Factors influencing the use of Robotic Process Automation Technology: A Study in the Sri Lankan Banking Sector

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Abstract - *The rapid changes in technology parallel the differences in the everyday life of human beings. Technology has significantly eased daily activities across various sectors, including education, communication, business, and the job industry. The research investigates the implementation of the Robotic Process Automation (RPA) in the banking sector in Sri Lanka. The study mainly focuses on the challenges and implementation of effective managerial practices, conducive banking processes and factors related to decision-making. The study took a quantitative approach, selecting 80 bank employees through stratified sampling to assure representation across bank departments, and distributing the survey questionnaire in person to obtain employee impressions of RPA deployment. A questionnaire for the employees is incorporated into the study as the primary research tool and the gathered information is statistically analyzed using SMART PLS. The research findings provide a critical importance of factors influencing the adoption of RPA technology within the Sri Lankan banking sector. Particularly, the study emphasizes the significance of Perceived Ease of Use and Management Support, while acknowledging both their strengths and weaknesses.*

Keywords: Banking sector, Operational efficiency, Operational efficiency, Robotic Process Automation, RPA In Banking, Technology Adoption, Use of RPA

I. INTRODUCTION

The banking industry is undergoing a dramatic transformation fuelled by technological advancements and evolving clients. In the competitive market, banks are continuously looking for new ways to increase efficiency, cost saving and improve their overall services. Automation has been a promising technological innovation in this technological era. Automation refers to the use of technology and machines with the purpose of performing tasks and processes that can be carried out without human intervention. Modern automation systems can perform complex tasks with accuracy and speed far superior to human capacity in some cases such as at analyzing data, making decisions, and even learning from past experiences.

RPA is a technology that uses software robots to automate repetitive, rule-based processes that are traditionally handled by humans. It is a rapidly emerging technological tool, that automate digital tasks creating a human-bot working environment (Zhu & Kanjanamekanant, 2023). This technology considered to be a one of an industrial revolution 4.0 technologies (Riantono,2022). It uses software robots commonly known as "bots" to perform repetitive and rule-based tasks that require little to no human decision making. It enables of document digitalization (Soeny et al., 2021) including data entry, extraction of information in the form of documents, file handling, report generation, streamline operations and validation allowing the organizations to free up human resources for more complex and value-added activities by automating these repetitive tasks. As a result of its potential for simplifying and streamlining many manual processes. Like many other industries banking sector has witnessed a significant transformation in

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its operations through adoption of RPA to their operations, promising cost savings and increased efficiency. Its Optical Character Recognition approach enhances the user experience removing manual errors improving accuracy, reducing the waiting time at the bank premises, and managing emails. For example, loan processes are one of the main activities that take so long to validate and approve in banks. RPA facilitates faster decision-making and choices about the eligibility processing customer information and background checking in loan procedures, reduces the risk of errors securing the processes through a minimizing the potential risks while performing these tasks, just as fast and real-time processing capacity is provided by cloud computing. Furthermore, RPA improves productivity imitating human behaviour and interactions with computer systems and application. Since software robots can execute tasks much faster than humans automating repetitive and mundane tasks without any breaks or downtime. For instance, calculation processes had to be carried out on 24/7, not hindering the weekend leaves of the employees (Gomes & Seruca, 2023; Gradim & Teixeira, 2022; Ma et al., 2019; Patrício et al., 2023; Séguin et al., 2021).

Although there are many studies and investigations on automation and digital technology benefits and its adaptation in today's world, it seems like there are not many jobs on this topic specifically in the banking sector. Investigating the factors influence the use of RPA, making a link between the pillars of sustainability is an essential aspect (Patrício et al., 2023). Hence, this research aimed at this integration of RPA, ensuring proper recognition factors and significance issues to banking sector and its stakeholders and improve the understanding of interorganizational relations from the point of view of the banking industry, the key triggers which are considered to have an influence the use of RPA process in the field. In fact, the adoption and successful implementation of RPA is important. But being aware of what influence the use of RPA, which has a great potential in every industry in particular the banking sector because of its functions to make the most effective use of RPA and tackle possible problems as it is essential that they understand these practical factors beforehand.

To give them adequate information about its implementation. In order to identify which processes can be adapted for automation and in order to predict the potential benefits of increased effectiveness and reduced turnaround times, banks may benefit from knowledge of factors that affect not only on the process efficiency and speed, task complexity, system integration requirements or availability of qualified personnel but also the impact on compliance and risk management, such as data privacy regulations, auditability of automated processes, and the ability to maintain an audit trail, helps banks ensure that RPA implementations align with relevant regulations and minimize potential risks. According to a study conducted by the Patri in 2020, organizations are increasingly adopting more and more technological solutions. to meet growing customer demand, for example, 24x7 service, failsafe service, mobile services, so they can take advantage of the new operating conditions in this area. RPA has emerged as one of the most important technologies to scale up services with speed and efficiency. Automating, helps in expanding, managing, analyzing, and providing better customer service is becoming an increasing use of RPA (Patri, 2020).

The current study aims to identify the factors that will drive RPA implementation in banking. Specifically, to what extent it is effective to provide more opportunities for making a convenient environment within banking is investigated. It will be productive for exploring the future development strategies within the sector to reduce the mistakes occurred. On the other hand, to increase financial management, the study investigates

specific banking processes conducive to automation, considering factors like complexity and transaction volume. Moreover, the decision-making process for RPA implementation is examined, particularly about the complexity and volume of redundant tasks. Through these inquiries, the research aims to provide insights into optimizing RPA adoption and utilization within the Sri Lankan banking sector.

II. LITERATURE REVIEW

According to Patrício et al. (2023) investigating the factors influence the use of RPA, making a link between the pillars of sustainability is an essential aspect. The literature analysis, a broad approach revealed by all the relevant papers paving the path to seek and assess in detail the current state of deployment of them through the lens of established technology adoption models. And they help to understand how adoption of technology impacts on organizations implementation of RPA as well. A wide range of appropriate and reliable sources have been sought to carry out this literature review. To identify peer reviewed journal articles in different fields we looked for academic databases including Emerald, IEEE, Scopus, Science Direct and the Web review of Science. the factors identified which has the potential to influence the utilization of RPA in banking sector according to the previous research and theoretical frameworks.

A. Robotic Process Automation

RPA is a popular strategy used to improve effectiveness and efficiency in the business industry. It involves automating the tasks of humans to ensure the operation process efficiency (Madakam et al., 2019). In the banking sector, RPA is used to extract the customers' data on business intelligence to make the appropriate business decisions considering the data from Robotic Process Automation (Rodrigo, 2023). RPA is a rapidly emerging technological tool, that automates digital tasks creating a human-bot working environment (Zhu & Kanjanamekanant, 2023). It is considered the banking sector to evaluate the relationship between Robotic Process Automation (RPA) and employment opportunities (Rodrigo, 2023). RPA advantages for banking sector business organizations to understand the behaviors and expectations of the customers (Madakam et al., 2019). RPA is implemented to reduce human involvement in operational activities to avoid the risk of human errors and enhance the efficiency of the operational practices (Madakam et al., 2019).

RPA plays a crucial role in the broader context of digital transformation in the banking industry. While the study focuses on the factors influencing the use of RPA in the banking sector, it is important to note the possible benefits that encourage banks to employ the technology. Many researchers have conducted studies to investigate the uses of utilizing RPA in the world. Improving productivity, accuracy and reliability, risk management, consistency and cost reduction are more significant among the key benefits. According to Kanakov and Prokhorov (2020), RPA is particularly useful in the banking industry, which enables more quickly solutions via robots completely replicate a human's computer work patterns and are very good at solving repetitive tasks. RPA can record all actions and allowing flexibility regarding operational productivity (Asquith and Horsman, 2019). According to Asquith and Horsman (2019) RPA demand less changes in company infrastructure when interacts with existing applications and systems. Especially, RPA reduces the rate of errors by avoiding people's mistakes, such as fatigue and tardiness or lack of awareness (Abdulla et al., 2020). Basic repetitive manual work in banking industry RPA can automate the process of collecting and verifying customer information such as

Know Your Customer (KYC), Anti-Money Laundry (AML) checks, fraud detection, accurately managing the loan applications process by extracting and analyzing data from various documents such as credit reports, bank statements, income verification. A case study described (Asatiani et al., 2023) in bank various tasks, such as automation of transactions, processing data, communication with systems, handling massive calculations, comparisons, checking whether a customer is eligible for it, can also be performed by RPA (Abdulla, et al., 2020). While reviewing papers we have synthesized and summarized the main pros of RPA following the major research literature analysis alluded the applications in variety of industries which also true indifferently in the banking sector (Hu &Wang, 2020).

B. Technology Acceptance Model (TAM)

Understanding the acceptance and uptake of new technologies by individual people is a widely used model. This model firstly introduced by Davis (1989) and has identified two major factors that determine whether users adopt the technology: Perceived Usefulness (PU) and Perceived Ease of Use (PEU). PU refers to a user's perceptions about the benefits of such technology for enhancing their performance or productivity. The degree to which a user believes that the technology can be learned and used easily is described as PEU (Venkatesh et al., 2003). In assessing the way staff perceive and embrace RPA within an enterprise, this model can be applied to explore the adoption. TAM shall take account of factors PU and PEU as well as attitudes towards the technology (Razak & Ismail, 2022).

C. Unified Theory of Acceptance and Use of Technology (UTAUT)

Venkatesh et al. (2003) developed a research model UTAUT which sought to understand and describe the determinants that have influenced the utilization of technologies in an organization or individual. It integrates several existing theories and models, including the Theory of Reasoned Action (TRA), the Theory of Planned Behavior (TPB), the TAM, and the Motivational Model. This framework proposes four key factors that influence an acceptance and use of technology as performance expectancy, effort expectancy, social influence and facilitating condition.

D. Model CUE

The model CUE (Coherence, Usefulness and Ease of use) conceptualized by Yapa, et al. (2019) explains the sequential coherence as a key determinant which demands the manager’s attention beyond the organizational boundaries in employing new technologies such as RPA.

E. Task-Technology Fit Theory (TTF)

Proposed by Goodhue and Thompson (1995), the concept of task technology interoperability is an idea where the characteristics of a task and those of specific technologies are compatible or aligned. It looks at whether a technology helps or hinders the achievement of a specific task or set of tasks. To ensure a match between the characteristics of automated tasks and RPA's capabilities, task orient technology fit is also applicable for robotic process automation. RPA can effectively execute repetitive and rule-based tasks, resulting in increased performance, accuracy, cost savings when a good fit is found (Edward, 2022). According to Kokina and Blanchette (2019) RPA is an emerging technology, enabling the automated processes and tasks of business governed

by rules using software bots. and furthermore, they have conceptualized TTF to represent the RPA tool to automate and perform tasks that earlier execute by humans.

F. Literature Findings on RPA Adoption

A literature from Malaysia revealed that the perceived importance of RPA was significantly enhanced by relative advantages, training, and education (Razak & Ismail, 2022) they have developed a survey questionnaire to collect data from accounting personnel and integrates 1) Theory of Environment Framework, 2) Hofstede's cultural model other than TAM. However, the study by Razak did not consider the potential impact of organizational factors, managerial factors, technical factors to adoption of RPA.

A company's decision to adapt technology can also be significantly influenced by its customers. It means that customers can drive technological changes within an organization or institution. For example, to meet customer expectations, organizations often must upgrade their technology when customers demand better products or services. In addition, market trends and competition where customers' behavior shape its trends organizations need to adapt new technologies. Indeed, organizations are not merely maintaining relationships with customers to obtain benefits for the consumers but also so that they may themselves benefit (Walter & Ritter, 2003). In other words, for value-creating functions of customer relationship and management have a mediating role for identify the customer co-creation and exploring emerging technologies such as RPA in banking (Khanagha et al., 2017).

Quantitative research to identify the impact of RPA on the work processes of banking firms in Indonesia, suggested some moderate effects in developing RPA such as audit procedures, workflows. The study created its framework, banking audit processes, workflow and competencies as independent variables and emerging technology as moderating variable while RPA and its effectiveness in banking procedures, cost reduction and access to timely financial data as dependent variables. Asatiani et al., (2023) conclude his research with the importance of managerial involvement in RPA implementation proposing a 3 key decision checklist for RPA managers. There are 1) selecting internal vs external resources for RPA development 2) deciding whether to pursue RPA deployment on premises or through cloud 3) choosing the RPA tool or open source. According to Gomes & Seruca (2023) the different job roles in a workplace view and perceive RPA as a useful tool for different reasons. He claims that managers have more positive feelings on RPA productivity, quality, and cost while employees have the feeling of job satisfaction using the RPA.

A systematic review of the impact of new technologies such as IoT, VR, AI, machina learning and big data in the banking industry discovered that the managers' perception of technology influences the organizational outcomes such as strategic plan development, for better resource allocations, enhance collaboration and communication, better change managements helping employees with the technological transitions and identification of new opportunities. Another comprehensive evaluation by Kanakov et al. (2020) identified 4 parameters feasible in implementation of RPA. They are full time staff, RPA process support team, procedural complexity, and advisability.

A multiple case study on RPA potentials, barriers, and implementation by Flechsig et al. (2022) identified that technological and management support in adoption of RPA. A structured literature review and analyzing the answers form 19 experts' interviews (Plattfaut et al., 2022) has identified 32 critical success factors for RPA which

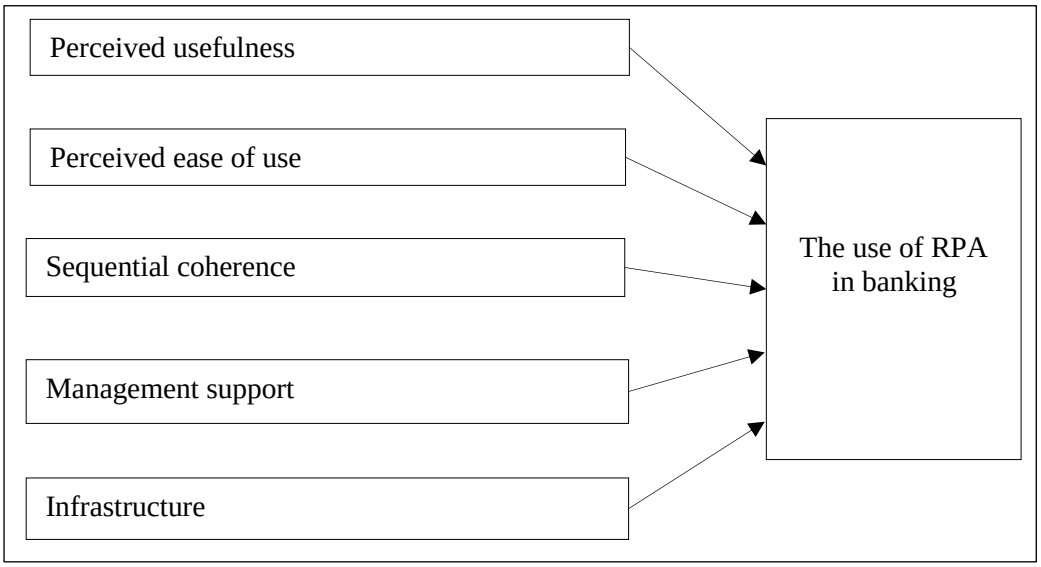
distributed in 3 main contextual clusters. The clusters are development structures, change management theory, and organizational and strategy setup.

Some other contextual factors on adoption process of RPA have investigated by Juntunen as innovative attributes, organizational attributes, individual attributes, and managerial facilitation attributes integrating the concepts from theoretical frameworks such as IDT, User acceptance and Change management (Willcocks et al., 2019) where identified skill development, communication, management of active stakeholders and management support (Plattfaut et al., 2022). Some other factors provided in the literature are the stability of the environment (Syed et al., 2020), environmental readiness (Flechsig, et al., 2022), security and trust, subjective norms, attitude and Information Technology literacy (Rathnaweera & Karunasena, 2020), low cost of maintenance compared to salary of full-time employees, low level of intrusiveness. supplier related issues, organizational structure, government regulations, IT infrastructure, internal communication (Flechsig et al., 2022).

G. Conceptual Model and Hypotheses

Figure 1 as the conceptual model on which the present study built upon. It developed by analyzing and synthesizing the literature, identifying the dependent variable as 'the use of RPA in banking sector in Sri Lanka'. The independent variables have been identified as: 1. PU 2. PEU 3. SC 4. Management support 5. infrastructure.

Figure 1. Conceptual Framework for Factors Identification



Source: Authors' compilation.

The current study has raised 5 hypotheses based on the above discussion:

Hypothesis 1

H_0: Perceived usefulness has no impact on use of RPA in banking sector.
H_1: Perceived usefulness has an impact on the use of RPA in the banking sector.

Hypothesis 2

H_0: Perceived ease of use has no impact on use of RPA in banking sector.
H_1: Perceived ease of use has an impact on the use of RPA in banking sector.

Hypothesis 3

H_0: Management support has no impact on the use of RPA in the banking sector.
H_1: Management support has an impact on the use of RPA in the banking sector.

Hypothesis 4

H_0: Sequential coherence has no impact on the use of RPA in the banking sector.
H_1: Sequential coherence has an impact on the use of RPA in the banking sector.

Hypothesis 5

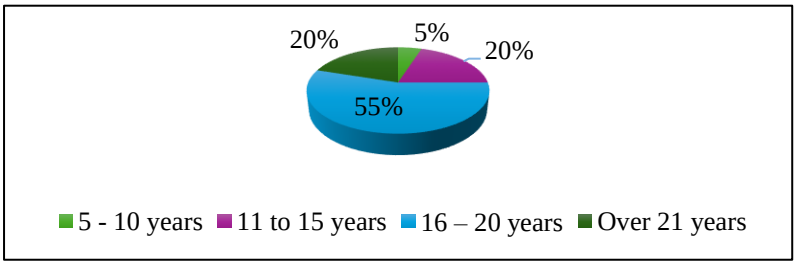
H_0: Infrastructure has no impact on the use of RPA in the banking sector.
H_1: Infrastructure has an impact on the use of RPA in the banking sector.

III. METHODOLOGY

The conceptual model was tested using a survey research design employing a questionnaire. The questionnaire was designed in 2 parts. The first part was on gathering demographic information about the respondents including factors such as job title, years of experience in the banking industry and the level of familiarity with RPA technology. The second part focused on measuring the five variables hypothesized to influence the use of RPA. For each variable, several statements were presented, and respondents are asked to indicate their level of agreement using a 5-point Likert scale. The survey questionnaire distributed in person and used paper-based surveys to bank professionals in Sri Lanka.

From the population of 24 licensed banks in Sri Lanka that authorized to carry out banking activities and RPA initiatives, 80 participants were employed through stratified sampling to ensure a representative sample of bank professionals with diverse job positions and varying levels of exposure to RPA technology and possessing expertise aligned with the research purpose. This approach ensures representation from various banking professionals and RPA stakeholders, reducing potential biases. Prior to data collection, all potential respondents received a written informed consent form outlining the purpose of the study, confidentiality measures and their right to withdraw at any point. For statistical analysis, SMART PLS software was used to identify patterns, correlations, and trends. Figure 2 illustrates the work experience of the survey participants while figure 3 illustrates the most involved functional areas.

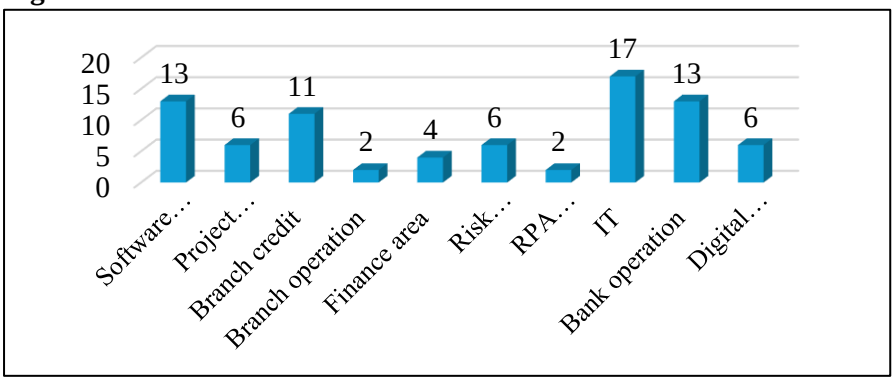
Figure 2. Work Experience



Source: Authors' compilation based on survey data.

The data on the experience of participants reveals a diverse range of tenure within the banking sector, with a notable concentration of respondents having 16 to 20 years of experience, accounting for 55% of the total. This suggests a significant level of expertise and deep understanding of banking operations among the participants. Additionally, 20% of the respondents have over 21 years of experience, indicating a substantial number of seasoned professionals in the sample. On the other hand, the proportions of respondents with 5 to 10 years and 11 to 15 years of experience are relatively lower, at 5% and 20% respectively.

Figure 3. Most Involved Functional Areas



Source: Authors' compilation based on survey data.

The data on the most involved functional areas of participants indicates a diverse range of roles within the banking sector. The highest representation is from the IT department, with 21.3% of respondents involved in this area. This suggests a strong reliance on IT expertise for implementing RPA technologies. Other significant areas include software designing (16.3%), bank operation (16.3%), and branch credit (13.8%), indicating a broad spectrum of functions involved in RPA adoption. Additionally, roles such as project management (7.5%), risk management (7.5%), and digital marketing (7.5%) also play a notable role, highlighting the interdisciplinary nature of RPA implementation within the banking sector. Overall, the data indicates that RPA adoption involves collaboration across various functional areas, emphasizing the need for a multidisciplinary approach in implementing RPA tech.

IV. RESULTS

The primary objective of this present study is to investigate the factors influencing the use and adoption of RPA, a software robotics tool in the banking industry, where CFA was conducted.

Figure 4 presents an in-depth CFA of various factors influencing the adoption and implementation of RPA technology in the banking sector. It primarily focuses on Perceived Usefulness (PU), Perceived Ease of Use (PEU), Management Support (MS), Infrastructure, and Sequential Coherence as crucial elements affecting RPA integration. Perceived Usefulness (PU) is highlighted as a significant factor influencing how bank employees perceive the value and advantages of RPA. Statistical analysis confirms a strong correlation between PU and RPA adoption, emphasizing the importance of recognizing RPA's benefits for operational efficiency and task automation.

Perceived Ease of Use (PEU) plays a critical role in technology adoption, with high statistical validation indicating that users perceive RPA as a user-friendly technology that streamlines tasks and boosts efficiency. Emphasizing PEU underscores the importance of designing intuitive systems and offering effective training programs to encourage RPA adoption.

Management Support (MS) is identified as crucial for successful RPA implementation, with strong statistical measures indicating its role in creating an environment conducive to technology adoption and driving organizational change. Prioritizing management support enables organizations to overcome obstacles and promote innovation within the banking industry.

Infrastructure readiness is underscored as crucial for effective RPA integration, with statistical validation confirming its significance in supporting RPA initiatives. Investments in IT infrastructure, hardware capabilities, and data security are highlighted as essential for seamless RPA implementation and operation.

Sequential Coherence in integrating RPA processes with existing workflows is identified as vital for maximizing efficiency and operational success. Statistical analysis confirms a strong consensus on the coherence and coordination of RPA operations within banking activities, emphasizing the need for clear process mapping and change management strategies.

In here emphasizes the significance of these factors in shaping RPA adoption and implementation strategies within the banking sector, providing valuable insights for organizations aiming to leverage RPA technology effectively

A. Measurement Model

CFA assesses the validity of the measurement model by testing the relationships between observed variables and their corresponding latent variables, as well as the relationships among the latent variables themselves. A well-fitting measurement model indicates that the observed variables are good indicators of their respective latent constructs, providing confidence in the validity of the measurement instruments used in the study. The statistics of the model justification are shown in table 1.

Table 1. Model Fit Summary of Finalized Model

The Goodness of Fit Index	Estimated Model
Chi-square	196.423
Number of model parameters	50.000
Number of observations	80.000
Degrees of freedom	121.000
P value	0.000
ChiSqr/df	1.623
RMSEA	0.088
RMSEA LOW 90% CI	0.065
RMSEA HIGH 90% CI	0.110
GFI	0.807
AGFI	0.728
PGFI	0.571
SRMR	0.188
NFI	0.835
TLI	0.908

CFI	0.927
AIC	296.423
BIC	415.524

Source: Authors' compilation.

The model fit summary provides several indices to assess how well the finalized model fits the observed data. The chi-square test is a measure of the discrepancy between the observed and expected covariance matrices, with a lower value indicating a better fit. However, it is sensitive to sample size, often resulting in significant values for large samples. The chi-square to degrees of freedom ratio (ChiSqr/df) is used to adjust for sample size, with values close to 1 indicating a good fit. In this case, the ChiSqr/df ratio is 1.623, suggesting an acceptable fit.

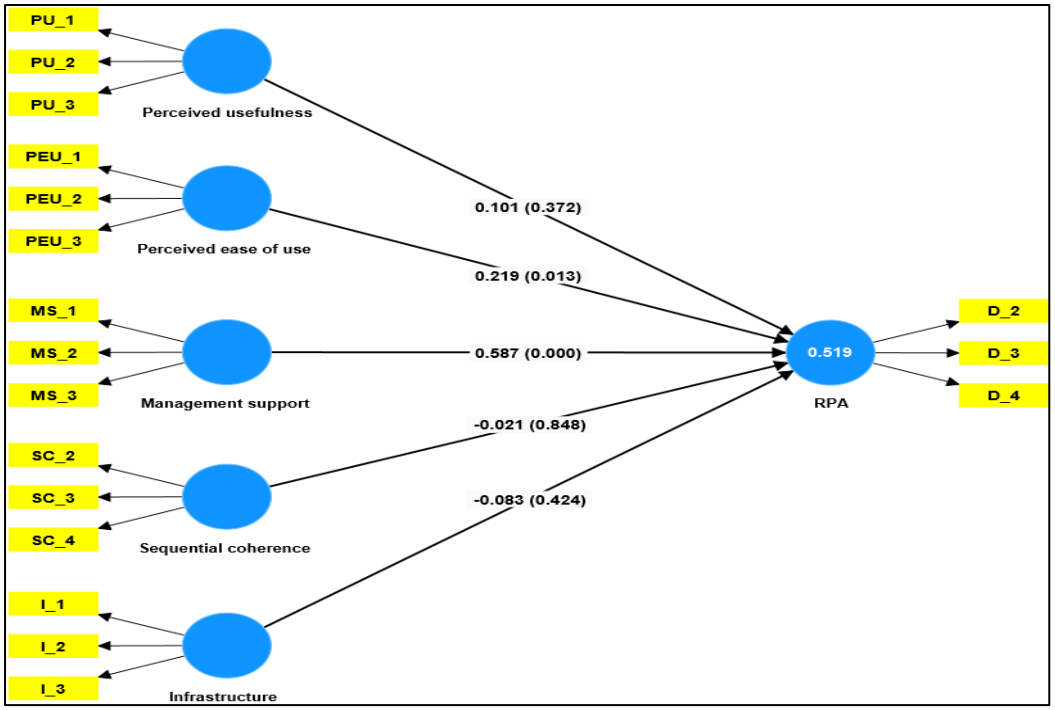
The root mean square error of approximation (RMSEA) measures the discrepancy between the model and observed covariance matrices, with values less than 0.05 indicating a close fit and values up to 0.08 indicating a reasonable fit. The RMSEA of 0.088 in this model suggests a reasonable fit, although it slightly exceeds the typical threshold. The goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), and normed fit index (NFI) assess how well the model fits the covariance matrix, with values closer to 1 indicating a better fit. The GFI and AGFI values of 0.807 and 0.728, respectively, suggest a moderate fit, while the NFI value of 0.835 indicates a relatively good fit. The comparative fit indices (CFI and TLI) compare the fit of the specified model with that of a baseline model, with values close to 1 indicating a good fit. The CFI and TLI values of 0.927 and 0.908, respectively, suggest a relatively good fit. The standardized root mean square residual (SRMR) measures the discrepancy between the observed and predicted covariance matrices, with values less than 0.08 indicating a good fit. The SRMR value of 0.188 in this model suggests a less-than-ideal fit.

B. Structural Equation Model (SEM)

In SEM, the R-squared value represents the amount of variance in the dependent variable that is explained by the independent variables in the model. An R-squared value of 0.519 indicates that approximately 51.9% of the variance in the dependent variable is accounted for by the independent variables in the model, suggesting a moderate level of explanatory power.

The results indicate that there are statistically significant relationships between Management Support, Perceived ease of use, and their respective Quadratic Effects (QE) with RPA. Specifically, the mean value for management Support to RPA is 0.584, which is significantly higher than the sample mean of 0.581 ($p = 0.000$), suggesting a positive relationship between Management Support and RPA. Perceived ease of use shows a significant positive relationship with RPA, with a mean value of 0.188 compared to the sample mean of 0.188 ($p = 0.052$). On the other hand, the results for Perceived usefulness, Sequential coherence, and their respective Quadratic Effects do not show statistically significant relationships with RPA. Table 2 shows that the path analysis results, five independent variables in the model: Perceived usefulness, perceived ease of use, Management Support, Sequential coherence, Infrastructure and dependent variable is RPA in the model.

Figure 4. Evaluation of the Structural Model (SEM)



Source: Authors' compilation.

Table 2. Standardized Path Analysis Results of the Structural Model

Path	Coefficients	Standard deviation (STDEV)	P values
I_ -> RPA	-0.083	0.104	0.424
MS_ -> RPA	0.587	0.100	0.000
PEU_ -> RPA	0.219	0.088	0.013
PU_ -> RPA	0.101	0.113	0.372
SC_ -> RPA	-0.021	0.111	0.848

Source: Authors' compilation.

The standardized path analysis results of the structural model indicate the strength and direction of the relationships between the latent variables in the model. The coefficient for the path from Infrastructure (I) to RPA (D) is -0.083, indicating a weak negative relationship, although it is not statistically significant (p = 0.424). Management Support (MS) has a strong positive relationship with RPA (D) with a coefficient of 0.587, which is statistically significant (p = 0.000). Perceived Ease of Use (PEU) also shows a positive relationship with RPA (D) with a coefficient of 0.219, which is statistically significant (p = 0.013). Perceived Usefulness (PU) and Sequential Coherence (SC) have coefficients of 0.101 and -0.021, respectively, indicating weak and statistically insignificant relationships with RPA (D) (p = 0.372 and p = 0.848, respectively). These results suggest that Management Support and Perceived Ease of Use are important factors influencing the adoption of RPA, while Infrastructure and Sequential Coherence have less impact.

C. Hypothesis Testing

The hypothesis testing results in table 3 indicate the support for each hypothesis based on the path coefficients and p-values.

Table 3. Hypothesis Testing Results

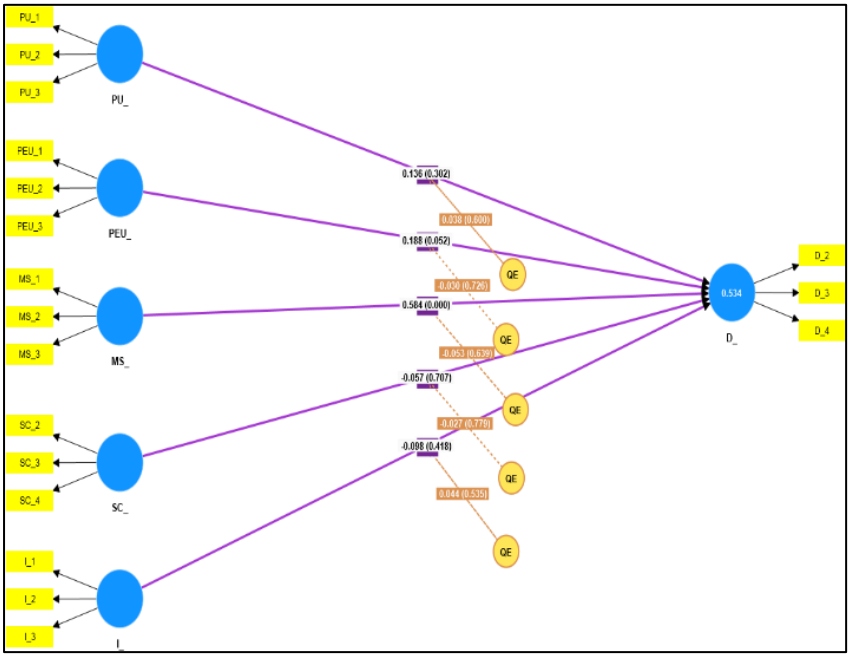
Hypothesis	Path coefficients	P values	Decision
H_1	-0.083	0.424	Not Supported
H_2	0.587	0.000	Supported
H_3	0.219	0.013	Supported
H_4	0.101	0.372	Not Supported
H_5	-0.021	0.848	Not Supported

Source: Authors' compilation.

Hypothesis 1 (H1), which proposed a negative relationship between Infrastructure (I) and RPA (D), is not supported (p = 0.424). Hypothesis 2 (H2), suggesting a positive relationship between Management Support (MS) and RPA (D), is supported (p = 0.000). Hypothesis 3 (H3), proposing a positive relationship between Perceived Ease of Use (PEU) and RPA (D), is also supported (p = 0.013). However, Hypothesis 4 (H4) and Hypothesis 5 (H5), which respectively suggested positive relationships between Perceived Usefulness (PU) and Sequential Coherence (SC) with RPA (D), are not supported (p = 0.372 for PU and p = 0.848 for SC). These results indicate that Management Support and Perceived Ease of Use are significant factors influencing the adoption of RPA, while Perceived Usefulness, Infrastructure, and Sequential Coherence have less impact.

D. Quadratic Effect

Figure 5. Quadratic Effect of the Model



Source: Authors' compilation.

In statistical analysis, the quadratic effect refers to the relationship between a predictor variable and an outcome that is not linear but follows a quadratic function. This indicates that the influence on the outcome variable is not continuous but rather varies in a curvilinear fashion as the predictor variable changes. Accordingly, the quadratic effect model made in relation to this study can be understood through table 4 and figure 5.

Table 4. Quadratic Effects in Path Coefficients

	Original sample (O)	Standard deviation (STDEV)	P values
I_ -> RPA	-0.098	0.121	0.418
MS_ -> RPA	0.584	0.145	0.000
PEU_ -> RPA	0.188	0.097	0.052
PU_ -> RPA	0.136	0.131	0.302
SC_ -> RPA	-0.057	0.150	0.707
QE (PU_) ->RPA	0.038	0.073	0.600
QE (PEU_) -> RPA	-0.030	0.086	0.726
QE (MS_) -> RPA	-0.053	0.112	0.639
QE (SC_) -> RPA	-0.027	0.096	0.779
QE (I_) -> RPA	0.044	0.071	0.535

Source: Authors' compilation.

The results indicate that there are statistically significant relationships between Management Support, Perceived ease of use, and their respective Quadratic Effects (QE) with RPA. Specifically, the mean value for management Support to RPA is 0.584, which is significantly higher than the sample mean of 0.581 ($p = 0.000$), suggesting a positive relationship between Management Support and RPA. Perceived ease of use shows a significant positive relationship with RPA, with a mean value of 0.188 compared to the sample mean of 0.188 ($p = 0.052$). On the other hand, the results for Perceived usefulness, Sequential coherence, and their respective Quadratic Effects do not show statistically significant relationships with RPA.

V. DISCUSSION

The purpose of the current study was to investigate factors that influence the use of RPA, ultimately contributing to a better understanding of its integration in banking operations. By reviewing the literature findings, the study developed its conceptual framework including independent variables: Perceived ease of use, Perceived usefulness, Management support, Sequential coherence, Infrastructure shaping the adoption of RPA. The empirical findings of this research confirm the critical role of Perceived ease of use and management support in influencing RPA utilization within Sri Lankan banks. These findings align with established literature across various industries, where use-friendliness and strong management backing are recognized as key drivers of technology acceptance (Davis, 1989; Khanagha et al., 2017). Employees who perceive RPA as easy to integrate into their workflows and learn are more likely to embrace it. Similarly, demonstrably strong support from bank leadership through resource allocation, addressing employee concerns and setting clear expectations for RPA implementation fosters an environment conductive to successful adoption.

While the research only confirms the significance of perceived ease of use and management support, it is important to acknowledge the other variables the study investigated. Understanding the adoption of Robotic Process Automation (RPA) technology within the banking sector is crucial for both academic researchers and industry practitioners. However, as with any research endeavour, it is essential to acknowledge and address potential limitations to ensure the validity and reliability of findings. In this regard, this discussion highlights several limitations encountered in existing studies on RPA adoption in banking and offers recommendations for future research to overcome these limitations and advance our understanding of this important phenomenon.

One of the limitations of this study may be the sample size and its representativeness, potentially stemming from a specific geographic region or a limited number of banks. This issue could affect the generalizability of findings to the broader banking sector. Future research endeavours could aim for larger and more diverse samples, spanning various geographical locations and encompassing a broader range of banking institutions, to enhance the external validity of the results and provide a more comprehensive understanding of RPA adoption trends. The study's cross-sectional design limits its ability to establish causality between independent and dependent variables. While correlations were identified, longitudinal studies or experimental designs could offer more robust evidence of causal relationships over time. By adopting longitudinal approaches, researchers can track changes in RPA adoption patterns and identify causal mechanisms underlying adoption decisions within the banking sector.

The study's findings are contingent upon the validity and reliability of measurement instruments used to assess variables. Issues like response bias, social desirability bias, or measurement error could have influenced results. Future research could employ multiple methods and measures, including objective measures and third-party evaluations, to enhance the validity and reliability of findings and ensure a more accurate depiction of RPA adoption dynamics in banking. The study may not have accounted for all relevant contextual factors influencing RPA adoption in the banking sector, such as regulatory environment, competitive pressures, organizational culture, and technological readiness. Future research could explore a more comprehensive set of contextual variables to provide a richer understanding of RPA adoption dynamics and their interaction with broader industry and organizational contexts. Furthermore, the study may not have captured the dynamic nature of RPA adoption over time, as factors influencing adoption evolve with technology advancements, organizational priorities, and market conditions. Longitudinal studies or qualitative research approaches could offer deeper insights into the temporal dynamics of RPA adoption in banking, allowing researchers to track changes in adoption patterns and identify emerging trends and challenges.

VI. FUTURE RESEARCH DIRECTION

While this study provides valuable insights into the factors influencing the adoption of Robotic Process Automation (RPA) technology in the banking sector, there are several avenues for future research to further enhance our understanding of this phenomenon and its implications. Here are some potential future research directions.

Future research could delve deeper into these variables to understand their specific influence on RPA adoption in the Sri Lankan context and delve deeper into the mechanisms through which the identified factors influence RPA adoption. Investigating potential mediating and moderating variables, such as organizational culture, employee

attitudes, or external regulatory pressures, could provide a more nuanced understanding of the relationships between independent and dependent variables. The consideration of Sri Lanka's unique cultural context might be valuable. Research could examine how cultural factors like attitude towards technology or risk tolerance might impact the identified variables. Comparing RPA adoption across different banking institutions, regions, or regulatory environments could reveal contextual factors that influence adoption decisions and outcomes. Comparative studies could also shed light on best practices and lessons learned from organizations with varying levels of RPA maturity.

Complementing quantitative analysis with qualitative research methods, such as interviews, focus groups, or case studies, could provide rich insights into the subjective experiences, perceptions, and motivations of stakeholders involved in RPA adoption processes. Qualitative research can capture nuances and complexities that may not be captured through quantitative surveys alone. Investigating the interplay between RPA and other emerging technologies, such as artificial intelligence, blockchain, or advanced analytics, could uncover synergies, challenges, and opportunities for leveraging these technologies in tandem to enhance banking operations and customer experiences. Moreover, extending research beyond the banking sector to other industries could yield valuable comparative insights into the adoption patterns, drivers, and outcomes of RPA technology. Cross-industry studies could identify transferable lessons and strategies for successful RPA adoption across diverse organizational contexts. Exploring the ethical, social, and economic implications of widespread RPA adoption in the banking sector is another important area for future research. This could include examining issues related to job displacement, data privacy, algorithmic bias, and the equitable distribution of benefits and risks associated with automation technologies.

By addressing these future research directions, scholars can contribute to a more comprehensive understanding of the factors influencing RPA adoption in the banking sector and inform strategies for maximizing the value of automation initiatives while mitigating potential risks and challenges.

VII. CONCLUSION

Technological developments have always enabled organizations to improve their operational effectiveness. The potential for RPA to increase productivity and streamline knowledge-based operations makes it a key milestone. Banking organizations need to figure out how to successfully incorporate RPA into their processes as they approach this useful change. When it comes to knowledge-based work, customization of automation solutions to meet the specific needs of each target process is crucial. Organizations can create a framework for smoothly implementing RPA solutions by utilizing the plethora of RPA literature and project insights available. To guarantee successful and seamless implementation, success in RPA projects depends on considering a variety of aspects and carefully attending to each one. The use of RPA in the banking industry has emerged as a significant phenomenon, promising to transform traditional operational frameworks.

The paper aimed to investigate the various factors influencing RPA adoption in the banking sector in Sri Lanka. The variables have been identified through extensive literature review, with a particular emphasis on Perceived Ease of Use, Perceived usefulness, Management Support, Infrastructure, and Sequential Coherence. This study has empirically investigated and analysed the complexities of RPA implementation, providing insights for practitioners and researchers alike. Literature was reviewed to understand the fundamentals for establishing answers for the context of RPA

implementation and developing the current conceptual framework for the study. The findings revealed the role of PU and PEU in driving RPA adoption within banking institutions. The perceived benefits of RPA adoption have played a significant role in influencing the bank stakeholders' attitudes towards RPA integration. Additionally, PEU, which reflects the simplicity and usability of RPA systems, had a significant impact on stakeholder perceptions and intentions to adopt the technology. Moreover, the findings of the study emphasized the role of MS in the context of RPA integration in the banking system. Leadership and active participation in RPA initiatives were identified as critical components for breaking down organizational barriers and ensuring successful implementation and adoption. Furthermore, infrastructure readiness emerged as a critical prerequisite for successful RPA adoption, emphasizing the importance of strong technological foundations and supportive ecosystems. Additionally, the concept of sequential coherence emerged as a key determinant. This chapter serves as a point of convergence between the study's findings and existing literature, providing critical analysis, theoretical integration, and practical implications.

The existing literature on RPA is still comparatively small and mainly devoted to giving basic introduction Technology instead of exploring more intricate relationships. As a result, there are few thorough hypotheses to support the conclusions of this thesis. However, by combining several well-known theories and frameworks, this study proceeds and produces fresh insights. In this study, we drew from the resource-based, the TAM, and other theories to examine the variables for technology adoption, particularly RPA in the banking sector. Based on the empirical research, we predicted that the banking industry should experience better RPA adoption and better performance due to better PEU, PU, MS, I, and SC. The results do not provide us with empirical support for 3 hypotheses. However, it is important to note that the lack of empirical support does not rule out the possibility of an effect. Further investigation using significant tests can reveal whether the collected data reflects the presence of any underlying causes. This finding may come as a surprise, especially given the existing literature, which suggests that a strong theoretical framework typically correlates with technology adoption. The disparity between theoretical expectations and empirical findings for those variables necessitates further investigation to determine the factors underlying this disparity.

This study contributes to the growing literature and awareness in linking RPA to the Sri Lankan banking industry. The research findings indicate that several factors influence the adoption of Robotic Process Automation (RPA) technology in the banking sector. Among the independent variables studied, Management Support and Perceived Ease of Use emerged as significant predictors of RPA adoption, while Perceived Usefulness, Infrastructure, and Sequential Coherence showed less impact. Management Support plays a crucial role in facilitating the implementation and utilization of RPA technology within banks. A supportive organizational culture, backed by strong leadership endorsement and resource allocation, is essential for successful RPA adoption. Additionally, the perceived ease of use of RPA systems significantly influences their adoption. Banks should focus on designing user-friendly interfaces and providing comprehensive training to employees to enhance their comfort and proficiency in utilizing RPA tools. However, the study did not find significant relationships between RPA adoption and Perceived Usefulness, Infrastructure, or Sequential Coherence. While these factors may still have some influence in specific contexts, their impact on RPA adoption in the banking sector appears to be relatively limited.

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