Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

The Role of Robotic Process Automation (RPA) in Enhancing Operational Efficiency and Optimizing Resource Allocation in Business Organizations

[1]Dr. Mujtaba Ali
[2]Hushi Asim

How to cite this article:

Ali, M., & Asim, H. (2021). The Role of Robotic Process Automation (RPA) in Enhancing Operational Efficiency and Optimizing Resource Allocation in Business Organizations. *Journal of Technological Information, Management & Engineering Sciences* , *2*(2), 17-30.

Received	Accepted	Published
27 July 2021	26 Oct 2021	27 Dec 2021

Abstract

In finance, human resources, procurement, customer operations and compliance, and other business areas, repetitive rules-based tasks are becoming one of the more important ways to automate through the use of Robotic Process Automation (RPA). However, its organizational worth is not just about task speed—automation has the potential to alter the way a task is done, technology spending, managerial focus and investment cash. This paper suggests a research-based approach to the assessment of RPA's effectiveness on the efficiency of business operations and the effect of RPA on the capital reallocation in the corporate workforce. It synthesizes the findings of research on the value of business process automation, the value of information systems, organizational change and business process automation governance to provide a multi-dimensional evaluation model. The model combines process level indicators (cycle time, throughput, error rates, service quality, exception rates) with financial level indicators (total cost of ownership, net present value, payback period, realised benefits). It also takes into account the impact on the workforce, such as task redesign, reskilling, redeployment and employee experience. It is recommended to use a mixed method evaluation design, which incorporates pre- and post-implementation process data, comparison groups (if available), financial data, and employee interviews. No findings, facts, or observations are made up in the paper, but it makes claims of propositions that could be tested, and gives a practical roadmap for implementation. The critical concept is that when the right processes are identified, when RPA bots are considered a production asset, when end-to-end results are measured and when released capacity is planned for new, higher value processes and not just as a 'headcount reduction initiative', the value created by RPA is sustainable.

Keywords: *Robotic Process Automation (RPA), Operational Efficiency, Resource Optimization, Business Process Automation, Capital Allocation, Workforce Redeployment, Process Improvement, Automation Governance, Digital Transformation, Organizational Performance.*

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

Introduction:

Cost is still a problem, but there's always a need to satisfy customers' growing expectations, cut down service time, stay compliant, and improve productivity. Numerous corporate processes still depend on digital, structured work that happens throughout enterprise resource planning systems, customer relationship management platforms, spreadsheets, e-mail and web portals. Though everything is based on clear rules, tasks such as invoice matching, data entry, account reconciliation, employee onboarding, report preparation and regular case updates are time-consuming for your employees.

Robotic Process Automation (RPA) is a technology that uses software robots, known as bots, to automate repetitive tasks. While physical robotics can automate tasks on the robot, RPA usually automates tasks on the software side, such as through user interfaces, APIs or other mechanisms of system integration. It does not require changing all of the underlying applications, so it's attractive to organizations with different legacy systems. However, while some tasks may be easily automated, others are much more complex, such as handling exceptions, maintaining the processes, securing them, or altering them within an organization. A narrow assessment is based on the number of bots deployed and/or hours nominally saved. These are warning signs that can be deceiving. A bot might help to reduce the amount of effort needed for one task, redirect effort to another team, make exceptions, or require costly maintenance. Similarly, the amount of time that you save as a result of automation isn't always the same amount of money saved. The benefit can be in terms of capability, in the case of someone who continues working, but not necessarily in terms of lower pay. Realized value is achieved through the productive reallocation of this capacity, the improvement of the quality of service and the appropriate adjustment of the operating and capital budgets.

In this paper, we examine the relationship between RPA, op-eff and capital re-allocation. It poses the questions: What operational measures allow for a valid evaluation of the results of RPA? When does automation release resources to be

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

used for activities of greater value? How to measure the investment returns of implementation, governance, maintenance and transition of workforce?

The research aim and scope was discussed.

The main objective is to provide an integrated framework for assessing RPA investments, over and above simply the automation of tasks. The specific objectives are: to identify appropriate process and financial solutions; to distinguish between the capacity release required and the resulting benefits received; to grasp the connection between automation and capital and human resource reallocation and to propose governance tools that will lead to performance over time.

The paper is limited to corporate administrative and knowledge-work processes that have steps that are repeatable, digital, and rule-governed. These include accounts payable, accounts receivable, payroll administration, master-data update, compliance evidence collection, order processing and internal reporting. It acknowledges that RPA can be used in conjunction with workflow platforms, OCR, machine learning, process mining, and APIs. While it is true that these technologies are not all the same, RPA is better suited to stable and structured interactions, while processes that involve complex judgment calls and/or frequent context interpretation might need to be redesigned or otherwise automated.

Conceptual analysis, literature analysis. Does not state original field measurements or experimental results. The proposed framework can be tested with organizational studies in the future through process logs, financial information, employee surveys and interviews.

3. Literature Review

3.1 The nature of RPA

Typically, RPA automates repetitive tasks handled via digital interfaces, and controlled by consistent rules. Early deployments typically would take place for high volume activities where there was more than one application but where there were not significant changes to the core systems. Research and Practitioner analysis has identified the following potential benefits: Processing times are quicker, consistency, audit trails, and running outside of normal working hours.

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

Concurrently, RPA can be fragile if interfaces shift, information is inconsistent, or business rules come to light.

While Lacity and Willcocks describe the RPA as automating basic office work, it's not quite that simple—there are choices to be made, governance to be put in place and the business must take control of RPA implementation. The literature review conducted by Syed and colleagues also includes technical, organizational and management considerations including implementation issues, suitability of process, and systematic evaluation. The approach to managing RPA should be thought of in terms of a socio-technical capability rather than a piece of software.

Operational efficiency and process management (3.2).

Operational efficiency is "multi-dimensional. Processing speed is important, but it is essential that organizations consider first-time-right performance, the ability to correct errors, service availability, compliance, customer satisfaction, and end-to-end process flow stability. Business process management research emphasizes that business performance is a function of the whole process and not of individual tasks. If a process is inefficient, it may be more challenging to improve it or may be automated to improve its efficiency.

Process mining and event-log analysis can help to understand and define the real work-flow, identify bottlenecks and quantify process deviations prior to automating the process. Normal case, exception, rework, handoffs and waiting time should all be included in a baseline. The same definitions should be applied when implemented to ensure that different populations are not compared or only successful cases are reported.

The students will know the value of and appraise investment decisions with regard to information systems.

The value of an information system has to do with the series of technology capabilities, process changes, organizational outcomes, and financial outcomes. A business value can be realised by the output of a technical process by a bot – if the result of the output is used to improve the service or to free up resources. The costs of licensing, development, testing, infrastructure, support, change management and monitoring and maintenance therefore need to be included in a

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

cost-benefit analysis of investment appraisal. The advantages should be contrasted by considering a credible alternative outcome (counterfactual) of what would have happened if the investment had not been made.

While traditional financial metrics such as net present value (NPV), internal rate of return (IRR) and payback period can be useful in decision making, they depend on assumptions regarding volumes, labour costs, exception rates, bot availability and future maintenance. These things may be important strategically even if they don't have a dollar figure estimate. They should be reported as such and not be translated to financial estimates based on speculation.

This is the third goal of the 2013-2017 Economic Development Plan seeking to change the workforce and reshape capital reallocation.

Job composition is shifting as a result of automation. Tasks may disappear, can be reduced in size, may be rotated between different jobs, or can become more analysis and exception driven. Once released, the capacity can be utilized to reduce the backlog, enhance customer engagement, improve the quality, conduct risk analyses, or even expand the product offering, but without any additional employees. Whether or not this happens is a function of managerial considerations, skills, job design, demand and availability of appropriate work.

A wide sense of capital reallocation should be applied. This means changing the time spent by employees, reallocating operating dollars, changing technology investments, training or redesigning processes, or all of the above. The important difference is between the capacity that is released and the capacity that is captured in practice. However, if no intention exists to change workloads, service levels, staffing or output levels, then the value of a team can be limited, such as if there are 1,000 hours of theoretical annual time savings for a team.

The conceptual framework and the propositions are presented.The conceptual framework and Propositions are presented.

The suggested framework links five phases: Process selection, Design of automation, Operational performance, Release of resources and Value realisation. All stages are impacted by governance and organizational context. The suitability of a task for automation, the quality of the data, the frequency of exceptions, the

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

stability and control requirements of a system will affect whether the task can be automated reliably. Implementation quality impact on bot availability and maintenance burden. Based on operational results, capacity is released, and based on the Workforce planning and budgeting, the released capacity is converted into business value.

4.1 Testable propositions

The first being that when dealing with a high volume rule-based and consistent process, with a clear exception path, RPA is actually more effective for improving cycle time and consistency of the process.

Proposition 2: The amount of financial benefits achieved depends on the level of redeployed capacity or real cost savings from operating RPA projects.

Higher exceptions and application switching and lack of process ownership reduce the efficiency of RPA, thereby driving up monitoring, rework and maintenance costs.

Process Governance, Risk Controls, and Workforce Development are the three key components that are crucial to organizations that are lacking for having lesser chances of sustaining the benefits.

When employees are engaged early, trained for new positions or new roles, and have structures in place to build upon vacated capacity for new and important roles, then they are more likely to see positive outcomes.

5. Research Methodology

Evaluation of the framework is recommended to be done along a mixed-method, longitudinal design. The quantitative element should consist of a comparison of the progress of the processes before and after the implementation of RPA, ideally with a matched process without RPA, or in a phased rollout. The qualitative element should consist of interviews with process owners, process automation developers, frontline process users, finance partners, risk teams and managers who are involved in re-deployment decisions.

The unit of analysis can be a business process, automation use case or an operating team. Some of the processes that can be studied have a high number of transactions, some are more complex, some have more exceptions, some are

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

more stable, etc. and some examples of data sources are: process log, bot execution log, incident log, service-level log, payroll or time allocation log, project budgets, vendor log, employee survey, etc. When gathering data on the productivity of individuals, confidentiality and data minimisation are important.

The length of the baseline should be long enough to accommodate seasonal demand and normal fluctuation. The definitions of cycle time, touch time, error, exception and completion should be uniform. Where a comparison group exists, the difference-in-differences method could be used to estimate the impact of RPA, but must be tested for its assumptions. If randomisation is not possible, interrupted time-series analysis or carefully matched comparisons might be appropriate.

Qualitative interviews can be used to shed light on processes that quantitative data cannot, e.g. why there are exceptions, how employees experience changes in their roles, whether managers really redeploy capacity or what governance mechanisms support reliability. Findings should highlight the correlation vs causation and limitations of data quality, selection effects and changes in concurrent processes.

6. Evaluating Operational Efficiency

6.1 Process-level indicators

The amount of time that passes from a defined beginning to end of a process is called cycle time. Throughput is a number of cases completed per time, touch time is an active effort by a human. The percentage of cases that have been successfully finished (without correction or rework) is the first time right rate. Exception rate is the proportion of cases that need human involvement or are outside of the bot's decision criteria. Technical measures of success and availability for the bot are supplied but this is not intended to replace the business outcome measures.

Other evidence of customer or internal-user satisfaction, audit or compliance errors are also relevant. An automated process may be quicker, but of less benefit, if it's difficult to fix errors, or if users need to click on the same information many

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

times repeatedly. Measurement should encompass all of the workflow (including exception queues & downstream correction).

6.2 Total cost of ownership

RPA cost estimates include the software licenses, development time, process discovery, testing, security review, environment management, orchestration, monitoring, support, upgrades and bot maintenance. Other potential sources of costs include application changes, rules that aren't documented, and re-design of upstream data. Total cost of ownership (TCO) is an accurate assessment which decomposes costs into implementation costs and operating costs.

Also, businesses need to consider the human resources needed to keep track of bots and exceptions. The process can be automated, but still require manual validation, reconciliation or escalation. Such activities do not have to be failures, the goal is to make human intervention "visible" and "directed" in an appropriate manner.

6.3 Efficiency scorecard

The dimensions of the object to be built.A suggested size of the unit object to construct.

Speed Median and 90th-percentile cycle time Captures typical and delayed cases

Capacity Labor-hour output (cases) Compares output to labor effort

Speed First-time-right rate; rework rate Checks if speed gained without compromising quality

Exception rate Exception rate; manual intervention hours Shows residual work and coverages of rules Reliability Bot availability, failed runs, recovery time Measures the technical stability

Defines end-to-end service impact, service SLA attainment, user satisfaction.

Cost of technology and operating costs per case + cost of successful completion

Has automation become a control? Checks for faults in control, violations of access, audits.

Capital Reallocation and Benefit Realization

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

The key issue is not only about how many hours the bot can actually save, but also, how the organisation's freed up capacity is converted back to value. A useful framework for benefit realisation is to consider the various categories of benefits as cashable savings, capacity released (from existing resources), cost avoidance and quality/risk benefits. A cashable saving is a genuine saving, such as an overtime cost reduction, temporary labor or outsourced processing cost savings. Capacity released means extra work / value work / activity for employees, for a given number of employees. Cost avoidance relates to costs that were due to be incurred but they are not, and the quality and risk benefits are fewer errors, better auditability and response time.

7.1 The estimation of the net financial value

This can be measured as realized labor or vendor savings + monetized incremental output + validated cost avoidance – recurring RPA operating costs. One time costs should also include the costs of implementation and transition of an investment. The same hour released is not to be doubled counted as a payroll saving and an increase in productive capacity.

The present value of the expected net cash flow(s) minus the initial investment is the net present value. Transparent assumptions for benefit ramp-up, discount rate, software pricing and maintenance, process volumes and expected software automation life should be included in the calculation. Reduced transaction volumes, increased exception rates, longer implementation times and increased maintenance should be subject to sensitivity analysis.

7.2 The workforce and budget decision

In advance it is good practice to agree a capital reallocation plan before it is implemented. Management must be clear about where capacity will be channelled, how that capacity will be measured, what are the outcomes of the capacity and what kind of training will be necessary and how will it be monitored. Examples of HR admin capacity that moved to supplier dispute resolution, employee support, or compliance analysts assigned to higher-risk cases. The plan should be updated following the launch, as redeployment might be limited during

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

a workload season, or by the availability of the skills, or by the organizational design.

An owner of a budget has to be able to differentiate the investment cost of the automation and the resources that will be gained from the automation. There may be those who would prefer not to have to recruit in the future rather than remove people from the existing workforce. If the demand forecast and staffing counterfactual is well documented, this is a legitimate benefit. The term "avoided costs" is not to be interpreted as a cash saving, however.

7.3 Employee experience and responsible transition

While repetitive tasks can be reduced by automation, there can be uncertainty, work intensification, or surveillance and job security concerns. A responsible program is one that educates employees about the purpose of the automation process, details the use of performance data, and involves employees in identifying exceptions and opportunities for efficiencies. Training for process analysis, exception handling, data quality, customer communication and monitoring automated processes should be provided.

Employee outcomes can be represented by workload distribution, training completion, role transition, employee satisfaction, absenteeism and even feedback (qualitatively). Care needs to be taken in interpreting individual productivity data which must not be used out of context or without reference to the complexity of the work performed. The aim of Goal is not only to boost the number of transactions that can be completed automatically, but to have the organization perform in this way sustainably.

8. Governance, Risk, and Control

RPA robots can get access to the sensitive data and perform consequential processes such as preparing financial transactions, modifying accounts, or updating employee records. Each bot should have an owner responsible for the bot, a technical owner, a purpose for the bot, an access profile and a support structure. Credentials need to be kept securely and privileges be given only what is necessary, and any bot activities be recorded in a manner that allows investigation and audit.

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

A centralized automation center of excellence can establish architectures, naming, reusable components and development practices, testing, release management, monitoring and retirement. Avoid central governance – automations can be created in shared controls by federated teams. Change management is crucial because of the potential issues with automations due to interface changes, policy updates and new data formats.

When considering risk, financial materiality, privacy, cyber security, regulatory requirements and operational resilience and the impact of mistakes should all be considered. The testing, approval, reconciliation and human review is more relevant for high impact bots. The BCP should include the steps to be taken to switch to manual systems and the sequence of recovery. Credential revocation, data retention review, and confirmation of dependent processes updated should be included in retiring a bot.

Automation sprawl is another governance concern: with multiple teams developing their own automation bots with no interoperability or common controls and spend. This risk can be reduced by establishing a bots inventory, use cases, dependencies, bots owners, license and benefit. Low value automations should be replaced with processes with higher business case with periodic reviews.

9. Implementation Roadmap

Phase 1: Discover and prioritize (9.1)

Look for processes and collect initial data. Identify volume, manual effort, exceptions, risk and process variation using process mining, workshops and observation. Concentrate on tasks that are stable, predictable and have clear measurable outcomes and are in sufficient volume. But don't select a process if it's easy to automate, its strategic value and need for control and its downstream dependency may be other reasons.

The business case will be designed during Phase 2.

Define the target operating model, the desired service outcomes, TCO, risk controls and capacity-reallocation plan. Validate assumptions with Finance and/or process owner. State what will be considered success and if applicable, find a

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

comparison. Implementation effort and a plan for maintaining the automation as apps and rules change should be part of the business case.

The third step is the piloting and validation:

Develop a small pilot with tests for expected conditions, boundary conditions and failure and recovery. Run the bot in a safe environment and compare the output with trusted data sources. Make end to end comparisons with baseline measurements. Exception handling, monitoring, access controls and support responsibilities must be established before pilot scaling.

The next step in the fourth phase of 9.4 is scaling and institutionalization. The fourth action of 9.4 is "scaling and institutionalizing ".

Implement reusable components and common controls; have clear control. Provide staff and management training on new processes. Report and track operational metrics and value delivered on a monthly/quarterly basis (based on criticality of process). Post-implementation reviews to compare performance against assumptions, make adjustments to the business case and discontinue or reorganize automations that are not providing value.

10. Discussion

The framework proposed here explains why RPA is more about an organizational change than a mere technology implementation. Operational efficiency is when processes are suitable, effective and when all aspects of the flow are designed. Without releasing resources being converted to cashable savings, cost avoidance, increased production, or improved service and risk results, there is no financial value. The two are linked together but not the same.

One of the key management implications is the need to plan for the release of capacity. Automation can lead to efficiency in the immediate sense, but not necessarily to improved overall performance, if not explicitly linked to a specific objective. However, substantial value can be added by reallocating the workforce to higher value work without an increase in expenditure on payroll. This is why the framework focuses on capital reallocation at the center, rather than lastly.

Balanced measurement" is also stressed in the framework. While these are not strong indicators alone, they are good indicators of how a bot is used. When

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

Journal of Technological Information, Management & Engineering Sciences (2021),2(2), 17-30

evaluating the sustainability of an automation, understanding end-to-end quality, exception handling, risk, and total cost of ownership and workforce outcomes is important. The recommendations given are beneficial for a practical test in industries and business operations.

12.1. Limitations

This paper is not empirical nor does it offer any original estimates of the impact of RPA. Process, organization, vendor model, legacy system environment, transaction volume and workforce arrangements are subject to change and will impact actual results. The proposed actions also rely on access to accurate process and financial data, often broken up or impacted by privacy and confidentiality restrictions.

Further research efforts should investigate the differences across industry for RPA programs, examine the long-term impact on the proposed propositions, and investigate how process maturity and governance maturity relate to net benefits. More research is needed into the relationship between redeployment plans and positive outcomes in relation to technology-based implementation, the employee experience of automation over time, and a comparison of RPA vs API integration, workflow redesign and intelligent automation. Additional research could also lead to a consensus on a best way to estimate a noneconomic benefit that would not overestimate the dollar benefit.

12. Conclusion

By eliminating the repetitive manual tasks, boosting consistency, and speeding up digital processes, RPA can enhance corporate operations. But when it comes to enterprise performance, it's the technical delivery that's not the only thing that matters. The outcomes of the end-to-end organization should be measured including maintenance & governance costs, exceptions management, data protection and what to do with released capacity?

This paper proposes an integrated process suitability–operational metrics–TCO–capital reallocation–workforce transition–governance framework. It distinguishes between cashable savings and released capacity and cost avoidance, avoiding overstated benefits for organizations. Investments in automation can be more

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.

likely to yield continued returns if they are implemented in a structured lifecycle from discovery to design of the business case, validation in a pilot, scaling and reviewing benefits. It is recommended that the framework be further evaluated in empirical research in the future, and that the underlying factors of good operational and workforce practice that contribute to better outcomes from RPA capability are understood.

References

Agostinelli, S., Marrella, A., & Mecella, M. (2022). Intelligent Robotic Process Automation research challenges. In the Business Process Management Workshops. Springer.

Cooper, L. A., Holderness, D. K., Sorensen, T. L., & Wood, D. A. (2019). Public Accountants and RPA. Accounting Horizons, 33(4), 15–35. https://doi.org/10.2308/acch-52466

Devarajan, Y. (2018). In this study, we examine the usage of Robotic Process Automation (RPA) and its usage cases today for tomorrow's business. International Journal of Computer Techniques, Volume 5(6), 12-18.

Lacity, M., & Willcocks, L. (2016). New way to automate services. MIT Sloan Management Review, 58(1), 41–49.

Lacity, M. and Willcocks, L. (2018). Complete Guide to Robotic Process Automation and Risk Mitigation. SB Publishing.

Syed, R., Suriadi, S., Adams, M., Bandara, W., Leemans, S. J. J., Ouyang, C., ter Hofstede, A. H. M., van de Weerd, I., Wynn, M. T., & Reijers, H. A. (2020). Modern ideas of RPA and challenges. Computers in Industry, 115, 103162. https://doi.org/10.1016/j.compind.2019.103162

van der Aalst, W. M. P. (2016). Process Mining: Data Science in Action 2nd Edition. Springer.

Willcocks, L. P., Lacity, M., & Craig, A. (2015).

[1]Assistant Professor, Department of Business Administration, University of Management and Technology (UMT),
[2]Lecturer, Department of Business Administration, University of Management and Technology (UMT),

Copyright (c) 2021 Author(s)
This work is licensed under a Creative Commons Attribution 4.0 International License.