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Integration of RPA and Blockchain for Pharmaceutical and Healthcare Industry

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ABSTRACT

In this era of digital transformation, every day new disruptive technology is emerging, and the business need to adapt to these technologies. Pharmaceutical and Healthcare industry is always overwhelmed by towering costs, incredibly high volume, and demanding regulations. These defiance leads to the quality and urgency of drugs and patient care.

In healthcare organizations, there are many repetitive processes, and the decision-making responsibility lies solely on how correct the data is. For example, patient onboarding and follow-ups, medical billing and claims processing, generating reports for physicians and prescription management are some of the repetitive tasks that are common across all healthcare organizations. These are among the factors that create the perfect environment for robotic process automation (RPA) to increase efficiency, reduce costs and improve the patient experience. The demand for Robotic Process Automation in the healthcare industry is only to rise, with the global market size. Healthcare, customer service, supply chain management, accounting, human resources & financial services are some areas disrupted by RPA in healthcare.

RPA and blockchain are emerging technologies and have the potential to change how industries work. Both technologies can impact almost every sector out there. We can see use-cases of RPA and Blockchain in industries such as retail, insurance, finance, government, healthcare, and so on.

Keywords : Robotic Process Automation, User Interface, Blockchain

I. INTRODUCTION

What is Robotic Process Automation (RPA)?

Robotic process automation (RPA) is an automation technology that uses software to mimic the back-office tasks of human workers, such as extracting data, filling in forms and moving files [1]. It combines APIs and user interface (UI) interactions to integrate and perform repetitive tasks between enterprise and productivity applications. By deploying scripts that emulate human processes, RPA tools complete autonomous execution of various tasks, activities and transactions across unrelated software systems [2].

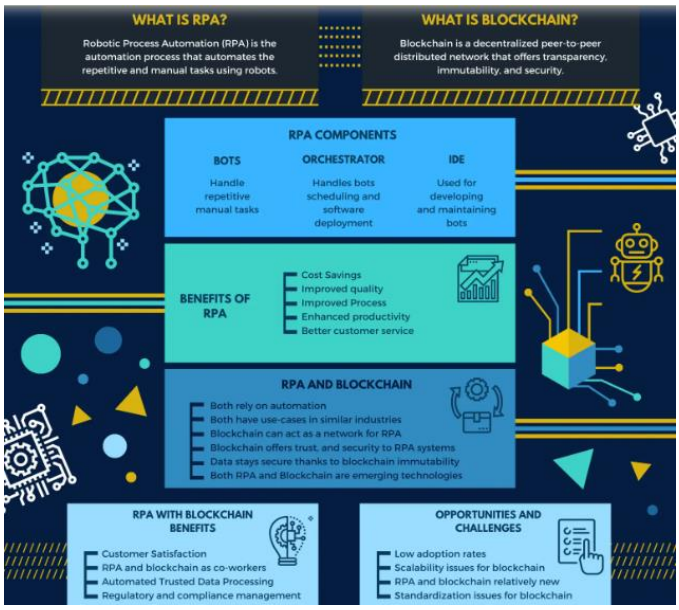
In RPA, a robot or software is configured to interpret and capture the data related to an application and then use that data to handle all the different tasks related to it, including data manipulation, responses, and communication [3].

What is Blockchain?

Blockchain is a peer-to-peer network capable of functioning without the need for a centralized entity. The decentralized approach brings a lot of features on the board, including transparency, immutability, security, and so on [4].

Blockchain is a system of recording information in a way that makes it difficult or impossible to change, hack, or cheat the system. A blockchain is essentially a digital ledger of transactions that is duplicated and distributed across the entire network of computer systems on the blockchain. [5] These are essentially a database distributed within a network, with each node having access to the database. Data is stored differently from a typical database. Rather than having a centralized location where all of the data is stored and then giving people access to that centralized location, the data is stored in a chain[6] [7].

Fundamentals of RPA and Blockchain



How can we integrate RPA and Blockchain to work together?

It is quite often for industries to combine multiple technologies to get the best possible outcomes. The market is very competitive, and customers are expecting more from brands than ever before. That's why companies need to evolve beyond their strategy. With technologies working together more seamlessly than ever, it is now easy for businesses to adopt them and create a system that works best for them as well as the end-user. Also, the data collected by companies are massive enough for them to try out new combinations. All of these are possible with the combination of RPA and blockchain [8].

RPA is all about playing a central role in automating the different aspects of the business. You can think of RPA as a consensus entity that can interact with both systems and end-users. It is made in such a way that it can interact and react with real-time data and make sense of it. Here, the workforce is all designated to find out the processes that can be automated. They should also take care of training co-workers [9]

So, where does blockchain fits in all of these?

Blockchain can provide a distributed, shared ledger to process all the data and information. It provides a smart, trustworthy, and smooth exchange platform for all the involved parties.

Benefits of Using RPA with Blockchain

RPA can enable blockchain when it comes to information exchange among different IT infrastructures. RPA and blockchain can also work well when it comes to monitoring and doing transactions across the system. With the trust of blockchain, RPA can work seamlessly and provide information within the environment without any worries.

The transactions can be validated and then transmitted with the help of the blockchain. Also, all the data can be stored in the decentralized ledger, providing immutability to the stored data.

For companies, this means that audit trials will be elementary to conduct. They can automate the workflow and ensure maximum productivity to meet customer's demands [9].

There are many benefits of RPA and blockchain —

- **Regulatory and Compliance Management-** Compliance is a big concern for businesses out there. They need to ensure that their process is compliant with the regulatory guidelines assigned by the governance that they are currently operating. Things get more complicated if they operate globally. RPA and blockchain can work together to automate repetitive compliance tasks. In creating regulatory and compliance management, blockchain plays a key role by offering immutability to the recorded events. All the events can also be accessed through the network, enabling external audits as well. This can be applied to currently available regulatory such as GDPR.
- **Accurate Data collection and Trusted Data Processing-** Another obvious use-case of Blockchain and RPA is to create automated trusted data processing. This has wide-range use-cases where blockchain acts as a core network to manage the data transmitted by another process. The decentralized ledger does wonder here as it offers a way to record processes data and business transactions for the automated decisions made by RPA. The best use-case for automated trusted data processing is the KYC process, insurance claim payments, HR recruitments, and so on!
- **Recording Audit Procedures-**The auditing procedure involves several tasks for the assessment of risks. These tasks and processes and their results have to be recorded to generate reports, which are then sent to concerned parties for verification and approval. These reports are necessary for regulatory compliance. But collecting and evaluating different reports from different auditing tasks can be very challenging, which can lead to human errors, and errors can result in non-compliance with regulations. RPA software can help pharma companies ensure accountability for different auditing procedures with this approach. Even if non-compliance happens by any chance, RPA software can quickly identify the person who approved the reports, increasing accountability.
- **Eradication of counterfeit medicines-** This technology can be instrumental in the identification of counterfeit medications. With the help of robotics, drugs can be traced from the production stage all the way to the point of sale. Blockchain technology embedded with RPA in the pharmaceutical supply chain stored data in a distributed register on the identification of drugs produced by the plant, as well as records of their movements throughout the supply chain, can accurately determine the authenticity of pharmaceutical products lying on the shelves of pharmacies.
- **Customer Satisfaction-** RPA and blockchain can also work together to create better customer satisfaction with fast, automated transactions that are secure and reliable.

Challenges to coalesce RPA with Blockchain

RPA and blockchain are both new technologies that are seeing rapid growth on their own. The rapid growth brings its own set of challenges. If you take blockchain as an individual technology, it suffers from problems like standardization, scalability, and interoperability.

The main issue here is decentralization! It is hard to standardize. Scalability is an issue as well. However,

new generation blockchain solutions are more scalable, but they are no way closer to the scalability offered by more traditional solutions, including VISA. Right now, blockchain is actively improved to solve these core problems [11]

Hyperledger, for instance, is working towards a unified framework that can be utilized by different organizations. This will improve both adoption rates and standardization.

Even though RPA doesn't have that many challenges, it still suffers from adoption rates. Companies are not properly utilizing RPA to automate their business functions. Most of them are simply using RPA to automate human labor. However, they should strategically think about how to make the most out of the RPA. In simple words, they should improve their value proposition when they adopt RPA into their business process.

Another challenge towards RPA is acceptance by employees and onboarding as perception is automation leads to eradication of human [4] manpower towards repetitive processes. Organizations should also be careful when it comes to adopting RPA with blockchain technology. Also, organizations should always do a pilot position to estimate the impact of RPA and blockchain implementation [12]

As a business, you should ensure that you identify key success metrics, align to business goals, and understand the requirements to better utilize them towards human life improvement in healthcare. [14][15]

II. CONCLUSION

RPA is revolutionizing the healthcare sector, thanks to the innumerable benefits such as cost-saving and reduced errors. Consequently, the RPA benefits can be witnessed in all the major industries-manufacturing, retail, data-entry, telecommunications, and BFSI.

Automation is a big thing right now. Companies are reliant on automating things so that they can use their free time to solve creative problems. One of the biggest currencies of the current generation is creativity and problem-solving. This means that they can use automation to solve trivial requirements, whereas they can use humans to take more crucial tasks that require understanding, learning, creativity, and approach. The infrastructure created can handle itself by using RPA and blockchain [16]

Blockchain, on the other hand, also has its fair share of use-cases. It's the biggest impact can be seen in the trade finance sector and supply chain management. Other sectors are also bringing changes to their processes and solving pain points that were ignored until now. For instance, it is changing the banking system and providing faster settlements and easier account management.

III. REFERENCES

[1]. https://pharmacy-management.healthtechreach.com/how-is-rpa-solving-challenges-of-pharmaceutical-industry-management/

[2]. Madakam, Somayya, Rajesh M. Holmukhe, and Durgesh Kumar Jaiswal. "The future digital work force: robotic process automation (RPA)." JISTEM-Journal of Information Systems and Technology Management 16 (2019).

[3]. Mendling, Jan, et al. "How do machine learning, robotic process automation, and blockchains affect the human factor in business process management?." Communications of the Association for Information Systems 43.1 (2018): 19.

[4]. Bamakan, Seyed Mojtaba Hosseini, Shima Ghasemzadeh Moghaddam, and Sajedeh Dehghan Manshadi. "Blockchain-enabled pharmaceutical cold chain: Applications, key

challenges, and future trends." Journal of Cleaner Production 302 (2021): 127021.

[5]. Premkumar, Anitha, and C. Srimathi. "Application of blockchain and iot towards pharmaceutical industry." 2020 6th International Conference on Advanced Computing and Communication Systems (ICACCS). IEEE, 2020.

[6]. Rajora, N. (2022). Blockchain technology–A basic need of the pharmaceutical industry. International Journal of Advance Research in Computer Science and Management Studies, 10(4). http://ijarcsms.com/docs/paper/volume10/issue2/V10I2-0036.pdf

[7]. Schöner, Manuela M., et al. "Blockchain technology in the pharmaceutical industry." Frankfurt School Blockchain Center: Frankfurt, Germany (2017).

[8]. https://accelerationeconomy.com/ai-ml/rpa-and-blockchain-are-a-great-combo-for-businesses/

[9]. https://aisel.aisnet.org/cais/vol43/iss1/19/

[10]. https://www.techtarget.com/searchcio/essentialguide/From-blockchain-to-RPA-A-look-at-cutting-edge-tech-and-the-enterprise

[11]. https://ak-tyagi.com/static/pdf/49.pdf

[12]. Omidian, Hossein, and Yadollah Omidi. "Blockchain in pharmaceutical life cycle management." Drug Discovery Today (2022).

[13]. Abbas, Khizar, et al. "A blockchain and machine learning-based drug supply chain management and recommendation system for smart pharmaceutical industry." Electronics 9.5 (2020): 852.

[14]. Haq, Ijazul, and Olivier Muselemu Esuka. "Blockchain technology in pharmaceutical industry to prevent counterfeit drugs." International Journal of Computer Applications 180.25 (2018): 8-12.

[15]. Adhikari, Sam. "Integrating Deep Reinforced Learning and Robotic Process Assessment in Blockchain Digital Transformation for Autonomous Cybersecurity." AIAA Scitech 2021 Forum. 2021.

[16]. Rajora, Naveen. "Dynamics of Pharmaceutical Drugs Serialization." Universal Journal of Pharmacy and Pharmacology (2022): 43-49. https://www.scipublications.com/journal/index.php/ujpp/article/view/396

[17]. Rajora, N. (2022) Pharmaceutical drug launch and its readiness in enterprise systems. International Journal of Advance Research in Computer Science and Management Studies, 10(5). http://ijarcsms.com/docs/paper/volume10/issue5/V10I5-0020.pdf

[18]. Rajora, N. (2022) Counterfeit and illicit drugs trade: A quantitative data on how counterfeit drugs. Journal of Advance Research in Computer Science and Management Studies, 10(2) http://ijarcsms.com/docs/paper/volume10/issue2/V10I2-0036.pdf

[19]. Marrella, Andrea, et al., eds. Business Process Management: Blockchain, Robotic Process Automation, and Central and Eastern Europe Forum: BPM 2022 Blockchain, RPA, and CEE Forum

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