Turkish Journal of Computer and Mathematics Education Vol.12 No.12 (2021), 3675-3682

Research Article

A Review of the Robotic Process Automation's Impact as a Disruptive Innovation in Accounting and Audit

Joydeep Mookerjee[1], O. R. S. Rao[2]
[1]PhD Scholar, ICFAI University, Jharkhand, India
[2]Vice Chancellor, ICFAI University, Jharkhand, India

Article History: Received: 11 January 2021; Revised: 12 February 2021; Accepted: 27 March 2021; Published online: 23 May 2021

Abstract: Robotic Process Automation (RPA) is a holistic approach to accounting and auditing processes that have made them more dynamic, secure, and safe. This study demonstrates the principle of robotic process automation (RPA) and how it impacts accounting processes. This review paper makes recommendations for future studies. An analysis of the literature from previous research as well as the most recent sources was conducted to identify research gaps. The study's results revealed the ability for RPA to automate accounting processes and the fact that robotic approaches are projected to replace accountants for a significant portion of their work. This will lead to a reduction in the number of base-level accounting roles. While also making it easier to create new accounting vacancies. Financial reporting for company consultancy and the transformation of robotic process automation would be among the future accountant's tasks.

Keywords: Disruptive Innovation, Strategic Initiatives, Competitive Strategy, RPA, Financial Accounting, Audit.

1. Introduction

Industrialized automation, such as robotics, improves production capacity by increasing production rates, improving efficiency, and lowering manufacturing costs. However, "robots" also revolutionize administrative processes, IT processes, company workflow management, back-office jobs, and remote infrastructure in the modern digital era. As per(IRPAAI, 2020), RPA uses disruptive technology, enabling the workforce in corporations to use chatbots to automate repetitive tasks and for processing transactions, triggering alerts while interacting with ERPs be other digital systems. RPA improves accuracy, time management, and efficiency in business processing whiles also the workflow. RPA's introduction is being hailed worldwide as a comprehensive solution to stable and safe automated accounting.The new technical developments continue to revolutionize the industry at a breakneck pace, and accounting services are no exception. Modern technology can perform human tasks based on routine tasks faster and more accurately than human manual approaches. The emergence of simple automation solutions has paved the way for continuous improvement and the eliminating errors and mistakes. The roots and advancement of sophisticated data processing emerged from difficulties with manual data processing.RPA conjures up visions of a physical robot executing human tasks, it refers to the configuration of a computer programme. (L. P. Willcocks, Lacity, & Craig, 2015). It's a framework, mechanism, or tool for automating manual processes that includes encrypted computer programmes. The measures that computer users take to manually identify processes and automate them using a robot programmed to communicate with other computers are referred to as a system, mechanism, or tool.(Bataller, Jacquot, & Torres, 2017). RPA's potential in accounting was shown in one of the reports. This study looked at how RPA has changed people's perceptions of business principles, activities, and resourcing. (Kedziora & KIVIRANTA, 2018).RPA is a simple programmed structure that allows a user to run a business and execute processes without having to programme them manually. Within a few weeks, a user can train themselves on RPA. RPA stands for Robotic Process Automation, which is a workflow automation system that interacts with available functions and replaces human efforts. (Lacity, Willcocks, & Craig, 2015). The RPA tool that replaces this individual is known as the "swivel chair." This individual receives feedback from a series of processes, courses of input, and outputs, and tracks it in a documentation system (for example enterprise resource systems). RPA's "interface" for all customer payment gateways makes it easy to incorporate legacy systems and enterprise resource management systems (ERP).In a matter of minutes or seconds, RPA can generate invoices from billing documents, which it can then send or upload to the buyer portal. Millions of dollars are expected to be saved each year by improving demand-to-cash productivity. RPA can speed up processes in the ERP structure that require voluntary action in order to rationalize resources, costs, and risks. RPA, for example, can automate the handling of numerous company and vendor bills, eliminating repetitive and multilevel activities.(Fernandez & Aman, 2018). Organizations aim to enhance the productivity of their systems by re-designing and improving their commercial processes in order to remain competitive. As a consequence, sophisticated information technology (IT) is necessary to help the company achieve its objectives. Premature IT users, on the other hand, may struggle to build their own legacy systems because they are unavailable and closed due to a lack of appropriate application programming interfaces (APIs). Finance or banking companies that have successfully deployed RPA and a professional business model have seen positive results in terms of meeting operational goals, customer support,

and employee productivity. RPA is of particular interest to banking sectors, which have a history of being early adopters of new technology, especially process-aware information systems. (Lacity, Willcocks, & Craig, 2016).The most critical aspect that alters the way businesses operate is the digital revolution. Automation innovations are gaining traction in all aspects of modern industry, creating value and producing strategic benefits.(Kotarba, 2018). The impact of robotic technology on accounting activities is most prominent, as it required a wide range of skills and a significant amount of human activity. Cloud computing, Artificial intelligence, RPA, and blockchain are already disrupting this industry.The main objective of this research is to study the disruptive impacts of RPA in audit, accounting and related professionals. Other automation systems, such as ERPs, AI, and cloud computing, have garnered considerable attention so far.The growing use of RPA, which can benefit all of the accounting solutions listed above, necessitates further study. The key focus of this review paper is to clarify the principle of RPA, its various accounting implications, and future implications and directions.A literature review was performed for this reason. This review paper demonstrates the main features of RPA, it's strategic impact and accounting ramifications.This review paper has the following sub-sections:- Firstly Section-1 a briefly discussed concept of RPA and background of the study as introduction, section-2 explained the research methodology. Section-3 represents the application of RPA in accounting. Section-4 discussed the challenges of robotic automation implementation. Section-5 the influence of robotic automation on accounting and Section-6 includes discussion and conclusion.

2. The relevance of RPA in Financial Accounting:

The use ofNatural Language Processing methods, Text Mining procedures, Artificial Neural Network formulas, and for information extraction and subsequent optimization and forecasting scenarios in improving organisational and business processes extends RPA software's functionality.(Jorge , Rui, Tiago , & Sara, 2021)Investments in RPA software and tools are expected to range between $1.3 billion and $2.9 billion in 2021, according to industry analysts. Although it is possible to implement RPA without a comprehensive digital transformation programme, these systems will not achieve their full potential or fulfil their intended function without certain automation capabilities. (Daptardar, 2021). Accounting work is assigned to shared service centres. The primary motivation for outsourcing is to save money by working in low-wage countries. However, it seems that the vast majority of companies have already identified the advantages of outsourcing. Labour costs are declining, but this isn't the primary driver of outsourcing.Traditional outsourcing necessarily involves more control than outsourcing processes controlled by machines. A further justification to automate process transactions is to reduce costs, to save time and to keep more control over the databases. Employees appear to be more receptive to the RPA concept, than our customary sources. Outsourcing is actually more disruptive than integrating labour, according to a study of more than 500 executives conducted in 2018. Task automation is the technology of the future for increasing employee productivity and gaining a strategic advantage. (Lacity & Willcocks, 2017; L. Willcocks, Lacity, & Craig, 2017).Software robots were expected to assist with accounting and finance operations. The recording of numbering operations necessitates a high level of accuracy and precision, and many of them include the management of several transactions. Company employees collect data from a variety of disassembled devices and then execute procedures before entering data into the accounting system. Data collection and analysis by manually is time-consuming and error-prone.(Susan Parcells CPA, 2016; Tucker, 2017). Robotic operations can boost productivity and money by significantly reducing the error rate. Accounting activities are governed by a set of standards that allow them to be easily automated. It offers automation monitoring, authorizations, and file management all at the same time. Manual process audit records can share more information than manual management audit records.Accounting regulations and standards are subject to revisions and modifications. The modified code allows robots to be trained more quickly.Another reason to support RPA is that traditional automation solutions may exclude legacy systems.Various financial and accounting procedures are perfect candidates for software robots due to the simultaneous use of new and old software as well as the duplication of manual processes.(Chen, Huang, Chiu, & Pai, 2012; Moffitt, Rozario, & Vasarhelyi, 2018).

3. Impact of Robotic Process Automation on Financial Accounting:

Recent automation disruptive technology has appeared in the accounting services, and research studies have been conducted to explore the influence of emerging automation technologies and their effects on individuals and organizations. RPA denotes a drastic and disruptive shift in accounting and auditing that will allow accountants and auditors to work at a higher level.RPA helps accountants to enhance the value of their auditing approach; additionally, RPA has already demonstrated the primary capability of accounting firms to improve their company operations and processes. While some fear that RPAs will fully replace humans, it is well understood that workers can be redeployed in different functions and with a significantly different job description.RPA is needed to revolutionize personnel in manual accounting operations and assist them in complex multifaceted processes. Each incremental automation solution (various computer accounting software, RPA, AI, ERP computer networks, and so on) emerges to gradually reduce the dependency and costs of repetitive tasks, thereby improving process accuracy and saving money and time. (Ghasemi, Shafeiepour, Aslani, & Barvayeh, 2011; Kanellou & Spathis, 2013; Kokina & Davenport, 2017; Marshall & Lambert, 2018). Prior research

concentrated on the effects of ERP on accounting systems to a large degree. These studies found a correlation between ERP implementation and increased accounting performance.(Chen et al., 2012; Kanellou & Spathis, 2013). Many researchers have looked into the advantages, applicability, challenges, and disadvantages of AI in accounting, especially in auditing. (Issa, Sun, & Vasarhelyi, 2016; Kokina & Davenport, 2017; Moll & Yigitbasioglu, 2019; Sutton, Holt, & Arnold, 2016). Many previous researches looked at genuine RPA adopter cases and identified excellent efficiency, time savings, and cost savings. (Cooper, Holderness Jr, Sorensen, & Wood, 2019; Fernandez & Aman, 2018; Rana, 2019; L. Willcocks et al., 2017). (Gotthardt, et al., 2020)Studied technical, societal and practical aspect of RPA implementation by taking interview of different accounting professionals. His research provided valuable insight into the nuances of RPA implementation while also highlighting the issues and risks associated with it.(Gotthardt et al., 2020). (Gotthardt, et al., 2020)it was also identified that robots may necessitate job increases in security and fulfilment, which should be properly considered during the impact and effective study of RPA in audit andfinancial accounting.Furthermore, predictions about robotics capturing human roles or replacing whole human functions can seem troubling. As a result, changes in work processes can exacerbate employees' inability to update themselves with modern robotic technologies, leading to issues of technology acceptance.(Fernandez & Aman, 2018; Gotthardt et al., 2020; Jędrzejka, 2019). Prior research has shown, however, that the real resistance to innovation and automation isn't all that intense. However, research into this topic is grossly inadequate, and few recent studies point to the actual RPA implementation's challenges. Workers are concernedthat introducing RPA will exacerbate their condition, although consumers are reluctant to consider it because of transparency of data.The greater impact of RPA implementation is viewed as a positive, hi-tech innovation as an opportunity rather than a risk. However, further research into the effect of robots on full-fledged accounting is expected. (Cooper et al., 2019; Gotthardt et al., 2020).(KEDZIORA & KIVIRANTA, 2018)observed that dread of robotic transformation if workers are inappropriately affianced about implementation of RPA. Employees who previously performed voluntary repetitive tasks are now in charge of RPA implementation, management, and control, and find their tasks rewarding, dismissive, and thus build unwieldiness towards technological novelty. (Fernandez & Aman, 2018)point out that robot cannot entirely substitute manual employee tasks, and jobs slash is obvious, therefore employee genuine concerns by some means are justified. However, (WILSON, DAUGHERTY, & MORINI-BIANZINO, 2017)believe that the human vs. machine view is out of date and naive, and that more emphasis should be placed on human collaboration with the machine. Robotic processes are not an alternate for humans, but they are considered as resources to help humans. They act as virtual or digital assistants who assist humans in normal or routine activities (Jędrzejka, 2019; Wilson, Daugherty, & Bianzino, 2017). With the implementation of RPA, unstructured accounting activities have become more structured, and researchers see it as a way to eliminate redundancy in system involved and aid decision-making rather than replacing human intervention.(Kokina & Davenport, 2017; Marshall & Lambert, 2018). Robots are capable of executing repetitive and unpredictable tasks, but they must be validated first. Staff members have a depth of knowledge and a deep understanding of all the complexities of tasks or procedures that are automatically carried out.(Kokina & Davenport, 2017).RPA can be quickly and inexpensively integrated into the existing structures, ensuring that corporations can continue to operate in any situation. Traditional customer-facing businesses, such as retail and banking are very often plagued by rigid mainframe outdated structures,as a result of which manual and labor-intensive protocols are required, and benefit the most from RPA after Covid.(Spigner, 2020). In terms of operational and business process automation, RPA offers significant advantages.Moreover, the deployment of Artificial Intelligence protocols, procedures and techniques in conjunction with RPA processes in data extraction, identification, classification, forecasting, and process optimization significantlyenhance the effectiveness of RPA processes.(Jorge , Rui, Tiago , & Sara, 2021)

4. Impact of Robotic Process Automation on Audit Process:

4.1 Dual-purpose auditing using RPA:

Robotic process automation can be used to evaluate if prices and quantities differ through sales processes such as sales, invoices, shipping credentials, and so on, and to send out selling notifications for any transactions with quantity or price variations. Auditors may save time by automating these processes, allowing them to concentrate on more value-added activities. This will assist in improving audit efficiency and productivity. Auditors who use the RPA software have a better understanding of the client's business processes, which allows them to reliably assess the risks of information misunderstandings. (Rana, 2019).

4.2 Three-Step RPA approach to advance audits:

RPA is a form of quality improvement that employs the most up-to-date tools and is applied to the auditing process. The RPA program is designed to not only replace the previous drab, time-consuming, and manual auditing procedures, but also to encourage a reconfiguration of the entire auditing process. (Moffitt et al., 2018; Rana, 2019).

RPA implementation of included three significant steps:

(I) Audit data standardization

(II) Process understanding and,
(III) Implementation of automated audit test (i.e. audit apps)

4.3 Audit data standardization:

Consistency is expected in the data process for RPA auditing applications to work. Data for audits may come from a number of places, such as a company's ERP system or third-party asset managers. As a consequence, the names of "data fields" in different audit reports containing the same information can differ. The RPA software would be unable to function in this environment. As a result, the next step in adopting the RPA will be to produce uniform audit data for each process in order to satisfy the requirements of the public accounting firms that will eventually replace the RPA. For public accounting firms exploring using technology in their financial statement audits, audit data standardization. The form for consolidating audit data includes the audit data required to conduct audit tests. A company can design same “data field” names and formats to ensure that the RPA auditing claim achieves the proposed objectives.

4.4 Process understanding

Basic and repeated audits, which take time and do not involve an audit opinion, are the audits that profit the most from the RPA. As a result, public accounting firms will still want to consider an audit method that incorporates professional expertise, such as the knowledge of "revenue audit leaders" and the actual time spent on audit work, to add more value to the RPA.Furthermore, the most significant element in justifying automation is how often a client wants to perform a specific job, which is largely determined by the number of related audits. The final step in learning the process is to be able to interpret audit tasks into small auditing units until the organisation has decided that the RPA is an excellent candidate for project completion. The job of exporting or importing data is spontaneous for a manual user (human); however, for a coded program (software), the job must be categories into a series of following steps:

1. Classifying the file directory from where files are to be imported
2. “Importing the files”
3. “Saving the imported file”
4. Classifying the file directory from where saved files are to be exported

4.5 Implementation of automated audit test

The final step in putting RPA into operation in auditing is to create software that automates audit evaluations and integrates them into real-world audits. Public accounting companies may use a multitude of RPA tools, such as Blue Price, UIPAT, and others. The rewards of certifying "ready-to-use" RPA software include the fact that it requires little or no supplementary programming. Software languages like R programming and Python, on the other hand, can help with RPA-based auditing tasks, but they require significant programming skills. R programming and Python actually have very useful libraries for RPA operations.

RPA auditors are facilitated during the revenue audit process by accessing the customer's secure "File Transfer Protocol" (FTP) site to repackage audit data such as present and previous sales lists and trial balances. The RPA will then examine the total sales list and compare it to the audit balance. Assuming reconciliation, the RPA analyses whether net income from the current and previous year listings differs materially, and if the difference crosses a certain threshold, it sends an emergency alert. (Rana, 2019).

5. Benefits of RPA on Financial Accounting:

The RPA accounting system and processes that can be benefited from automation in terms of execution and precision include following benefits (**Figure 2**) (Le Clair, Cullen, & King, 2017):

Period-end closing: Sub-ledgers closing, ledger (general), corroboration of journal entries, consolidation, and low-risk “accounts reconciliation”.

Reporting: Management and internal performance reporting by compiling, analyzing operational and financial data, monthly close and yearly close reporting and “regulatory reporting”.

Accounts receivable and payable: Updating, maintaining, testing, dealer/customer data, processing/generating/delivering invoices, validating payments, “automating approvals”, billing, verifying invoices against each transaction.

Management Cash: “General ledger accounting”, payroll, “inventory accounting”, inter-organizational transactions, reimbursement of travel and other expenses requests, audit expense reports, accounting of fixed asset and tax. Of course, the intelligence of an iceboat or chatbot is limited by the information it can extract and transmit to its user. This is done by implementing robots to retrieve and deliver data to our user interface, i.e., the chatbot, and thus respond appropriately to the query. The chatbot accomplishes this by translating the abstract query into a set of queries that the RPA system can comprehend. The robot then uses the record system(s) to retrieve relevant data objects, bundles them, and returns them to the chatbot, allowing it to recreate them into a natural language response. RPA is a critical component in enabling applications to communicate in the new world of conversational interfaces, particularly those that are difficult to integrate.(Daptardar, 2021)

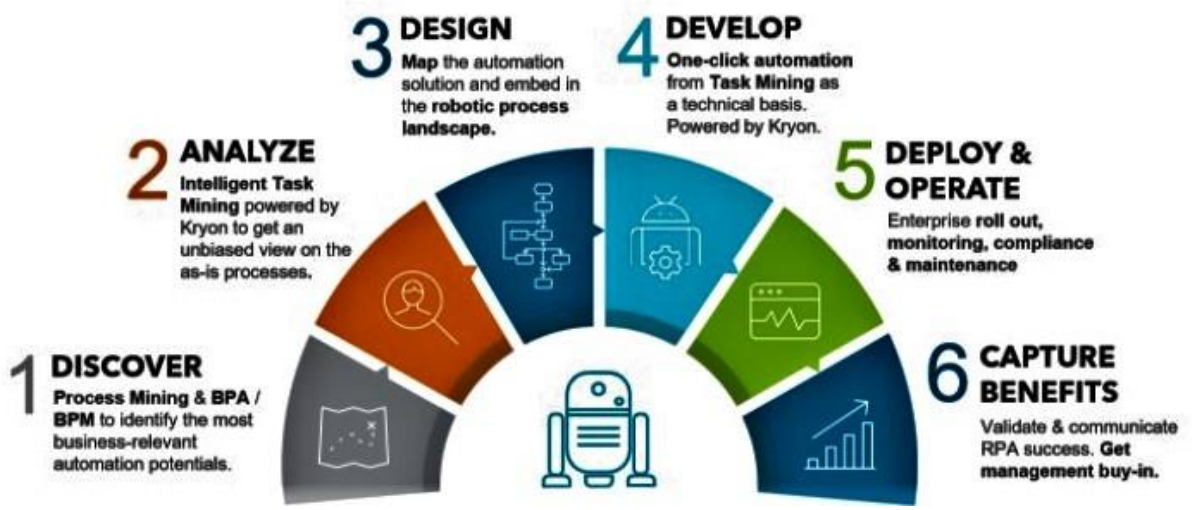

Fig.1: Implementation of RPA in Accounting Operations (Heller, 2020)

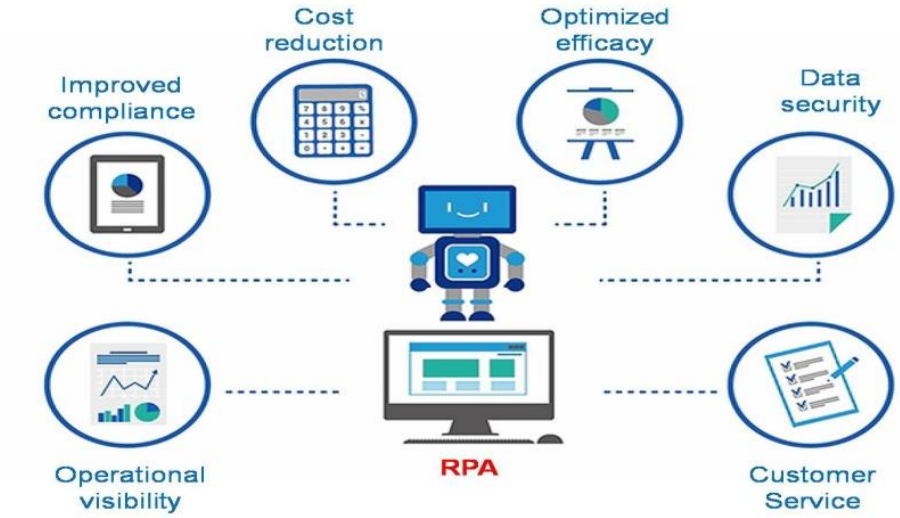

Fig.2: Benefits of RPA in accounting process (Pullen, 2019).

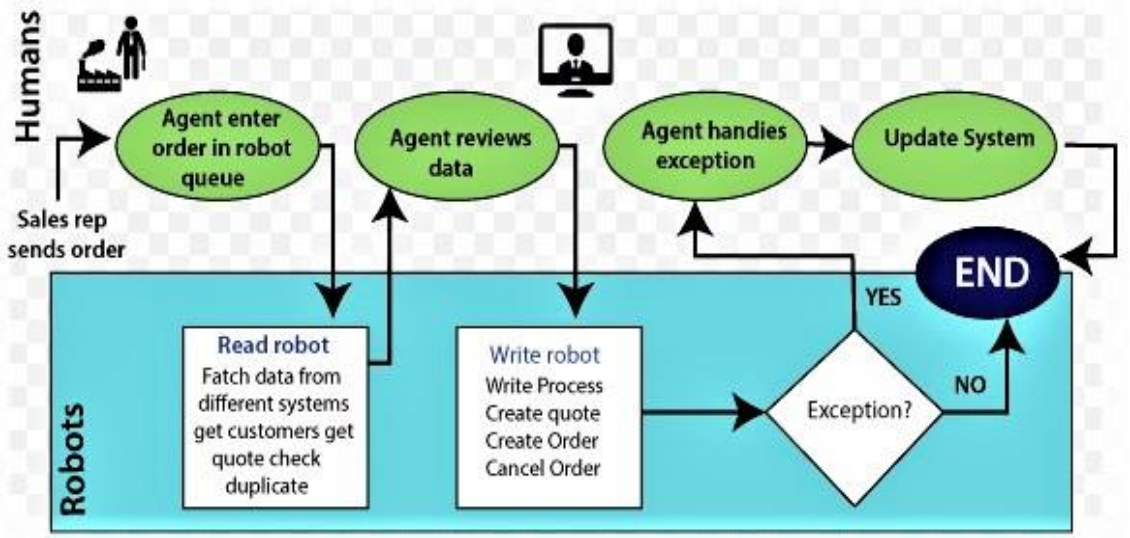

Fig. 3: RPA Process Flow (admin, 2020)

Table 1: Implementation risk of RPA risk (Jiles, 2020)

Implementation risks	Risk examples
OPERATIONAL	Bad robot resource management results in inadequate exceptions to the process workflow or ineffective operational execution (for example, allowing too many time-sensitive processes per single robot)
FINANCIAL	Inadequately structured criteria that result in financial misunderstandings or incorrect payments; which enabled a human to direct multiple robot inputs that could result in segregation of duties violations automates the processes that result in a company's financial losses
REGULATORY	Internal Financial Controls need to be significantly strengthened andautomation risks must be mitigated because it is possible to fraudulently exploit the robot's activities for financial reporting (for example, manipulating the input of a robotic process to direct a false output).
ORGANIZATIONAL	Incompetent governance, management, or administrative continuity planning (because resources are re-allocated to other tasks) or inability to retain functional performance within the team after automation are all examples of poor management, documentation, or operational continuity planning.
TECHNOLOGY	The effect of bot success on the instability of application integration; (Attackers) hack premium access accounts or retrieve data from RPA databases, posing a cyber threat. As a result, developers could fail to encrypt sensitive data as part of bot design, posing a significant risk.

6. Research Gap

The review literature indicated that research on impacts of RPA in accounting seems to gain steadily as compare to other latest technologies. Majority studies on accounting focused on demonstrating the common principles and concepts of the accounting solutions (Appelbaum & Nehmer, 2017; Bhimani & Willcocks, 2014; Jędrzejka, 2019; Yedavalli, 2018). The constraints of automation have previously been analysed; however, key factors such as scalability, complexity, and pace of updating that enable operations to be modified according to cost-benefit ratios are still unexplained. For a clearer understanding of the effects of RPA in accounting, an overview of the scale of the benefits versus the costs of introducing and running an RPA may be useful. Furthermore, further research is needed to explore the long-term viability of automation by studying an all-encompassing overview of RPA's components. Also, question remains how to control on RPA tools and automatic of full digital services of accounting (Cooper et al., 2019; Gotthardt et al., 2020). There is also a research gap about whether RPA is beneficial for SMEs when applied on a broad scale (especially in accounting and auditing section).RPA has proven to be a recession-proof saviour for business sustainability, allowing businesses to take advantage of new technologies. Across all sectors, automation combined with artificial intelligence is allowing disruptive technologies. With an explosion of consumer allegations and questions, company leaders struggling with the complexities of managing a dispersed workforce have recognized the value of change. They've switched to RPA to automate the processing of new claim forms as a consequence of the massive global contagion, as a result of which new procedure codes have evolved. (Spigner, 2020)

7. Future implication

Future research should provide criteria that describe both non-financial (employee productivity and satisfaction, employee reductions, processing times, client satisfaction, and so on) and financial (employee productivity and satisfaction, employee reductions, processing times, client satisfaction, and so on) factors (ROA, ROS, ROI,). The factor of organisation size and the financial viability of RPA should be the subject of future study. This review can lay the groundwork, to reflect the effectiveness of fields for future research in order to link academia and industry adoption of these technological models.The current study can be used in academic research since it addresses relevant research areas to show the current state of RPA approaches among auditing and accounting professionals. The situation of technology implementations is presented with two cases to cover diverse facets in operation, in addition to describing the unique challenges. This study offers a unified summary of the current situation and the categorized problems of RPAs, which should be extended based on implementation areas and department structure, in addition to a qualitative multi-factor analysis. Future research should incorporate new scholarly publications as well as realistic models in this regard. Furthermore, experimental research on the level of human involvement and the time/cost savings should be performed to identify areas relevant to work difficulty and voluntary labour intensity in order to identify areas where the RPA performs best.To assess the scale of RPA changes by providing additional benefits, case studies should be undertaken. As a result, from both micro and macro viewpoints, this study aids in highlighting the commercial, technical, and social complexities of implementing RPA in accounting.The time has come for corporations to schedule ahead and invest in RPA strategies. to help both remote and on-site workers adjust after months of workforce reduction and restructuring.

RPA technology is helping in mitigating unpredicted risk exposurelinked to blended workforce frameworks and enable humans to collaborate with data in the face of such volatile labour market dynamics.(Spigner, 2020)Notwithstanding the waves of Digital Transformation and robotics solutions, contract and communication management considered to be a significant problem for organizations.This is especially true for external materials like consumer or service provider contracts, which necessitates intensive manual case management.An organisation needs a framework to open access to an organization's application estate in order to deploy these solutions within an enterprise.(Daptardar, 2021)

Conclusion

Financial reporting has evolved as a result of technological innovation, and it is now simpler, quicker, more effective, more dependable, and faster than ever before. As a result, technological automated systems have completely transformed the accounting system. RPA refers to a set of software that operates as an employee in the system and automates the completion of multiple tasks, such as workflow management or process conscious systems. RPA is a new tool that involves a series of algorithms that simulate a human being's manual operations. Automated auditing tests are possible when audit tests are programmed into rule-based work. Anticipating low-risk operations that do not require audit judgment would increase the enterprise RPA project's success rate. RPA users' self-confidence can be improved by beginning with a simple basic move. In determining the effectiveness of "RPA-based audits," using RPA audit tests in audit interventions is critical.Parallel auditing reviews, including the existing manual evaluation and the RPA-based audit test, should be conducted as part of the process to verify RPA auditing tools. Furthermore, for RPA audits to succeed, corporations must enlist the help of their various IT departments. Setting up a "RPA support hotline" would help auditors gain trust in these new technologies, and coordination between audit teams and IT support teams will ensure that "RPA audit tools" are customized to meet the standards of auditing and accounting goals.

References

1. IRPAAI. (2020). What is Robotic Process Automation? , from http://irpaai.com/what-is-robotic-process-automation/
2. Lacity, M., Willcocks, L. P., & Craig, A. (2015). Robotic process automation at Telefonica O2.
3. Bataller, C., Jacquot, A., & Torres, S. R. (2017). Robotic process automation: Google Patents.
4. Kedziora, D., & KIVIRANTA, H. (2018). Digital Business Value Creation with Robotic Process Automation (rpa) in Northern and Central Europe. Management (18544223), 13(2).
5. Fernandez, D., & Aman, A. (2018). Impacts of robotic process automation on global accounting services. Asian Journal of Accounting and Governance, 9, 123-132.
6. Lacity, M., Willcocks, L., & Craig, A. (2016). Robotizing global financial shared services at royal DSM. The outsourcing unit working research paper series.
7. Kotarba, M. (2018). Digital transformation of business models. Foundations of Management, 10(1), 123-142.
8. Jorge , R., Rui, L., Tiago , E., & Sara, P. (2021). Robotic Process Automation and Artificial Intelligence in Industry 4.0 – A Literature review. Procedia Computer Science.
9. Daptardar, S. (2021). A REVIEW- THE GOLDEN TRIANGLE OF RPA, AI AND DIGITAL TRANSFORMATION. International Research Journal of Modernization in Engineering Technology and Science.
10. Lacity, M., & Willcocks, L. (2017). Conflict resolution in business services outsourcing relationships. The Journal of Strategic Information Systems, 26(2), 80-100.
11. Susan Parcells CPA, C. (2016). The power of finance automation. Strategic Finance, 98(6), 40.
12. Tucker, I. (2017). The blueprint for continuous accounting. Strategic Finance, 98(11), 40.
13. Chen, H. J., Huang, S. Y., Chiu, A. A., & Pai, F. C. (2012). The ERP system impact on the role of accountants. Industrial Management & Data Systems.
14. Ghasemi, M., Shafeiepour, V., Aslani, M., & Barvayeh, E. (2011). The impact of Information Technology (IT) on modern accounting systems. Procedia-Social and Behavioral Sciences, 28, 112-116.
15. Kanellou, A., & Spathis, C. (2013). Accounting benefits and satisfaction in an ERP environment. International Journal of Accounting Information Systems, 14(3), 209-234.
16. Kokina, J., & Davenport, T. H. (2017). The emergence of artificial intelligence: How automation is changing auditing. Journal of Emerging Technologies in Accounting, 14(1), 115-122.
17. Moll, J., & Yigitbasioglu, O. (2019). The role of internet-related technologies in shaping the work of accountants: New directions for accounting research. The British Accounting Review, 51(6), 100833.
18. Sutton, S. G., Holt, M., & Arnold, V. (2016). "The reports of my death are greatly exaggerated"—Artificial intelligence research in accounting. International Journal of Accounting Information Systems, 22, 60-73.

19. Cooper, L. A., Holderness Jr, D. K., Sorensen, T. L., & Wood, D. A. (2019). Robotic process automation in public accounting. Accounting Horizons, 33(4), 15-35.
20. Rana, K. (2019). Effects of Advanced Automation on Accounting Processes. Retrieved from https://ranakapil.medium.com/effects-of-advanced-automation-on-accounting-processes-21a385fc9c97
21. Willcocks, L., Lacity, M., & Craig, A. (2017). Robotic process automation: strategic transformation lever for global businessservices? Journal of Information Technology Teaching Cases, 7(1), 17-28.
22. Gotthardt, M., Koivulaakso, D., Paksoy, , O., Saramo, , C., Martikainen, , M., & Lehner, , O. (2020). Current State and Challenges in the Implementation of Smart Robotic Process Automation in Accounting and Auditing. ACRN Journal of Finance and Risk Perspectives.
23. Moffitt, K. C., Rozario, A. M., & Vasarhelyi, M. A. (2018). Robotic process automation for auditing. Journal of Emerging Technologies in Accounting, 15(1), 1-10.
24. Marshall, T. E., & Lambert, S. L. (2018). Cloud-based intelligent accounting applications: accounting task automation using IBM watson cognitive computing. Journal of Emerging Technologies in Accounting, 15(1), 199-215.
25. Issa, H., Sun, T., & Vasarhelyi, M. A. (2016). Research ideas for artificial intelligence in auditing: The formalization of audit and workforce supplementation. Journal of Emerging Technologies in Accounting, 13(2), 1-20.
26. Jędrzejka, D. (2019). Robotic process automation and its impact on accounting. Zeszyty Teoretyczne Rachunkowości, 161(105), 137-166.
27. Wilson, H. J., Daugherty, P., & Bianzino, N. (2017). The jobs that artificial intelligence will create. MIT Sloan Management Review, 58(4), 14.
28. Spigner, M. (2020, 12 30). Why RPA is a game changer in the post-Covid era. Retrieved from Information Age: https://www.information-age.com/why-rpa-game-changer-post-covid-era-123492818/
29. Le Clair, C., Cullen, A., & King, M. (2017). The Forrester Wave™: Robotic Process Automation, Q1 2017. Forrester Research.
30. Heller, C. (2020). Make RPA successful with a process-driven approach. Retrieved from Software | ARIS Community: https://www.ariscommunity.com/users/christina-heller/2019-11-19-free-webinar-make-rpa-successful-process-driven-approach
31. Pullen, D. (2019). 10 real world cases of robotic process automation (RPA) in accounting. Retrieved from https://www.tmnz.co.nz/2019/05/14/10-real-world-cases-of-robotic-process-automation-rpa-in-accounting/
32. admin. (2020). Robotic Process Automation UiPath. Retrieved from rpa-uipath: https://www.tutorialandexample.com/rpa-uipath/
33. Jiles, L. (2020). Govern your bots. Retrieved from https://sfmagazine.com/post-entry/january-2020-govern-your-bots/
34. Appelbaum, D., & Nehmer, R. (2017). The coming disruption of drones, robots, and bots: how will it affect CPAs and accounting practice? CPA Journal, 87(6).
35. Bhimani, A., & Willcocks, L. (2014). Digitisation,'Big Data'and the transformation of accounting information. Accounting and Business Research, 44(4), 469-490.