPA system completed an error-free transfer of over 64,000 records from old systems to a new system in less than 24 hours. A general-care hospital in Europe faced various labour-intensive difficulties with 70,000 emergency visits and 300,000 outpatient visits each year. For medical files and financial paperwork, he relied on paper records, and he struggled to keep track of inventory. The hospital employed RPA to replace paper records with digital data storage. It did it by eliminating redundant functions, integrating operational silos, and streamlining the supply chain. The Processing cost of claims and billing is decreased.

3.2 Application of RPA

Robotic process automation (RPA) is a technology that mimics the human interactions that originally completed

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high-volume, repeatable commercial procedures. RPA works best for tedious, repetitive activities like logging. Entering data into online apps, filling up forms, and retrieving data from various internal systems (see Figure 2).

RPA bots are trained to obey "if-this-then-that" criteria, therefore they function best in processes that are already well-understood and have standardised data formats. Bots, on the other hand, can be used to further structure data through their outputs, making them an important tool in the creation of a standardised data architecture.

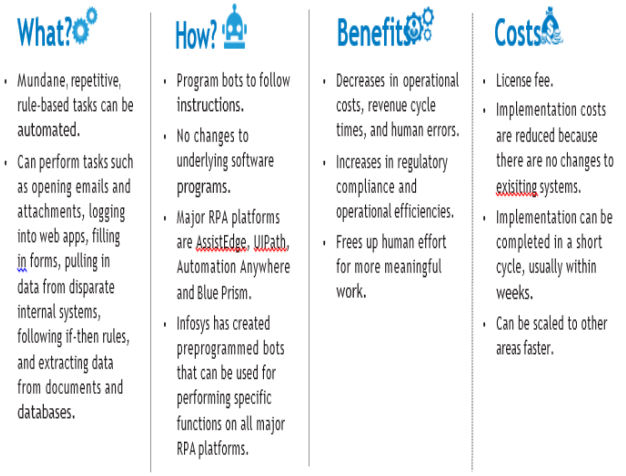

Fig.2: RPA benefits and cost an overview

RPA can help with appointment scheduling and patient monitoring after they've been discharged from the hospital. When patients make appointments, the hospital's coordinator must match the patient's needs with the doctors' schedules and availability.

RPA bots can automate this process by collecting patient data, such as personal and insurance information, and scheduling appointments based on these parameters. It can also be used to send out automated reminders or keep patients up to date when their appointments alter. Monetary tasks can also benefit from RPA. Inefficiencies in the revenue cycle cost hospitals money and have a negative impact on their profits. Claims handling takes time and is prone to errors when carried out manually, implementing a data architecture that is standardised.

3.3 The Road to AI with RPA

RPA is a critical component of digital transformation. RPA helps hospitals cleanse and standardise their data and processes so that they can support more advanced digital capabilities like analytics, machine learning, artificial intelligence, and cognitive computing. Figure 3 depicts the various stages of the digital transformation process and where RPA fits into the overall picture.

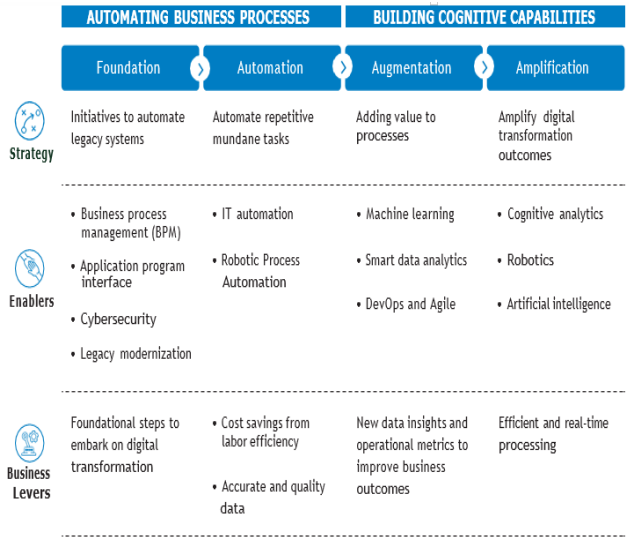

Fig.3: Stages of digital transformation

4. RPA Implementation Approach

RPA tools can provide tremendous benefits. Poorly planned and performed automation projects, on the other hand, will fail and risk derailing the entire digital transformation process. An RPA centre of excellence should be formed to collaborate with each hospital information technology system and its users, given the fundamental shift that RPA facilitates. The following activities should be carried out by the COE.

- Assessment of opportunity
- People and process election
- Proof of concept
- Data security
- Production support
- Scale

4.1 Assessment of Opportunity

Determine which processes are candidates for RPA. This activity is dependent on the business users of the processes. Examine whether the present RPA platform's capabilities can be used to automate the provided process. Examine cost savings and other quantifiable advantages. When assessing ROI, don't just look at waste reduction and mistake reduction; but consider gains in care quality and health outcomes. Make a case for the investment in a business plan. The whole cost of automation should be included in the ROI calculation, as well as the costs of implementation, performance monitoring, production support, and upgrade and change management.

4.2 People and Process Selection

People who understand both the process and the technology should make up the core implementation team.

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RPA should be implemented using the whole software life cycle, starting with analysis, bot development, testing, and finally deployment. The effectiveness of RPA adoption is dependent on change management concepts and appropriate project plan oversight. Poor planning and execution cause 30-50 percent of RPA initiatives to fail.

4.3 Proof of Concept

Begin with a proof of concept and then go on to a pilot programme in non-critical internal processes. Users can gain a better understanding of the advantages of automation through early achievements. If hospital leadership and users, for example, see a process time reduced from 16 to 4 hours, their comfort level will rise, and enthusiasm for greater automation adoption will grow.

4.4 Data Security

Data security should be a top priority throughout the process. Security matrix optimization, single sign-on, and username and password protocols should all be properly stated.

4.4.1 Production Support

Support personnel keep an eye on automated procedures to verify that they continue to work as intended.

4.4.2 Scale

Build a plan for implementing the RPA at scale during the design stage of each pilot programme. Without it, an organisation risks succumbing to "death by pilot," in which innovative projects fail to scale across the organisation due to a lack of stakeholder buy-in, investment planning, and change management from the start.

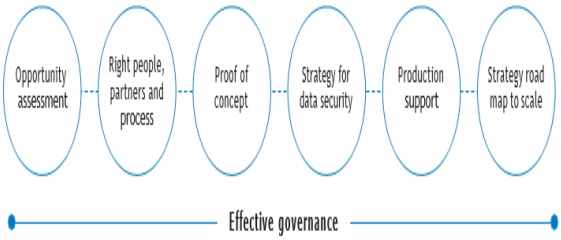

Fig.4: RPA implementation

5. Conclusion

RPA is the first little step toward a future in which computer systems are more autonomous, allowing for the realisation of true artificial intelligence's larger goals. However, it's critical to keep things in perspective.RPA is altering workplace dynamics by taking over tasks that were previously managed by humans. However, the goal is not to completely replace humans. Instead, it can allow people to maximise their potential by allowing them to engage in more meaningful work that demands social intelligence, nuanced critical thinking, and problem-solving creativity. This is especially true in the health-care industry, particularly in hospitals. The ability of medical-care workers to focus on human connections is critical, and the introduction of digital technology that can help them do so must be embraced.

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