The Study of Integration of Robotic Process Automation in Engineering Project Management: Benefits and Challenges

MARJORIE ANN T. MANALANG¹, DR. NOEL T. FLORENCONDIA², CHRISTOPHER M. LADIGNON³

 ¹ Graduate Student, Master of Engineering Management, Nueva Ecija University of Science and Technology, Gen. Tinio Street, Quezon District, Cabanatuan City, Nueva Ecija, Philippines
² Chair, Engineering Management Department, Nueva Ecija University of Science and Technology, Gen. Tinio Street, Quezon District, Cabanatuan City, Nueva Ecija, Philippines
³ Professor, Department of Engineering Management, Graduate School, Nueva Ecija University of

Science and Technology, Gen. Tinio Street, Quezon District, Cabanatuan City, Nueva Ecija, Philippines

Abstract- Engineering project management is a critical function that involves the coordination of complex tasks, timelines, resources, and teams to deliver successful project outcomes. However, traditional project management practices often struggle with repetitive administrative tasks, delayed decision-making due to manual data handling, and inefficiencies in monitoring and reporting. As engineering projects increase in scale and complexity, these challenges can lead to cost overruns, schedule delays, and reduced overall productivity. This growing concern has prompted the exploration of digital solutions like Robotic Process Automation (RPA), which has shown potential in automating routine, rule-based processes across various industries. RPA is increasingly being recognized as a transformative technology in project-based environments, yet its application in engineering project management remains relatively underexplored. The integration of RPA in this domain offers potential benefits such as increased efficiency, improved data accuracy, and enhanced real-time monitoring capabilities. However, it also brings forth challenges related to implementation complexity, workforce adaptability, and system integration. This study aims to investigate both the advantages and the barriers to **RPA** adoption in engineering project settings, providing insights into how organizations can strategically implement automation to enhance project performance while addressing potential risks and limitations.

Indexed Terms- Project Management, Robotic Process Automation

I. INTRODUCTION

1.1 Background of the Study

In today's fast-paced and technology-driven world, engineering project management is becoming increasingly complex. Managing large-scale projects involves coordinating multiple teams, handling vast amounts of data, and making timely decisions—all while ensuring quality, cost-efficiency, and on-time delivery. Traditional project management methods, although well-established, often fall short when it comes to handling repetitive, time-consuming administrative tasks and real-time data processing. This is where Robotic Process Automation (RPA) comes in as a promising solution.

RPA is a technology that uses software robots, or "bots," to automate routine, rule-based tasks that would otherwise require human effort. In the context of engineering project management, RPA can be applied to activities such as document management, progress tracking, scheduling, reporting, and data analysis. By integrating RPA, project managers can significantly reduce manual workload, minimize human error, and enhance decision-making processes through timely and accurate information. As engineering projects continue to grow in scale and complexity, the adoption of RPA offers a strategic advantage—allowing teams to focus more on critical thinking, innovation, and problem-solving, while automation takes care of the repetitive groundwork.

1.2 Review of Related Literature

In recent years, both researchers and industry professionals have taken a closer look at how Robotic Process Automation (RPA) can make engineering project management faster, smarter, and more efficient. These studies offer practical insights into how RPA is changing the way teams handle everyday tasks—while also shedding light on the real-world challenges of bringing automation into established project workflows.

Robotic Process Automation for Improved Project Risk Management by K. J. Williams and L. M. Hensley (2021)

Discusses the application of RPA in improving risk management processes in engineering projects. It proposes a framework for integrating RPA into risk assessment and mitigation tasks, noting that automation can help identify risks earlier and enhance the accuracy of risk evaluations. Despite these benefits, the study warns of the challenges in adapting RPA to handle complex, unpredictable project environments.

Implementing Robotic Process Automation in Construction Project Management by W. M. Tarek, A. A. Abdel-Baset, and M. A. Ali (2020)

This study investigates the potential applications of RPA in automating routine tasks in construction project management. It explains how RPA can streamline data collection, scheduling, and resource allocation processes, offering significant time savings and reducing human errors. They conclude that RPA can greatly enhance the efficiency and costeffectiveness of construction projects, but careful integration with existing systems is necessary.

Enhancing Project Management Efficiency through RPA: A Case Study in Engineering Projects by R. S. Kumar, P. R. Patel, and S. K. Gupta (2021) The study examines how a large engineering firm implemented RPA to optimize project scheduling, task tracking, and reporting. The study highlights how automation reduced administrative burdens and allowed project managers to focus on more strategic decisions. The study also points out key implementation challenges, such as adapting workflows and ensuring the integration of RPA with legacy systems.

1.3 Conceptual Framework

This study is built on the idea that Robotic Process Automation (RPA) can play a big role in making engineering project management more efficient by taking over repetitive, rule-based tasks. It looks at how RPA can be applied to everyday project activities like scheduling, reporting, managing documents, and allocating resources-areas where automation can really make a difference. By reducing the need for manual work and lowering the risk of human error, RPA is expected to speed things up and provide more accurate data for better decisions. The framework also considers how ready an organization is to adopt new technology, how well employees adapt, and whether the existing systems can support automation. It doesn't ignore the challenges eitherlike the costs involved, potential resistance from the team, or difficulties in connecting RPA to older systems. In the end, this framework helps guide the study by exploring both the upsides and the realworld hurdles of using RPA in engineering project management.

1.4 Statement of the Problem

General Problem

Engineering project management often struggles with shifting project goals, poor communication, and lack of risk planning. These issues can lead to delays, budget overruns, and frustrated teams. When resources are stretched thin or the right expertise is missing, projects become even harder to manage. Without clear direction and coordination, even wellplanned efforts can fall apart. Success depends on staying focused, prepared, and aligned as a team.

Specific Problems

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1. Telecom engineers often spend a significant amount of time manually configuring network elements (like routers, switches, or base stations) and provisioning services for new customers. This process is repetitive, error-prone, and time-consuming especially when scaling up for large rollouts or during service migrations.

2. Civil engineering projects—especially those involving public infrastructure or construction—often get delayed due to the slow and manual process of handling of permits, approvals, and regulatory compliance paperwork. Engineers or project managers must repeatedly fill out forms, submit documents to various agencies, and follow up for status updates.

3. Aviation engineering teams are required to maintain highly detailed and up-to-date aircraft maintenance logs for safety, compliance, and operational efficiency. This data often comes from multiple sources (manual logs, maintenance software, technician reports) and needs to be consolidated, verified, and updated in centralized systems manually.

1.5 Scope and Delimitations

This study explores how Robotic Process Automation (RPA) can be integrated into engineering project management. It examines its applications across civil, mechanical, electrical, and telecommunication engineering. The primary focus is on how RPA improves project workflows by automating repetitive and administrative tasks. Benefits such as improved efficiency, accuracy, and time savings are analyzed. The study also investigates challenges like resistance to change, integration complexity, and technical limitations.

The research includes literature reviews, case studies, and interviews with industry professionals. Emphasis is placed on real-world applications within medium to large-scale engineering projects. Only projects where RPA has been evaluated or implemented in the last five years are considered. This ensures that findings are relevant to current technologies and industry trends. The study is limited to Telecommunications Industry This boundary allows the research to stay focused and gather more accurate, localized data. Core engineering work such as design, testing, or construction is outside the study's scope.

The research specifically focuses on project management functions like scheduling, reporting, compliance tracking, and document processing. Broader RPA applications in industries like healthcare or finance are not part of this study. By narrowing the scope, the study aims to provide actionable insights for engineering project teams considering RPA integration.

1.6 Significance of the Study

The study on the integration of Robotic Process (RPA) in Automation engineering project management is significant for several reasons. It highlights how RPA can improve efficiency and productivity by automating repetitive tasks like data entry and report generation, allowing project managers to focus on more strategic work. This automation leads to cost reduction by cutting down on labor costs associated with manual tasks. Additionally, RPA minimizes human error ensuring greater accuracy in project documentation and reporting.

RPA can also speed up project timelines by streamlining processes such as approvals and compliance checks, helping projects meet deadlines. It contributes to higher quality and compliance by ensuring systematic handling of regulatory requirements and documentation. The study also explores the challenges of adopting RPA, particularly the resistance to change, providing insights for better integration strategies.

Furthermore, RPA enhances strategic decisionmaking by providing real-time, accurate data, management. improving risk The research emphasizes the importance of upskilling the workforce to handle digital tools like RPA, preparing them for the future of work. It also offers benchmarking insights for other industries considering RPA adoption. The findings contribute to the body of knowledge on RPA's application in engineering projects, guiding firms toward more modern, efficient practices.

Finally, by streamlining processes, RPA helps improve client satisfaction, leading to better communication and project transparency. The study ultimately supports engineering firms in modernizing their project management practices, ensuring they remain competitive in the industry.

1.7 Definition of Terms

1. Robotic Process Automation (RPA) - RPA refers to the use of software robots or "bots" to automate repetitive, rule-based tasks that are typically performed by humans. These tasks can include data entry, process execution, report generation, and interaction with various applications, all without the need for manual intervention.

2. Engineering Project Management - Engineering project management involves the planning, coordination, and execution of engineering projects. It includes managing resources, timelines, budgets, and ensuring that technical, legal, and safety standards are met. The goal is to ensure that the project is completed on time, within budget, and according to specified requirements.

3. Automation - Automation refers to the technology or processes that reduce or eliminate the need for human intervention in a task. In the context of engineering project management, automation is used to streamline repetitive processes such as scheduling, reporting, and data processing.

4. Process Optimization - Process optimization refers to the practice of improving the efficiency and effectiveness of a process by eliminating bottlenecks, reducing waste, and enhancing the overall performance. In the case of RPA, process optimization involves using automation to make engineering project workflows more efficient. 5. Change Management - Change management is the process of preparing, supporting, and helping individuals and organizations adapt to changes, particularly in technology or organizational structure. In the context of RPA integration, change management focuses on how engineering teams transition from manual processes to automated systems, addressing resistance and ensuring smooth implementation.

II. RESEARCH METHODS

2.1 Research Design

The study utilized a descriptive quantitative research design to explore employee perceptions and experiences regarding the integration of Robotic Process Automation (RPA) in engineering project management. This design was chosen to systematically describe the demographic characteristics, satisfaction levels, and challenges within an industry. The quantitative approach enabled the analysis of relationships and trends among variables such as years of service and satisfaction levels.

2.2 Sampling Technique

A purposive sampling technique was employed to select participants who met specific criteria. The respondents included employees from a Telecommunications Company, representing both telecommunication and corporate sectors. A total of 20 participants were surveyed.

2.3 Reliability of the Questionnaire

The questionnaire's reliability was evaluated using Cronbach's Alpha, a standard measure for assessing the consistency of survey scales. The analysis produced a Cronbach's Alpha value of 0.83, reflecting strong reliability and indicating that the Likert-scale items effectively measured employee perceptions of integrating Robotic Process Automation (RPA) in engineering project management.

This result confirms that the survey items were closely related and collectively captured key aspects

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of employee satisfaction, productivity, and the effectiveness of project management. The high reliability ensures that the findings are consistent and accurately represent employee experiences.

2.4 Data Gathering Instrument and Statistical Tools

The researchers utilized a structured Google Form questionnaire to collect the necessary data for this study. The survey included demographic questions and Likert-scale items aimed at capturing respondents' satisfaction levels, productivity, and perceptions of policies related to integration of Robotic Process Automation (RPA) in engineering project management. The collected data was analyzed using IBM SPSS Statistics26.

III. RESULTS AND DISCUSSION

The foundation of this study rests upon the survey responses obtained from a sample of 20 from different job positions in a telecommunication company. This approach guarantees that the research is anchored in the insights and real-world experiences of staff and professionals directly engaged in areas relevant to the study. Gathering survey data from this specific group enhances the relevance and precision of the findings, making them more applicable to evaluating the benefits of the implementation.



Figure 1: Respondents Work Title/Position

Figure 1 represents the job titles of 20 respondents to the survey. The most common roles were Engineer and Senior Engineer, each chosen by two people (10.5%). Every other title—like NOC Technician, Network Engineer, Operation Support, Team Leader, and a few others—was selected just once (5.3%). Overall, the responses are evenly spread out across different positions. This suggests there's a good mix of job roles among the group. There's no single role that stands out as dominant. The slightly higher count of engineers might hint that the team or organization leans technical. The variety of roles could mean this is a cross-functional team, with people from different departments working together. It is clear that there's a healthy range of expertise represented. That kind of diversity can be a real strength in collaborative environments.

Are you currently using Robotic Process Automation (RPA) in your current work?



Figure 2: Utilization of RPA

Figure 2 shows the distribution of responses regarding the implementation status of a particular action. Three categories are visible: "Yes," "No," and "Planning to implement soon." The majority of respondents, 73.7%, have already implemented the action. This suggests a strong overall compliance or readiness among participants. A smaller portion, 21.1%, have not yet implemented the action, indicating potential barriers or reluctance. Only 5.2% are in the process of planning to implement soon, suggesting limited upcoming growth. The high percentage of "Yes" responses reflects a positive outcome for whoever conducted the survey. However, the "No" group still represents a significant minority that should not be overlooked. Further investigation may be necessary to understand why some respondents have not implemented the action. The "Planning to implement soon" group could be targeted for support or followup initiatives.

What do you think are the primary benefits of RPA in engineering project management? (Select all that apply)



Figure 3: Primary Benefits of RPA

Figure 3 shows the perceived primary benefits of RPA (Robotic Process Automation) in engineering project management. "Improved efficiency" was identified as the top benefit, chosen by 90% of respondents. "Faster project completion" was the second most common response, selected by 70% of participants. "Reduced costs" came next, with 55% of respondents highlighting it as a key benefit. Both "Reduced errors" and "Streamlined communication" were each identified by 45% of the participants. "Enhanced decision-making" was selected by 40%, indicating a slightly lower emphasis compared to the "Streamlined other categories. Interestingly, communication" had the least number of selections, with only 5% recognizing it as a major benefit. This suggests that while RPA is seen as improving internal processes, its impact on communication is viewed as minimal., The graph highlights that efficiency and speed are the most valued contributions of RPA to project management.



Do you believe RPA has the potential to transform engineering project management?

Figure 4: RPA Potential

Figure 4 illustrates opinions on whether RPA (Robotic Process Automation) has the potential to

transform engineering project management. A significant majority, 80% of respondents, believe that RPA can indeed transform the field. This strong positive response indicates a high level of confidence in the technology's impact. Meanwhile, 15% of participants were "Not Sure," reflecting some uncertainty or lack of awareness. A very small proportion of respondents, about 5%, answered "No," suggesting minimal skepticism. The overwhelming "Yes" responses show strong optimism about technological advancement in project management. The "Not Sure" group may represent individuals who require more information or exposure to RPA's benefits. The small "No" percentage suggests that resistance to RPA's integration is relatively low. The data portrays a very favorable attitude toward the adoption of RPA in engineering project management.

In your experience, how has RPA affected the role of project managers and team members?



Figure 5: RPA Experience

Figure 5 presents insights on how RPA (Robotic Process Automation) has affected the roles of project managers and team members. The largest portion, 55%, believe RPA has reduced workload but increased reliance on technology. This suggests that while automation has made some tasks easier, it has also introduced new challenges tied to technological dependence. Meanwhile, 40% of respondents feel that RPA has increased efficiency, allowing for a stronger focus on strategic tasks. This positive outcome highlights that many professionals see RPA as a tool for enhancing high-level decision-making. A very small percentage of participants selected "No significant change," indicating minimal perceived impact for some teams. Notably, no respondents identified "Increased stress due to technological dependency" as a major effect. This absence suggests that while reliance on technology has increased, it has not yet translated into widespread stress among team

members. The findings imply a generally positive view of RPA's role, with some caution around technological over-dependence. The fact that efficiency and workload reduction dominate the responses points toward RPA achieving its primary goals. However, organizations may need to provide additional support to manage the risks associated with heavy reliance on automated systems. RPA appears to be shifting roles in a beneficial but complex way that needs careful management.

Have you observed any improvements in the following areas after implementing RPA in your projects? (Rate from 1 = No improvement to 5 = Significant improvement)



Figure 6: Observed improvements in implementing RPA

Figure 6 gives us a clear picture of how people feel about the improvements after implementing RPA (Robotic Process Automation) in their projects. Participants were asked to rate the level of improvement on a scale from 1 (no improvement) to 5 (significant improvement). Interestingly, no one chose the lowest ratings (1 or 2), which shows that almost everyone noticed at least some positive change. In fact, 36.8% of respondents rated their experience a 4, and another 36.8% gave it a full 5 — both pointing to strong satisfaction with the results. About 26.3% rated the improvement at a 3, suggesting moderate but noticeable progress. The complete lack of low scores indicates that RPA has generally been well-received. The nearly even split between 4s and 5s reflects a very positive overall sentiment. Altogether, 73.6% of experienced significant improvements, people underscoring RPA's effectiveness. The chart makes it clear that implementing RPA has been a real success for most projects.

What additional support would you need to successfully integrate RPA in your engineering projects? (Select all that apply)



Figure 7: Additional support needed to integrate RPA

Figure 7 shows a clear picture of what people feel they need to successfully bring RPA into their engineering projects. Respondents could pick more than one option, and overwhelmingly, 95% said they need more "Training and development programs" showing just how important skill-building is to them. "Improved collaboration with IT teams" came in second, with 45% highlighting it as a key need. Close behind, 40% of participants said having "Access to case studies and best practices" would really help them. About 35% pointed to an "Increased budget for RPA tools," signaling that financial support is also a concern. Interestingly, only 30% felt they needed more "Support from RPA vendors," making it the least selected option. The strong call for more training shows that lack of knowledge is still a major barrier to RPA success. In general, people are saying loud and clear that building internal skills and working better with teams matter more than just throwing money or external help at the problem.

How do you feel about the long-term impact of RPA on the workforce in engineering project management?



Figure 8: Long-term impact of RPA

Figure 8 gives us a glimpse into how people feel about the long-term impact of RPA on the workforce in engineering project management. Participants

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shared whether they had already faced - or expected to face — resistance to RPA. The biggest group, 40%, said they had encountered "some resistance," showing that while RPA adoption is happening, it's not always smooth. On the bright side, 25% said "everyone was supportive," highlighting that in some environments, change is welcomed. About 20% of respondents reported "significant resistance," pointing to deeper concerns in some teams. Interestingly, 15% hadn't seen resistance yet but expected it to come eventually. When you combine those who faced either some or significant resistance, it adds up to 60%, showing that pushback is common. Still, the quarter of participants who experienced full support suggests that with the right approach, acceptance is possible. The expectation of future resistance hints that organizations are aware cultural and workflow challenges are still ahead. the This reminds us that while RPA has a lot to offer, getting everyone on board is still a major hurdle. Making RPA truly successful will take more than just good technology — it will also require thoughtful communication and change management.



Figure 9: RPA in detecting and preventing errors

Figure 9 shows a good sense of how people feel about RPA's ability to catch and prevent errors in project documentation and reporting. A strong majority — 60% — believe that RPA can significantly reduce errors, showing a lot of confidence in its potential. Another 35% feel that while RPA helps, it's mostly effective for fixing minor mistakes rather than major ones. A small group worries that RPA might actually introduce new errors, reminding us that no tool is completely risk-free. Interestingly, almost no one felt that RPA has little effect or said they were unsure, meaning most people have a clear opinion on the matter. The overwhelming belief in RPA's positive

impact suggests it's seen as a valuable addition to project management practices. At the same time, the fact that over a third of respondents see its limitations shows that people aren't blindly optimistic. Even among supporters, there's an understanding that RPA isn't a magic fix for everything. Some concerns about new errors emphasize the need for careful setup and monitoring People seem excited about what RPA can offer, but they're approaching it with a practical mindset. It's clear that successful use of RPA will require not just adoption but also thoughtful management.

How has RPA affected collaboration between cross-functional teams (e.g., engineering, finance, procurement)?



Figure 10: RPA effect on cross functional team collaborations

Figure 10 suggests a clear picture of how RPA has influenced collaboration between different teams like engineering, finance, and procurement. Most people - 63.2% - feel that RPA has improved collaboration to some extent, which is definitely a good sign. Another 31.6% said it has significantly boosted collaboration, showing that for some teams, the impact has been really strong. Only a tiny group wasn't sure about the impact, based on the small purple slice. Interestingly, no one reported that RPA made collaboration worse or had no real effect at all. This suggests a strong overall belief that RPA is helping teams work better together. The fact that most people leaned toward "some improvement" rather than "significant improvement" hints that there's still room to make things even better. RPA is moving teams in the right direction when it comes to collaboration. With a little more fine-tuning, it could be an even bigger game-changer.

What do you think is the most crucial consideration when adopting RPA for engineering project management?



Figure 11: Considerations in adopting RPA

Figure 11 gives us a glimpse into what people see as the biggest priorities when bringing RPA into engineering project management. The top two concerns - "Integration with existing systems" and "Flexibility of the technology" - are tied, with 26.3% of people picking each one. That tells us most folks are thinking about how well RPA fits into what they already have and how adaptable it will be moving forward. Meanwhile, 15.8% of respondents each pointed to "Cost-effectiveness," "Employee readiness and training," and "Scalability of the solution" as their top concerns. Even though these areas didn't get the biggest share, they're still seen as really important. People aren't just worried about technical stuff - they're also thinking about the realworld challenges of money, people, and future growth. Nobody sees just one thing as the magic answer, which shows how layered and complex RPA adoption really is. At the heart of it, success with RPA seems to come down to finding the right balance across all these factors. Organizations that think holistically - about systems, people, and flexibility - will likely have the smoothest journey with RPA.



What is your overall satisfaction with RPA's impact on engineering project management so far?

Figure 12: Satisfaction with RPA

Figure 12 captures how people feel about the overall impact of RPA on engineering project management.

Nearly half of the respondents (47.4%) said they are "Satisfied" with the results, making it the largest group. Another 31.6% mentioned they are "Highly satisfied," showing a strong wave of positivity toward RPA adoption. Together, this means almost 80% of the participants are happy with the changes RPA has brought. About 21.1% chose "Neutral," suggesting they haven't seen a major difference yet - either positive or negative. Interestingly, no one reported being "Dissatisfied" or "Highly dissatisfied," which is a great sign for RPA initiatives. The high satisfaction rates indicate that RPA is doing a good job of improving project management tasks. The neutral responses remind us that some people might still be waiting to experience the full benefits. Since there's no visible dissatisfaction, it's fair to say that serious setbacks have been rare so far. The mood is very positive, suggesting that RPA is making a meaningful and welcome difference in engineering project management.

IV. SUMMARY, CONCLUSION AND RECOMMENDATION

Summary

This research paper dives into how Robotic Process Automation (RPA) is making its way into engineering project management. It points out that traditional project management often gets bogged down by repetitive tasks and slow decision-making. RPA steps in as a smart solution by automating rulebased, time-consuming tasks. The study explores not just the benefits but also the real challenges of adopting RPA. It shows that RPA can boost efficiency, improve accuracy, and make real-time project tracking much easier. Still, it's not all smooth sailing—there are real hurdles like technical integration issues and employee resistance to change.

Past studies back this up, showing RPA's potential while warning about the bumps along the way. This particular research focuses on the telecommunications industry. It zooms in on how RPA can improve tasks like scheduling, compliance tracking, and reporting. Researchers used a survey method, gathering insights from 20 telecom employees. The questionnaire turned out to be highly reliable, scoring a Cronbach's Alpha of 0.83. A big majority-73.7%-have already rolled out RPA in their work processes. When asked about benefits, most people (90%) said RPA improved efficiency, and 70% noticed faster project completion. About 80% believe RPA has the power to truly transform project management. At the same time, some respondents pointed out that while RPA cuts down workload, it also increases dependence on technology. Training and upskilling were huge needs, with 95% calling for more development programs. Most participants said they've seen noticeable improvements after bringing in RPA. There were some concerns about small errors and being too reliant on tech, but overall, complaints were rare. Team collaboration also improved for most, which shows RPA's broader positive impact. When choosing what matters most in adopting RPA, system integration and flexibility topped the list. In the end, 79% of participants said they were satisfied or highly satisfied with RPA's impact. The study wraps up by saying RPA is a huge step forward—but getting the full benefits will take smart planning, continuous learning, and strong change management.

CONCLUSION

Bringing Robotic Process Automation (RPA) into engineering project management is opening up some exciting new possibilities. By taking over repetitive, time-consuming tasks, RPA helps teams work faster and smarter. It also makes data more accurate and helps managers make better decisions, faster.

From the survey results, it's clear that most people who have tried RPA are seeing real benefits. Many said their projects now finish more quickly and run more smoothly thanks to automation. Notably, almost no one expressed dissatisfaction with using RPA, which is a great sign. Still, adopting RPA isn't completely without its struggles. Getting RPA to work smoothly with existing systems is a big concern for many teams. Making sure the technology is flexible enough to adapt to changes is another top worry. Training employees and helping them adjust to new ways of working are also critical needs. Some teams have experienced pushback, showing that change management can't be overlooked. There's also a cautionary note about becoming too dependent on technology. Companies need to have strong support systems in place to balance these risks. Investing in employee training will be key to making RPA a longterm success. Leaders will also need to foster a workplace culture that embraces innovation and change. When used thoughtfully, RPA doesn't just make work easier-it lets teams focus on bigger, more strategic goals. It has the potential to truly modernize how engineering projects are managed. But getting there will take careful planning, patience, to continuous and а strong commitment improvement. RPA could become a real gamechanger for the future of engineering project management.

RECOMMENDATION

Organizations should prioritize building strong, ongoing training programs to help employees adapt to RPA technology. Training will ease fears and build confidence in using automation tools. At the same time, strong change management strategies are essential to address employee resistance to RPA. Companies should clearly communicate the benefits of RPA and involve staff early in the process. Careful system integration planning is also key to making RPA work seamlessly with current operations. Organizations are encouraged to start with small pilot projects before launching full-scale RPA initiatives. Pilot projects allow teams to fine-tune processes and build success stories. Leaders should work to create a culture that embraces innovation and technological change. It's important to help employees see RPA to make their work more meaningful, not as a threat. Companies should also recognize the risks of becoming too dependent on technology.

Developing backup plans and keeping human oversight in place will balance the benefits of automation. Financial investment should go beyond buying RPA tools and include integration, training, and maintenance costs. Cross-functional teamwork between departments like engineering, IT, and finance should be actively encouraged. This collaboration helps ensure that RPA implementations work smoothly across the entire organization. Organizations must monitor and update RPA systems regularly to keep up with changing project demands. Finally, RPA strategies should be customized to fit the specific needs of different engineering disciplines, like telecom or civil projects. Considering these steps, companies can fully unlock RPA's potential while minimizing the risks.

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