Journal of Contemporary Issues in Business and Government Vol. 28, No. 04, 2022
https://cibgp.com/

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

Challenges of re-engineering through RPA and AI of Accounting and Audit Process – Indian Perspective.

Dr Gutti R K Prasad,
Associate Professor, GITAM Hyderabad Business School, GITAM (Deemed to be University), Hyderabad, India, e-mail: rgutti@gitam.edu
Dr Byju John,
Director-General, Kalinga University, Naya Raipur, Chhattisgarh, India e-mail: byju.john@kalingauniversity.ac.in

Abstract:

Over the last few decades, information technology has expanded rapidly, and accounting and auditing have become increasingly vital due to the opportunities discovered. Artificial intelligence (AI) and robotic process automation (RPA) are believed that automation of decision-making systems and systems that require human intervention would become increasingly vital for dealing with change. Because technology develops quickly, integrating AI into accounting and auditing systems is a high-risk proposition. However, there aren't enough theoretical frameworks to fully explain how RPA and AI can be used to re-engineer the accounting and auditing processes.
This study encapsulates the evolving RPA and AI ecosystem to address this research gap. It identifies critical challenges that must be overcome to successfully implement such auditing and accounting systems from the Indian perspective.
Keywords: Robotic process automation (RPA), Artificial Intelligence (AI), Accounting, Finance, Challenges

Introduction

AI and automation are the topics of this article. However, RPA and AI systems have been discussed for more than 20 years, but their deployment in enterprises is still early. Only 15% of firms believe that RPA, and 5% assume that AI is mature technology (PWC 2017). The vast potential of automation has yet to be fully realised by businesses. It is critical for firms to successfully adopt new technologies as their capabilities continue to grow at an accelerating rate.

More specifically, assess the challenges of implementing AI and RPA technologies and the critical decisions that firms must make. Andersson et al. (2018) studied utilising enterprise resource planning (RPA) systems in businesses and their restrictions. Cooper et al. (2018) have stated that extensive research has been conducted on using RPA in the audit and accounting profession and the challenges and potential outcomes. However, attentive guidance on

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

successfully integrating AI and RPA systems has been missing in auditing and accounting.

To begin bridging this divide, identify essential words associated with AI. Then, summarise recent achievements and research on the subject. Following that, delve deeper into the implementation issues related to AI. Provide an RPA architecture and two case analyses involving a software company and a small payroll service to highlight how AI is now being implemented and the tasks these organisations will face. Then, an attempt is made to find the primary challenges associated with AI deployment, particularly from the Indian context, and suggest some solutions. It will aid practitioners and researchers by providing aggregated knowledge about the typical issues faced by organisations when implementing AI technologies. This article could serve as a checklist for businesses considering deploying new technologies.

Terminology

AI and RPA are two related terms that have significantly impacted accounting and auditing processes and will continue to do so. These two tech tools are opposed to intelligent automation. Automation is increasingly transitioning away from process-based automation and toward data-driven automation. In contrast to RPA, which automates rule-based procedures, AI requires high-quality data to learn what to do, per CFB Bots (2018).

RPA has grown in popularity over the last two decades and is beneficial in various business operations, including auditing and accounting operations. It automates routine, rule-based tasks through the use of scripts. As per EY (2018d), robots can replicate data across different areas such as invoicing and payroll. Technical and operational capabilities bind traditional RPA approaches. Robots cannot handle unstructured data. Humans must manually give processed data to the robot to retain low-value employment for employees. Automating cognitive processes also has its drawbacks. Numerous tasks are currently not automatable. The rules for these "cognitive" tasks cannot be modelled because they require staff experience—a request for prioritisation and decision-making via e-mail (Perrier 2018).

AI has not replaced the RPA, which is called an old technology. The two technologies complement each other but are not mutually exclusive. AI and RPA tools may complement each other. For example, AI can create insights from credit risk modelling without RPA, but RPA can act on those insights (EY 2018c).

Machine learning, data mining, image recognition, speech, and semantic analysis are all examples of artificial intelligence. Statistics, artificial intelligence, and machine learning can uncover patterns in enormous data sets. It is critical since unstructured data accounts for approximately 90% of all data. As per SAS Institute (2019), data mining enables the faster retrieval of information

OCR is a critical augmentation technique for artificial intelligence that translates handwritten or typed text to machine-encoded text. It eliminates the need for time-consuming manual data entry. Additionally, AI encompasses machine learning (ML). After learning from data and decisions, machine learning algorithms can generate superficial judgments and classifications. Machine learning can be used to detect fraud. Earnest and Young (2018) stated that PayPal uses machine learning to differentiate between genuine transactions and money laundering.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

Learning algorithms are used by the natural language processing (NLP) to analyse text and unstructured data. NLG is a technique that creates speech or text from structured data. It can provide financial analysis reports that detail a company's performance. Chatbots understand text or voice data and respond with prepared answers using NLP and NLG. For analysis of unstructured data, chatbots constantly acquire new terminology to assist customers, as stated by Earnest and Young (2018d)

Practical implications

As per Price Water Coopers (2017), only 5% of companies use AI maturely, and 15% use RPA maturely. It indicates that AI is still in its infancy stage as a tool for change. It is also due to the high costs of adopting new technologies and the non-availability of the required skilled workforce within companies. Due to the vast likely uses of AI and RPA, companies should become experts in this area to gain an advantage.

Large volumes of data may be transformed into actionable insights using AI and RPA, enabling complete process automation. Intelligent automation is an investment. Hence one needs to evaluate the optimal RPA/AI mix for their business (EY 2018c). It necessitates accounting specialists that are conversant with both business and technology.

Price Water Coopers (2017) estimates that automating 45 percent of work activities will benefit $2 trillion per annum in global workforce costs. It demonstrates the value of effectively implementing AI technology. Companies must begin to invest in innovative ways as AI is progressively being used, and those who successfully implement it will see substantial productivity gains.

RPA and AI have an impact on auditing and accounting. Automate simple, repetitive chores that younger workers typically undertake. Rather than that, higher-level human competence is necessary to make decisions. Internal auditing considerably benefits from RPA. RPA can automate routine processes such as control testing, freeing auditors to focus on higher-value activities. Automation enables whole population testing rather than sampling, dramatically enhancing auditing accuracy.

Methodology

There is a wealth of information available regarding RPA. Nonetheless, it must be combed through to uncover data pertinent to the study issue of presenting the current state and problems of RPA systems. Additionally, an in-depth assessment of the existing literature was conducted to analyse and summarise the most significant elements in practice, rather than focusing exclusively on theoretical models. Two cases were considered to illustrate the practical ramifications. The findings have been examined, and a study technique has been established to support them.

Recent progress and ongoing research

Accounting and auditing processes across departments are inefficient, making it challenging to

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

allocate scarce resources and make focused judgments. Drum and Pulvermacher (2016) stated that, at present, spreadsheets are disorganised due to manual operations, resulting in lags, inaccuracies, and out-of-date data. They are named 'sleuth systems' since they are not recognised as legitimate mechanisms within the corporate system. The recent USD 100 million loss demonstrates that inadequate data quality and quantity in databanks and excelsheets can result in substantial financial losses, as Tan (2014) noted. Hence, new tools and frameworks are required to handle these issues while improving resource management and process quality.

Shortly, automation based on complementary technologies such as Blockchain and Big Data is predicted to have the most significant impact on accounting. As previously said, this technology is unavoidable in light of the technological evolution in the accounting industry. For years, this development has been expected and analysed. As C.L. Keenoy, vice president of the National Cash Register Company put it in the 1950s. According to Keenoy (1958), we are currently experiencing a shift in accounting and business management that will, in some ways, parallel the industrial revolution. Keenoy, The development of practical techniques for Integrated Data Processing (IDP) was hailed as groundbreaking. According to Baldwin et al. (2006), Expert systems and AI have been utilised to mechanise accounting processes since the 1980s, and their significance has grown.

Despite being recognised as crucial technologies decades ago, deployment methods are still poorly understood in current practice. Consider how to summarise a project structure like this in accounting and auditing.

Consider whether auditing and accounting should be isolated from ERP or firm financial administration or viewed as just elements of the broader picture before adopting RPA. A more comprehensive view of financial administration (auditing, cost and management accounting, bookkeeping, salaries, tax payments, etc.) reveals numerous interfaces that must be compatible with collecting essential data. Official institutions must reform their policies and procedures, and businesses must adopt them.

According to Hyvönen et al. (2008), system of ERP have added a new perception to transform digitally in the form of integration. Quattrone and Hopper (2005) stated that ERP systems have traditionally functioned as a bridge between a company's functional autonomies, allowing for a cross-functional, process-oriented approach. CFOs may serve as "captains of the ship," directing the development and implementation of business models (Andersson et al., 2018). The solution's "many links to other information systems" demonstrates its "complexity," according to Hyvönen et al. (2008). Moreover, efficient accounting automation, such as accounts payable/receivable or auditing, is challenging to execute, rendering ERP systems obsolete for jobs requiring complex judgment models.

Clients' resistance to RPA software is a widespread complaint among Big 4 audit firms interviewed. It is mainly due to clients being unaware of the potential of bots. Some people oppose automation because of concern for their employees' jobs. Additionally, many clients are hesitant to accept new technologies due to data security concerns. Concerns surround the security of corporate procedures and the cross-border movement of information (Cooper et al., 2018).

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

Research Framework

Despite the scholarly discourse, no consensus on feasible RPA models has been reached in practice. The analytical description of Deloitte's (Schatsky et al. 2016) back-office procedure for invoicing a purchase order is provided to address this gap. These begin with manual processes guided by humans, progress to RPA, and lastly to cognitive technology for RPA.

Manually, the user logs in to the system to examine orders, and the purchase order is validated once approved. The order is then priced or discounted following the terms of the client's contract. Later the purchase order is dispatched and billed. This way of working is susceptible to human mistakes and poor judgement.

This process can be automated using a software-based RPA robot. Following that, it checks the client system for new orders. The older system downloads the purchase order. By contrast, a supervisor verifies the order's legality and accuracy. The automated robot subsequently uploads the purchase order to the organisation's internal enterprise resource planning (ERP) system, such as SAP or Oracle. Discounts are applied under the terms of the customer agreement. Orders would then be downloaded from the customer's design and pushed into the legacy system via the programme. Natural language processing (NLP) extracts and matches data from client contracts. Finally, discounts are implemented under client contracts.

Humans are only involved in monitoring the automated application of these three working notions. Because the training and learning are done on a computer, the method is more efficient and saves money. J.R Baldwin et al. (2006) found that human processing is preferred by auditors to decision aids or technologies involved in knowledge-base. It shows how a proof-of-concept (POC) can show the economic benefits of these kinds of systems while also lining up with possible improvements to automation. A POC may take two weeks, according to Schatsky et al. (2016), while a pilot may take four to eight weeks.

Analysis of a case

One large image of the major developers of RPA robots and shared services in the world and one small image of India's startup environment demonstrate how the market is changing. The focus of this macro approach was on the technologies and collaborative ecosystems that are built around automation. On the other hand, the micro perspective focuses on the social ramifications of automation and its role in stimulating innovation in a local setting. In addition, they gave a quick summary of their automation environment and pointed out some potential concerns.

Case 1: Constructing an environment for RPA and AI in audit and accounting

Working with Unipath:

In 2005, software development kits were used to start UiPath in Romania (SDKs). It went from making $1 million in annual recurring revenue to $100 million in just 21 months (UiPath, 2018). It is one of the business software companies with the fastest growth. They have 2100 clients

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

worldwide, and every day they get six more. They have raised about 450 million dollars and are worth $3 billion on the market. Their platforms get high marks for their easy use, and they have a direct marketing strategy that includes large accounts in many industries.

The robot will extract the required information from the PDF document by opening the invoice folder in the mail. The fields needed for a total invoice are listed below. The robot is launched by the UiPath, opens the e-mail, saves the invoice data, and takes the required data. Information is removed after reading the PDF content. In addition, the robot transforms and formats data for SAP validation. This method is shown in UiPath Studio in Figure 1. The robot logs into SAP with encrypted credentials after extraction. Then, as illustrated in Figure 2, a search is performed to see if the vendor is found in the database. In that case, specific data from internal sources can be changed. The data from the files are then used to construct the invoices. The invoice and database are then VAT-validated. Cases can be made to ask the robot to "post" or "park" the invoice after it has been sent to a certain user. The original file is sent to processed invoices in the mail system. By automating the invoice processing process, clients can reduce human involvement.

This invoice processing concept was implemented with a client in the automotive industry using UiPath Studio (UiPath 2018). It was decided to automate because there were 2,000 invoices each day to process. Sub-optimisations were avoided, and construction was introduced into the client's processing concept, thanks to automation being administered from a single system.

Analysis of Business and Technical with UiPath

Chief Evangelist Guy Kirkwood states that several ecosystems have facilitated UiPath's expansion (Baxter 2018). As a result of this, their clients have the highest transaction potential. Their technological partners, including Google Cloud, IBM Watson, and Celonis, complement technologies like NLP, OCR, and ML integrated into UiPath Orchestrator, their core control system. As per Le Clair (2018), the multitenancy and backward compatibility characteristics may be differentiators that other industry competitors are still working on various software firms such as Oracle financials, Microsoft, Google, and service firms such as Salesforce incorporate the firm's capabilities into their systems. They will gain an advantage over a competitor automation vendor by creating a solution through process mining grounded on platform which are cloud-based. Their cognitive solutions, such as ABBYY FlexiCapture for unstructured data, can help. The excellent ROI and low prices of UiPath's products have attracted system integrators such as Deloitte, Capgemini, Accenture, and KPMG.

Within UiPath, the reusability of automation (for example, for error handling and reporting) is versioned (Le Clair, 2018). Their model of direct marketing, training through system, and scale are critical to their success. As a result, RPAbox and Symphony, two of their training initiatives, are essential to system deployment success.

Case 2: A close look at how to utilise AI and RPA in auditing and accounting

Based on Salaxy.com (Isosävi 2019) interview, this chapter explores RPA in auditing more prominent business administration technologies. Some of Finland's largest financial institutions use

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

Salaxy's online wage payment system at real-time with intelligent and automatic payroll.

As a buzzword, artificial intelligence (AI) is now being over-emphasised, even though most popular uses of AI do not involve machine learning. Remember that the Big4 and their reports promote, brand, and sell their general and tax consultancy services.

Problem of obtaining relevant structured data is one reason. For AI to bring benefit to most firms, it must first automate a lot. It would be revolutionary for small businesses to combine accounts payable, taxes, invoicing, and salaries (Isosävi 2019).

Enabling automation is the sole goal of Finland's national income registry, which went into effect on January 1, 2019. The registry stores wage payments and tax information, not other relevant items like home tax deductions. It is built solely for tax purposes. The register is another example of automating the process that is not a suitable solution for AI due to its lack of modern data storage design. No application can be produced without a holistic data and methodical collecting viewpoint. There are more AI technologies and interfaces to combine current structured data accessible. The real-time "pulse" of the economy could be obtained by blending the income register with a online real-time goods and service tax (GST) registry. With such a tool, any economic arguments would be made useless.

The broad societal debate should include a holistic picture and what data is collected and who manages it. There must be rules and standards for managing data, metadata, and access to this data to protect data security and privacy. As in the Finnish Transport and Communications Agency example, focusing on user demands rather than foundations and principles can lead to errors.

Sufficient AI already exists to merit the hype. Banks and AML procedures employ some of the most potent AI technology and examples of legislative activity supporting AI use. The 5th Anti-Money Laundering Directive (AMLD) specifies how banks must recognise money laundering patterns and other illicit transactions. Automated bank processes are currently used to collect data for machine learning to enhance AML practices.

Potential for the Future

Robo-accounting with intelligent automation has great promise (EY 2018c). However, traditional RPA has limitations, such as simply processing digital data and not checking things over the phone or informally. To fully realise its potential and create value, further digitalisation, especially machine learning, is required (EY 2018d).

To deepen customers' digitalisation capabilities, EY (2018d) describes how to improve clients' work habits. According to EY, automation requires digital enablement. To automate anything, clients must first digitalise and interpret unstructured data collected via digital forms, chatbots, and voice recognition into structured data for AI (intelligent optical character recognition) and robotics (RPA). To fully utilise automated processes, digital workflows must integrate human-to-human agent gateways.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

RPA, often known as digital labour, is a simple approach to using software robots to automate tasks. Banks and AML procedures use some of the most potent AI technology, as well as examples of legislative activity supporting AI use as per PWC (2017).

For automated operations, the internal auditing requires new methods of testing. It demands a grasp of RPA's risks and ensures that well-designed and realistic controls mitigate emerging technological threats. Automation can help with risk management and compliances. Contrary to humans, machines do not forget steps or get tired of performing transactions. The results are always reliable and consistent, with no bias or volatility. However, this means that robots may not be able to recognise changes in the business environment that humans do. RPA governance is required.

RPA has the potential to transform internal audits beyond controls testing automation. Tasks include recording and monitoring KRIs, creating automated reports and dashboards, and creating balanced scorecards (PWC 2017). Furthermore, using master data to evaluate data quality and log files to administer data promotes system validation and empowers individuals.

Additionally, RPA's benefits might not be realised until it is deployed with the same diligence and care as any other technology initiative. Technology advantages must be taken by Internal audits to cut costs and broaden risk coverage (PWC 2017).

Using advanced RPA methodologies allows for AI via machine learning. Because robotic processes gather data, any errors in data would automatically affect algorithm functionality, stressing the significance of RPA governance.

Financial transactions are a valuable target for cybercriminals due to artificial intelligence vulnerabilities. Aside from that, anyone willing to rig AI used for auditing may do it. User interface and other programme documentation must be transparent while processing personal data. The vulnerabilities of the Finnish Transport and Communications Agency's digital driver's licence programme provide a worst-case scenario of potential issues (YLE 2018). Any AI solution in finance requires relevant and well-scraped data.

Remember that we are in a state of flux, with no actual development speed, when examining digital services providers' fast-changing prospects. For example, 730 million euros have been invested by Nordea in operational security and compliance in 2018, employing 1 300 compliance specialists and training 12000 customer care representatives for 110000 hours. Meanwhile, the firm's robots can already perform the tasks of 1500 employees, and as per Kauppalehti (2019) it has pumped more than 200 million euros in digital services Automation is still a long way from becoming a reality.

Discussion and analysis

Because the field is new, the obstacles and risk factors vary. The following chapter discusses some essential elements in existing RPA systems and novel RPA ideas. Smaller solution suppliers and integrators have discovered these problems. The report provided an overview based on academic research and industrial arguments from PWC (2017) and Deloitte (2018) and to

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

reflect different features of the dangers of adopting RPA programmes with technologies of AI. These are generally derived from corporate and technical perspectives and should be complemented by societal attitudes. So, based on these issues, required focal fields for future study and industrial studies are given.

Table 1: As per PWC (2017) and Deloitte (2018), recognized risk categories for applying an AI and RPA rogramme is as follows

Business Risks		Automation risks	
Change Management	How organsiation tackles the RPA impacts? How to communicate the changes?	Odentity and access management Secured business process	Center of excellence
Executive	Who is responsible for RPA initiatives? Who will be responsible to mangae framework and promote efficiencies	Compliances of licence Strategy of Automation and governance	Proof of concept
Functional	Who is responsisble for designing the control systems? Whether ther are any scalabaility limitation in RPA and core systems?	Adopting existing systeme siwth new features Existing systems for simultaneous and unified operations across technical testing and rollout	Backward compatability
Technical	How to ensure the data accuracy and quality? How to carryout tests, validations and maintenance	Business Management and incidence management Regulatory compliance	Implimentatio n
Operational	What are the controls that exist for performance monitoring How can be business comply with regulatory requirements	Data leakages Cyber threats	Business Case

Good results through proper guidance

A significant danger when modifying a procedure is that the approver does not fully understand the concept. The programmer or IT specialist who develops or implements the system to replace the existing one is intimately familiar with the interface and underlying activities. Most upper-level executives aren't like this because experienced in a company is often associated with an older employees needing a more profound comprehension of general concepts. Because information is restricted, there is a high risk of misuse, and senior management rather than the system commits mistakes. For example, without an RPA system, the second tier of human interaction prevents these issues from arising.

It is critical to have the right motivation. Because deploying an RPA is a commercial endeavour, the primary focus should be on the business benefits. The system's ultimate goal may be forgotten if the IT focus becomes too intense. It may impact how RPA is integrated into the existing workforce and how many traditional jobs are replaced.

The ease with which AI systems can be tampered with or broken is a concern. The risk of boosting AI's cognitive process and damaging it is considered in its intended application. Microsoft's "Tay" project from 2016 is a good illustration. In less than 24 hours, an AI bot posing as a female user on Twitter is corrupted, spouting racist, sexist, and Various other offensive interpretations in response

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

to the discourse. It eloquently demonstrates one of AI's flaws: data. As per Sakata (2018), most current AI systems cannot overcome this initial stumbling block and recover if data quality is inadequate

Cyber risk and exposure to potentially harmful AI systems

Automated financial system hacking attempts are theoretically more effective and harder to detect. Hackers can use AI to infiltrate and stay in vital systems in the banking industry. EY outlines four cyber hazards associated with RPA installation and usage:

Abuse of privilege, data leakage, security weaknesses, and denial of service are security issues. Malicious parties can exploit these flaws to access sensitive data processed by RPA systems. However, because countermeasures are easily accessible and continually improving, RPA systems are comparable to other information technology systems. Different approaches to ensure a secure system, aside from IT technologies, include strict access control and a transparent and traceable organisation (EY 2018b).

Rright strategies and correct usage are critical

The financial industry is desperate to stay relevant and adopt concepts that have been successful in other organisations and circumstances, so there's a good chance you'll miss your company's genuine need. RPA may be more cost-saving and simple to design and use than another system or unique solution. Avoiding hot selection as a manager necessitates detachment and a grasp of the bigger picture (EY 2018a).

Outlook for future

Resource allocation for implementation

During the implementation process, they are ensuring that an RPA functions at maximum efficiency are vital. The symphonic ventures blog suggests enabling RPA for scheduling and task execution at the enterprise level. These capabilities are designed to save time and money, so RPA systems were created first (Brain 2017). Compared to considerable modifications in conventional IT platforms in auditing systems, RPA deployment expenses are minor in time and money.

EY (2016a) stated that there is concern that RPA would struggle to manage non-standardised bills and data. The accounting sector demands OCR technology and a configurable hierarchical approval and exception structure.

Need for funding and proof of concept (POC)

Most businesses require POC before making important decisions, and RPA and AI are no exception. Proper dimensions can be obtained after observing the system in action, which is a problem when breaking down cost-benefit calculations before installation. It is critical to have the means to test a system's usability before making a significant financial commitment. As per Lang T. (2019), POCs preferably should be evaluated similarly to the planned real-time system.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

Black Box Solutions: Transparency needed

To analyse correctly an RPA's impact on the business, management must be able to evaluate it objectively, which necessitates openness. It's critical to ensure that RPA achieves its goal better than previous methods. 2016b). Explanable AI aims to make decisions by AI is more analogous to patterns of human behaviour, allowing for human supervision. The ability of a corporation to comprehend AI improves transparency and utility. As per Samek et al. (2017), explainable and interpretable AI testing and deployment methods can aid in the discovery of data biases, model difficulties, and new insights into the system

Increasing the number of alternatives available to minor players

RPA service providers often pitch big ideas and projects, but most of the accounting field still works on a smaller scale. It opens the door for RPA or AI solutions in startups and other small businesses where accounting can be expensive (CiGen RPA, Medium.com). A new business can benefit greatly from having a clear plan for financial processing and internal growth.

Limitations and further research

This paper describes the state of RPA and AI in accounting and auditing. Two case studies were chosen to highlight how technology is employed currently. This study provides a thorough overview (Annex 2) of existing RPA and AI concerns, which should be expanded based on implementation sectors and departmental structures. The study's main flaws are its broad scope and emphasis on practical rather than theoretical implications. So, in the future, research should combine new ideas from academic articles with models from experiments. Studies should also be done on how much time RPA saves and how much human help it needs. It will help figure out where RPA is most beneficial. It should also include case-based testing to determine how much AI technologies can help RPA. It will help find business, technical, and social problems from a perspective of macro and micro. This study is a starting point for connecting research and using different technological paradigms in the industry.

Conclusion

The research and industry studies show that RPA and AI are becoming more useful in accounting and auditing and are being used to their full potential. Work that needs judgement, creativity, and a lot of exceptions is hard for computers to do (Wilson and Sangster 1992). Still, Bresnahan et al. say that RPA systems that AI boosts can bring many benefits (1999, p.11). Baldwin et al. (2006, p. 82) say that AI researchers can help solve some of the most critical problems in audit and assurance by using " neural networks, fuzzy logic, and possibly other parts of AI that have never been used in an audit and accounting point of view." It is shown that existing applications are vital to improving RPA systems and adding more things to think about. The threshold for increasing efficiency is lowered by automating most manual activities requiring much human intervention. While this has the potential to save time and money, we have discovered various hurdles to overcome, which are consistent with industry implementation experiences (PWC 2017). While AI systems will help answer vital data queries, the quality and quantity of data input are critical.

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

Furthermore, unlocking AI's black box is required to deploy such systems and expect increased automation levels responsibly. Explainable and interpretable AI technologies can help bridge this gap. While cyber-attacks grow in strength and frequency, cyber-defence grows in power to ensure system security and safety. Federal, state, and local government regulations and registries affect employers who must renew administration. Decades ago, C.L. Keenoy (1958) said that the wide distribution of responsibility schemes would give more chances in the coming age of automation.

Throughout our research, we've identified current technology's technical, social, and business contexts and how it's used. Our main concerns are mentality and ecosystem modelling (see Annex 2). For these systems to work in accounting and auditing, there must be support from all departments, a clear mindset, and clear plans and descriptions of the problems. Their processes will be more straightforward and more effective when dealing with mistakes or issues. RPA and AI technologies can only be fully used by companies that look at a wide range of risk factors. Other companies waste money on procedures that are not focused or reliable and don't have ownership on business or technology.

References

1. Andersson, Per; Movin, Staffan; Mähring, Magnus; Teigland, Robin; Wennberg, Karl; McGettigan, Karyn (Eds.) (2018): Managing digital transformation. 1. ed. Stockholm: SSE Institute for Research, Stockholm School of Economics ([SIR:s årsbok, 2017])
2. Baldwin, Amelia A.; Brown, Carol E.; Trinkle, Brad S. (2006): Opportunities for artificial intelligence development in the accounting domain. The case for auditing. In Intell. Syst. Accounting Fin. Mgmt. 14(3), 77–86. DOI: 10.1002/isaf.277.
3. Baxter, Michael (2018): RPA market with UiPath in the cockpit is taking off like a rocket: Information Age. Retrieved from https://www.information-age.com/rpa-market-uipath-123476832/, checked on 2/2/2019.
4. Brain, David (2017). RPA Technical Insights, Part 19: Doing More for Less: How to Optimise Resource Allocation in RPA. Symphony ventures blog. Retrieved from: http://blog.symphonyhq.com/rpa-technical-insights-part-19-optimize-resource-allocation
5. Bresnahan, Timothy; Brynjolfsson, Erik; Hitt, Lorin (1999): Information Technology, Workplace Organization and the Demand for Skilled Labor. Firm-Level Evidence. Cambridge, MA: National Bureau of Economic Research.
6. CFB Bots (2018). The Difference between Robotic Process Automation and Artificial Intelligence. Retrieved from https://www.cfb-bots.com/single-post/2018/04/09/The-Difference-between-Robotic-Process-Automation-and-Artificial-Intelligence.
7. CiGen RPA, Medium.com "RPA for small businesses: 6 Gains it is likely to bring about" Retrieved from https://medium.com/@cigen_rpa/rpa-for-small-businesses-6-gains-it-is-likely-to-bring-about-f50d62530677
8. C.L. Keenoy (1958): The Impact of Automation on the Field of Accounting: The Accounting Review (No.2), 1958, pp. 230–236. Retrieved from: https://www.jstor.org/stable/241233?origin=JSTOR-pdf&seq=1#page_scan_tab_contents, checked on 2/6/2019.
9. Cooper, Lauren; Holderness, D. Kip; Sorensen, Trevor; Wood, David (2018): Robotic

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

Process Automation in Public Accounting. Retrieved from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3193222

10. Deloitte (2018): Auditing the RPA environment. Our approach towards addressing risks in a BOT environment. Deepa Seshadri; Ashish Sharma. Available online at https://www2.deloitte.com/content/dam/Deloitte/in/Documents/risk/in-ra-auditing-the-rpa-environment-noexp.pdf.
11. Drum, Dawna M.; Pulvermacher, Andrew (2016): Accounting Automation and Insight at the Speed of Thought. In Journal of Emerging Technologies in Accounting 13(1), 181–186. DOI: 10.2308/jeta-51441.
12. EY (2016a) Robotic process automation in the Finance function of the future. Retrieved from: https://www.ey.com/Publication/vwLUAssets/EY Robotic_process_automation_in_the_Finance_function_of_the_future/$ FILE/EY-robotic-process-automation-in-the-finance-function-of-the-future-2016.pdf
13. EY (2016b) Get ready for robots. Retrieved from: https://www.ey.com/Publication/vwLUAssets/Get_ready_for_robots/$FILE/ey-get-ready-for-robots.pdf
14. EY (2018a) Risk and control considerations within robotic process automation implementations. Retrieved from: https://www.ey.com/Publication/vwLUAssets/EY-risk-and-control-considerations-within-RPA-implementations/$File/EY-risk-and-control-considerations-within-RPA-implementations.pdf
15. EY (2018b) How do you protect the robots from a cyber attack? Retrieved from: https://www.ey.com/Publication/vwLUAssets/ey-how-do-you-protect-robots-from-cyber-attack/$FILE/ey-how-do-you-protect-robots-from-cyber-attack.pdf
16. EY (2018c). Robotics and intelligent automation Combine the power of humans and machines. Retrieved from https://www.ey.com/Publication/vwLUAssets/EY-robotics-and-intelligent-automation/$FILE/EY-robotics-and-intelligent-automation.pdf
17. EY(2018d). Intelligent automation Reshaping the future of work with robots. Retrieved from https://www.ey.com/Publication/vwLUAssets/EY_intelligent_automation/$FILE/EY-intelligent-automation.pdf
18. Isosävi, Janne 2019. This chapter is based on a background interview on the topic done with co-founder and CMO Janne Isosävi of Salaxy.com on 8.2.2019 9.30-10.00. Salaxy offers Real-time salary payment solutions with automatic and intelligent payroll. Juvonen, Anna Kauppalehti 6.2.2019 ”Nordean von Koskull listaa muutosohjelman hedelmät: Robottien kapasiteetti vastaa 1500 henkilötyövuotta” (Kauppalehti 6.2.2019) Retrieved from: https://www.kauppalehti.fi/uutiset/nordean-von-koskull-listaa-muutosohjelman-hedelmat-robottien-kapasiteetti-vastaa-1500-henkilotyovuotta/7d335225-3b76-471d-9b81-38fb0eef0e71
19. Lang T. 2019, Enterprise services outlook "Executing a proof of concept test for robotic process automation" Retrieved from: https://www.esoutlook.com/cxoinsights/executing-a-proof-of-concept-test-for-robotic-process-automation-nwid-1161.html
20. Le Clair, Craig (2018): The Forrester Wave™: Robotic Process. The 15 Providers That Matter Most And How They Stack Up, 2018, 1–23.
21. Perrier, F. (2018). Pushing the limits of RPA with AI. Retrieved from: https://www.capgemini.com/2018/11/pushing-the-limits-of-rpa-with-ai/.
22. PWC (2017) Robotic process automation: A primer for

P-ISSN: 2204-1990; E-ISSN: 1323-6903
DOI: 10.47750/cibg.2022.28.04.094

internal audit professionals. Retrieved from https://www.pwc.com/us/en/risk-assurance/publications/assets/pwc-robotics-process-automation-a-primer-for-internal-audit-professionals-october-2017.pdf

23. Quattrone, Paolo; Hopper, Trevor (2005): A 'time–space odyssey'. Management control systems in two multinational organisations. In Accounting, Organisations and Society 30(7-8), 735–764. DOI: 10.1016/j.aos.2003.10.006.
24. Rao A. & Golbin I. 2018 PWC: "What it means to open AI's black box" Retrieved from: http://usblogs.pwc.com/emerging-technology/to-open-ai-black-box/
25. Sakata, Toby (2018) The Good, The Bad and The Ugly of Artificial Intelligence and Machine Learning. Medium.com. Retrieved from:https://medium.com/applied-innovation-exchange/the-good-the-bad-and-the-ugly-of-artificial-intelligence-and-machine-learning-3f7e663c317a
26. Samek, Wojciech; Wiegand, Thomas; Müller, Klaus-Robert (2017): Explainable Artificial Intelligence. Understanding, Visualising and Interpreting Deep Learning Models, 8/28/2017. Retrieved from https://arxiv.org/pdf/1708.08296.
27. SAS Institute Inc (2019). Data mining. Retrieved from https://www.sas.com/en_us/insights/analytics/data-mining.html Schatsky, David; Muraskin, Craig; Iyengar, Kaushik (2016): Robotic process automation. A path to the cognitive enterprise: Deloitte University Press (SIGNALS for Strategists), 2016, 1–10, checked on 27.01.19.
28. Tan, Gillian (2014): Spreadsheet Mistake Costs Tibco Shareholders $100M: The Wall Street Journal, 2014. Retrieved from https://blogs.wsj.com/moneybeat/2014/10/16/spreadsheet-mistake-costs-tibco-shareholders-100-million/, checked on 3/1/2019.UiPath (2018): Case Studies. RPA at work. Focus on accounts payable: UiPath, pp. 1–2, checked on 1/24/2019.
29. UiPath (2018): UiPath Raises $225 Million Series C Led by CapitalG and Sequoia. Irina Hutu. Retrieved from https://www.uipath.com/news/uipath-raises-225-million-series-c-led-by-capitalg-and-sequoia.
30. Wilson, R. A.; Sangster, A. (1992): The automation of accounting practice. Int J Inf Technol 7(2), 65–75. DOI: 10.1057/jit.1992.11.
31. YLE (11.12.2018). Tietoturva-asiantuntija STT:lle: Trafin palvelun ongelmallisin seikka oli pelkällä henkilötunnuksella toimiva haku. Yle uutiset. Retrieved from: https://yle.fi/uutiset/3-10549455