

Challenges in implementation of robotic process automation (RPA) in human resource management (HRM) and its effectiveness

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Abstract

This research endeavors to examine the impact and effectiveness of integrating Robotic Process Automation (RPA) into landscape of Human Resource Management (HRM). As organizations continue to seek innovative solutions to streamline HR processes, RPA emerges as a promising technology with the potential to revolutionize routine and rule-based tasks. This research explores the aspects of incorporating RPA (Robotic Process Automation) within HRM and its effectiveness was measured through data gathered from corporate executives via structured questionnaire. For the study of challenges faced by the HR managers in the implementation of RPA thematic analysis of interviews revealed major themes technological, Organisational and human aspects and overcoming these challenges in systematic way can ensure effectiveness of RPA in various processes of HR.

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Introduction

Use of software, robots or “bots” for rule based and repetitive tasks to automate them is called Robotic Process Automation (RPA) technology. These robots are not real physical robots, but the software programs made to imitate humans tasks by the software system. Some of the tasks like data collection, storing, extraction, reporting in different applications is made possible with RPA without complex coding and integration. Emerging and disruptive technologies report of McKinsey anticipated that the economic impact of robotic process automation will be globally around \$6.7 trillion till end of next year. As the organisations are eagerly looking for innovative solutions for optimization of resource, enhanced efficiencies and increased productivity in the changing workplace landscape. One groundbreaking technology that has garnered significant attention in recent years is Robotic Process Automation (RPA). Especially within Human Resource Management (HRM), incorporating RPA can revolutionize conventional HR procedures, ushering in unprecedented levels of efficiency, precision, smooths functioning of work and employee contentment.

Conventionally, HRM has been burdened by the manual execution of repetitive and rule-based tasks, often leading to a significant allocation of time and resources. In the quest for a more streamlined and responsive HR infrastructure, organizations are increasingly turning to RPA as a catalyst for change. RPA, defined by its ability to automate routine tasks through the deployment of software robots, presents an opportunity to revolutionize HRM by allowing human resources professionals to redirect their focus toward strategic, high-value activities.

The present study aims to delve into the consequences and effectiveness of RPA in HRM, exploring the various dimensions of this technological integration and its implications for organizational dynamics. By scrutinizing key aspects such as efficiency gains, accuracy improvements, scalability, and the overall employee experience, this study intends to provide a panoptic interpretation of the transformative potential that RPA holds within the HRM domain.

Rationale:

The rationale behind present research emanates from the growing popularity that RPA has the potential to redefine HRM practices, offering not only efficiency gains but also a paradigm shifts in how HR professionals

engage with tasks and contribute strategically to organizational goals. As organizations grapple with the need for digital transformation, understanding the nuanced impact of RPA on HRM becomes imperative for staying competitive in today's dynamic business environment.

Objectives:

To measure the effectiveness of HR function after implementation of RPA(Robotic Process Automation).

To identify challenges and considerations associated with the implementation of RPA in HRM.

Literature Review

The use of IT or information technology across various industries has surged, leading to a global demand for such aids. Robotic Process Automation (RPA) is one such modern technique which has acquired widespread adoption among companies to entitles employees to concentrate on complex and significant tasks, and routine, monotonous, and standard operating tasks are to be assigned to their technological counterparts. With RPA the process involves repetitive tasks governed by specific regulations can be accomplished in substantial lessor time devoid of any errors. [13]

The Role of RPA in business processes effectiveness

1. ***Enhanced Efficiency and Productivity:*** The most significant advantage of RPA application in digital transformation is the improvement in operational productivity and efficiency. RPA bots can work 24/7 without breaks, errors, or fatigue, ensuring tasks are completed faster and with a higher degree of accuracy.
2. ***Streamlined Processes:*** Digital transformation often involves reimagining and optimizing existing processes. RPA plays a vital role in this by automating routine tasks and seamlessly integrating with legacy systems, ERPs, CRMs, and other applications.
3. ***Improved Customer Experience:*** A key goal of digital transformation is to enhance the customer experience. RPA contributes to this objective by automating processes related to customer support, onboarding, and engagement. Bots can assist in responding to

inquiries, processing orders, and ensuring timely communication, leading to quicker resolutions and happier customers.

4. **Data Accuracy and Compliance:** Manual data entry is error-prone and can lead to costly mistakes. RPA ensures data accuracy by eliminating human errors in data input and validation processes. Moreover, RPA bots can be programmed to adhere to strict regulatory and compliance requirements, decreased possibility of non-compliance risk and associated penalties, resulting in improved efficiency, accuracy, and productivity. [6]
5. **Scalability:** Digital transformation often involves scaling operations to meet growing demands. RPA systems are highly scalable and can adapt to increased workloads with minimal effort. Organizations can deploy additional bots as needed to handle surges in work volume without significant overhead costs.
6. **Cost Savings:** RPA can generate substantial cost savings by reducing the need for manual labour, lowering error-related expenses, and minimizing the risk of costly process disruptions.
7. **Data Insights and Analytics:** RPA can also facilitate decision-making based on available data by collecting and analysing it from various sources. These bots can consolidate data from disparate systems, conduct calculations, and produce reports in real-time, providing valuable insights that can inform strategic planning and business optimization. [14]

RPA for Human Resource Management Process: a deeper insight

As the automation technology is revolutionizing so HR must accept and embrace its uses to capitalize on its advantages in terms of both money and time savings. RPA implementation can be tailored for HR needs, utilizes software robots to mimic human actions, enabling the automation of repetitive tasks traditionally performed by humans. This can streamline operations, enhance service delivery, ensuring processes adhere to standards and regulations [8]. From streamlining employee onboarding to managing timesheets, leave requests, and performance evaluations, RPA in HR optimizes every process, allowing HR professionals to focus on activities that drive company growth. [16]

Given that the core function of Human Resources involves interaction with humans, it naturally entails various forms of manual errors regardless of the diligence exercise by staff. Consequently, this can significantly

impede transaction quality, business process efficiency, and the accuracy of decision-making processes. As the volume of documentation increases, so does the time-consuming and repetitive nature of tasks. The increased likelihood of errors accompanies such tasks, posing risks, particularly in critical areas like payroll calculation, leave monitoring, and timesheet verification, which can have adverse effects on business operations. Similarly for new hires, HR's inability to maintain regular contact can lead to negative experiences. Overwhelmed with record management, HR may struggle to engage with new employees promptly, potentially souring their initial experience with the company. Given the array of challenges, alongside the benefits automation technology offers, organizations are increasingly turning to automation solutions in HR [15].

To thoroughly examine the merits and drawbacks of technology, a tangible application of an RPA solution introduces diverse social and technical considerations into the conversation. Technical challenges such as robustness and stability emerge as key hurdles in the effective deployment of RPA. Additionally, focused attention on error management and the ongoing maintenance of software robots becomes imperative to ensure the smooth and prosperous integration of RPA. [4]. During the implementation phase, notable hurdles emerge due to inaccuracies in element recognition and the absence of necessary packages. Software's incapacity, robot failures and unanticipated challenges with application usage, training support may lead to additional difficulties post-implementation. [5]

Robotic process automation (RPA) deployment holds the potential to achieve enhancing service delivery, ensuring HR functions compliance with set standards and defined regulations, facilitating swift beginning and finishing of HR tasks, boosting effectiveness through data digitization and improving HR productivity and cost savings. To effectively leverage RPA, a structured approach is essential for identifying suitable HR processes by validating, assessing, evaluating and categorising - to analyse and determine their appropriateness to RPA automation [2].

Effective implementation of RPA for HR functions

It was identified that for adopting RPA in HRMS data-driven measurement is necessary during the implementation phase. RPA is invaluable for supporting process-driven tasks but is not intended to replace HR entirely. Instead, it complements human efforts. [9] For implementing RPA requires a well-defined process model. Robots have

the potential to enhance speed and quality, operate continuously, reduce service inaccuracies, minimize errors, and enhance availability and delivery stability. [10] RPA should identify repetitive human tasks and automate them with precision and consistency to align with the task requirements. The aim is to achieve objectives while minimizing risks, time, and costs mainly in the mentioned processes.

Data Management and HR Analytics- Handling data encompassing past and present employee information, compliance, and controls manually poses significant challenges. However, automating data management is straightforward and efficient. This ensures data is quickly accessible, copied, and compared accurately, leading to improved implementation. RPA delivers precise outputs and swift decision-making, particularly in data analytics, surpassing the capabilities of human counterparts. [11] Payroll processing linking with time and attendance tracking has been all the way faster and simpler with the implementation of RPA.

Employee Onboarding- The onboarding process demands considerable time and attention. Robotic process automation (RPA) in HR proves to be a vital and favourable solution, allowing employees to focus on individuals while bots manage the administrative process efficiently. Even the step prior to this that is application sourcing and tracking now a days utilizing various sites and programs for applicant sourcing and tracking can be beneficial for businesses. Nonetheless, robots offer faster and more accurate capabilities in this area.

Performance management and benefits administration- RPA can automat appraisal process of HR by providing in time reminders, collecting feedback and consolidated data preparation. Performance management becomes simple with improved transparency. Involving the use of technology in streamlines and manage the process of recognizing, delivering, and tracking rewards helps in management decision of appraisal and succession process.

Digital transformation in changing business landscape is not merely a buzzword rather a strategic success factor. Organizations worldwide are harnessing the power of technology to streamline operations, enhance customer experiences, and stay competitive. Among the many tools driving this transformation game-changer is RPA [12].

Methodology

This research employed a mixed method approach, combining qualitative and quantitative methods. Qualitative analysis through structured questionnaire was employed on working professional of the organizations using robotic process automation to study the effectiveness of RPA in Human resource management processes. Questionnaire consisting of fourteen questions was shared through google forms to working professionals selected via convenient sampling. The link was shared to 150 respondents out of which 134 responses received are taken as sample for the study. On the other hand, qualitative methodology of interviews (semi-structured) was used for selected HR managers to understand the challenges associated with implementation of RPA in HR processes, as it facilitates in collecting data without fixed-response bondage [1]. Initially, 6 HR managers from companies using RPA were chosen from the leading organisations in the national capital region of India, and further requested them to recommend at least one potential candidate for the study [17] making the total participants as 12. The Table 1 below describes the demographics of respondents.

Table 1
Demographic profile of respondents

Demographic variable	Categories	No. of participants	
		Corporate Professionals (Questionnaire)	HR Managers (Interview)
Gender	Male	73	7
	Female	61	5
Age	30-40	67	5
	40-50	52	4
	50 and above	15	3
Work Experience (years)	0-5 years	41	6
	5-10	61	4
	10 and above	32	2

Data Analysis:

Data analysis in the present study is done using descriptive statistics for the data collected from working professional via questionnaire and

Table 2
Descriptive Statistics

Descriptors	N	Mean	Std. Deviation
How familiar are you with the concept of Robotic Process Automation (RPA)?	134	3.815	.3732
How easily you could understand and respond to RPA in HR processes?	134	3.700	.2715
RPA in HR process has made you feel how much engaged and comfortable?	134	2.538	.7042
How has RPA impacted the efficiency of HR processes?	134	3.003	.4573
Have you observed notable time savings in HR processes due to RPA?	134	3.645	.2715
How has RPA impacted the convenience and ease of connect of HR processes?	134	3.927	.2643
How well RPA impacted the interaction and communication with employees in HR-related matters?	134	2.685	.5795
Has RPA contributed to improved accuracy in HR tasks?	134	3.575	.3169
Do you foresee integrating RPA with other HR process in future?	134	2.984	.3124

semi structured interviews transcripts were analysed through thematic analysis method. The table 2 below show the descriptive statistics in respect of effectiveness of RPA for HR processes.

The scale of familiarity with RPA likely ranges from low to high. The average familiarity with RPA is moderately high. Not just familiarity but understanding and responding to RPA is also found to be moderately high. Which implies that the employees have required awareness and understanding for the RPA technology. But the engagement and comfort is found to be low the cause may be missing human touch.

Additionally, moderately low impact of RPA on the efficiency of HR processes is found having the mean score 3.03. contrary to this employee feels RPA helps saving time (mean 3.64) and provides convenience and ease of connect (mean 3.92) and enhances accuracy (mean 3.57) endorsing the use of automation in HR processes.

A relatively low positive impact of RPA is found on the interaction and communication with employees in HR-related matters (mean 2.68)

suggesting that technology cannot replace emotional connect. The survey suggests high likelihood of mixing RPA with other emerging technologies as AI and ML in the future. RPA implementation often leads to significant cost reduction by automation in processes, reduced human intervention, and streamlining workflows.

Also, the last five question in the questionnaire was for overall satisfaction of the employees towards RPA implementation in five main processes of HR identified through literature review, namely, employee onboarding, time and attendance tracking, payroll processing, benefits administration, performance management on a Likert five-point rating scale ranging from dislike a lot to like a lot as shown in the chart (Figure 1) below.

Overall, the data suggests a mixed perception of employees RPA on HR processes, with most positive feedback noted for time and attendance tracking followed by payroll processing and employee on boarding. Performance management and benefit administration functions are rated least of all.

Further, data collected through HR managers interview was analysed with thematic analysis method to single out merging themes. Braun and Clarke (2006) defined this method as “a flexible and useful research tool, which can potentially provide a rich and detailed, yet complex account of data”. In this tool data is classified into Common themes and further dropped down into categories. The study identified 9 main challenges that were grouped by researcher in the three main themes shown in the

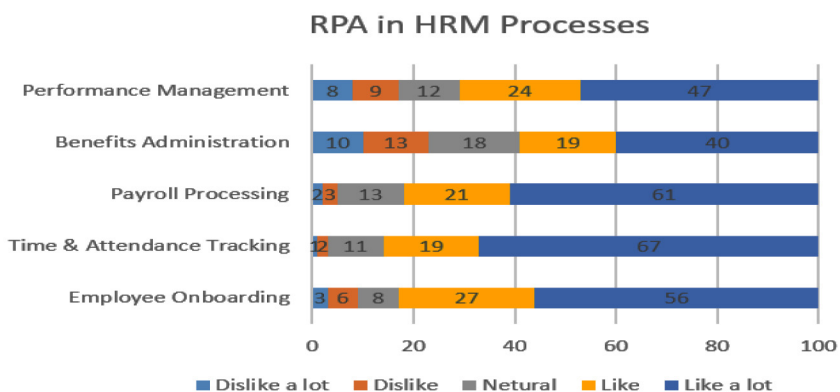


Figure 1
RPA in HRM

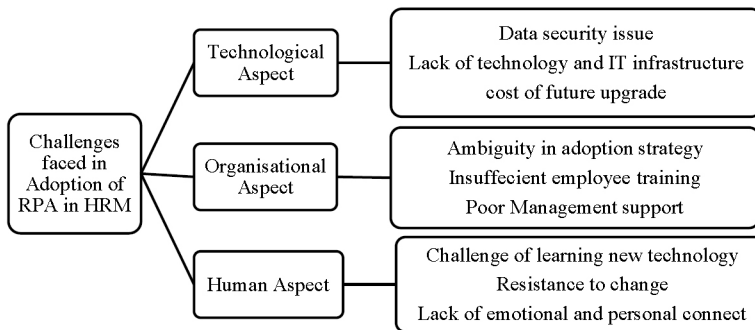


Figure 2
Thematic Analysis framework

Source: Author

figure 2 below as challenges faced due to technological aspect, organisational aspect and human aspects.

Theme 1- Technological aspects: HR managers in their interview told that keeping the data safe, maintaining privacy, control on data access are the major challenges faced by them. Even IT infrastructure is scarcely available, and the cost of hardware/software upgradation is quiet high making it difficult in implementation of RPA. Poor internet connectivity and downtime is also a hurdle.

Theme 2- Operational Aspect: use of RPA in HR provides a lot of benefits such as accuracy, time saving, error reduction and more efficiency but HR managers mentioned in the interview the operation bottlenecks are making the implementation process challenging. Employees are not provided required training for use of technology. Though top managements encourage automation but lacks support in practical implementation and evaluation as they are not laying down standard operating procedure, strict rules for timebound execution.

Theme 3- Human Aspect: innovative technologies have always been lucrative form monetary and administrative aspects but when it comes to human aspects thing go haywire. HR managers interview clearly pointed out that fear of change, fear of failure, inability to adopt new technology, challenges in learning are the major challenges faced by them in implementation of RPA. Automation of HR process saves a lot of time of employees but in case of confusion they have no one to refer to and they feel lack of human touch.

Conclusion and Implications

Robotic Process Automation is a climacteric catalyst for digitally transforming the world. It entitles organizations to streamline operations, boost efficiency, increased profitability and deliver better customer experiences with automation. RPA allows employees to concentrate on higher-value work and innovation by letting robot do the routinised tasks. It gives more accuracy to the output with less time invested in the work suggesting to enhances used of automation. As organizations continue to adapt to an ever-evolving business landscape, RPA will remain a vital tool in achieving digital transformation objectives and maintaining competitiveness in the improvement technological advancement of the world, but human feel and emotion cannot be ignored [18].

To effectively implement HR processes using RPA, it's crucial to understand the RPA concept and identify HR processes suitable for automation within organizations. Both qualitative and quantitative benefits for both the enterprise and employees should be outlined for each HR process. The study suggests organisations planning to implement RPA in HR processes shall begin with time and attendance tracking followed by payroll processing and employee on boarding process. Given the advantages it offers, RPA has the potential to play a significant role in transitioning HR functions into the digital age. [19]

Implementation of RPA for HR function can be made effortless and smooth if management find the ways to overcome the challenges laid down in the present research. Clarity of implementation strategy at management level and motivating employee by showing them associated benefit of advancement in technology with timely intervention of training programmes is essential. As organizations continue to adapt to an ever-evolving business landscape, RPA will remain a vital tool in achieving digital transformation objectives and maintaining competitiveness in the digitalization of HRM and it is indeed a need of corporate sectors to improve the efficiency and effectiveness.

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