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Business Requirement Analysis for RPA-Driven Automation in Insurance Claims Processing

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Abstract **- This study investigates the business requirements and operational feasibility of automating the Insurance Claims Processing workflow using Robotic Process Automation (RPA) at ValueDX Technologies Pvt. Ltd. The Banking, Financial Services, and Insurance (BFSI) sector heavily relies on document-oriented, repetitive, and rule-based activities, making it highly suitable for process re-engineering. Conducted from the perspective of a Business Analyst, this research utilizes qualitative requirement elicitation, process walkthroughs, and AS-IS workflow analysis to identify operational pain points such as high manual effort, volume variations, and processing delays. The core focus encompasses gathering requirements for claim verification, policy validation, supporting-document checking, and exception management. Key findings reveal that while standard, rule-based tasks are highly feasible for automation via RPA (AutomationEdge), activities involving suspicious claims and complex exceptions require retained human intervention. Ultimately, the study delivers a comprehensive Business Requirement Document (BRD) outlining the transition from the manual AS-IS state to an optimized TO-BE automated process, enhancing scalability, visibility, and accuracy in insurance operations**

Keywords - component, obotic Process Automation (RPA), Insurance Claims Processing, Business Requirement Document (BRD), Business Analysis, BFSI Automation, Process Re-engineering, AutomationEdge, ValueDX Technologies

I. INTRODUCTION

The rapid adoption of digital technologies has fundamentally transformed business operations, driving organizations to improve efficiency, reduce costs, and enhance process transparency. The Banking, Financial Services, and Insurance (BFSI) sector is particularly suited for process improvement due to its reliance on document-heavy, rule-based, and repetitive activities. A critical operation within this sector is Insurance Claims Processing, which involves receiving applications, verifying policy details, checking supporting documents, reviewing suspicious claims, and calculating settlements. Although this workflow may appear straightforward, it incorporates multiple users, applications, validation rules, and complex decision points. Consequently, manual execution often leads to increased processing times, unexpected delays, higher error rates, and the need for frequent customer follow-ups, highlighting a strong need for process automation.

To address these operational challenges, this project was undertaken at ValueDX Technologies Pvt. Ltd. from the perspective of a Business Analyst, focusing on Business Requirement Analysis and Requirement Gathering for process automation using Robotic Process Automation (RPA). Rather than focusing solely on technical bot development, the study emphasizes understanding the foundational business environment essential for successful implementation. Business Analysis and Requirement Gathering are utilized to evaluate the existing processes, identify pain points, and collect necessary data regarding inputs, outputs, exceptions, and user activities. Ultimately, these findings culminate in a Business Requirement Document (BRD), which serves as a structured bridge between business stakeholders and the technical team to ensure that the proposed RPA solution accurately reflects actual business needs rather than merely serving as a technical tool.

The primary purpose of this research is to thoroughly analyse the existing (AS-IS) Insurance Claims Processing workflow and document the business requirements necessary for its transition to an automated (TO-BE) state. The core objectives include understanding the current process applications, identifying manual and repetitive activities, documenting business rules, evaluating the feasibility of RPA and AutomationEdge, and preparing comprehensive functional and non-functional requirements. The scope of this project encompasses the entire insurance claims cycle—from initial claim receipt to final settlement notification and reporting—while analysing major data environments like PostgreSQL, Excel, Email, and Customer Portals. By detailing these requirements, exception scenarios, and relevant Key Performance Indicators (KPIs), this study provides a strategic blueprint for implementing a highly efficient, automated claims processing system..

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II. LITERATURE REVIEW AND THEORITICAL BACKGROUND

A. Literature review

Pietersen et al. (2026) propose a COBIT-based governance framework for aligning data governance, IT capability, accountability, and RPA operations in insurance claims. Gallo Velásquez (2017) design a Colombian health-claims automation model covering process design, technology interaction, system functionality, implementation requirements, and feasibility. Sneha (2020) report a UiPath claims-validation case that reduced manual effort and processing errors. Pavlović (2020) critically examine software-robot opportunities and implementation challenges in claims settlement. Oza et al. (2020) discuss RPA and chatbot support for high-volume claims data and customer service. Alladi and Desik (2015) emphasize stakeholder engagement, dynamic business rules, ACORD standards, and inclusivity in reinsurance workflow automation. Firmanto (2010) present a Joget workflow prototype for automating health-insurance claims and evaluating time efficiency. Picc Property (2013) apply jBPM workflow technology to complex vehicle-claims processes to integrate tasks, improve efficiency, and reduce costs. Ermolaeva et al. (2021) examine RPA adoption in insurance, stressing process suitability and employee development. Khidhir and Shihab (2013) show that complete and unambiguous requirements are essential for automation success. Berko et al. (2023) compare workflow systems using integration, standards, monitoring, scalability, testing, and cost criteria.

B. THEORITICAL BACKGROUND

The theoretical foundation of this project is rooted in Business Analysis, Requirement Gathering, and Robotic Process Automation (RPA). Business Analysis serves as the critical bridge between identifying operational business needs and implementing technical solutions. In the context of Insurance Claims Processing, a Business Analyst (BA) systematically investigates the current AS-IS state through elicitation techniques like stakeholder walkthroughs and document reviews. This ensures a comprehensive understanding of process workflows, data inputs, decision points, and user behaviors before transitioning to the desired TO-BE automated state.At the core of this transformation is the Business Requirement Document (BRD), which meticulously outlines functional requirements—such as data extraction, policy validation, and status updates—alongside non-functional requirements like processing time, security, and Service Level Agreements (SLAs). Crucially, the BRD defines the governing business rules and establishes a robust exception management framework. Since insurance claims often involve missing documents, invalid policies, or suspicious activities, the automation design must reliably process standard cases while routing exceptions to human experts, such as the Fraud Detection Team, for manual review.RPA and Intelligent Automation are highly effective for repetitive, rule-based digital tasks, allowing technology to handle routine data operations while preserving human judgment for complex claim evaluations. By maintaining strict requirement quality and traceability, the BA ensures that every automated action and exception protocol directly links back to a specific business need. This structured approach not only mitigates inappropriate automation but also guarantees that the final RPA solution aligns perfectly with organizational goals, compliance standards, and User Acceptance Testing (UAT) criteria.

III. MARETIALS AND METHODS

This study adopts a qualitative, analytical research methodology grounded in Business Analysis principles to bridge operational business needs with technical automation solutions. The research design relies entirely on empirical process observation and direct stakeholder engagement rather than quantitative sampling. Primary data collection was executed through structured process walkthroughs, application workflow observations, and detailed requirement elicitation sessions with Subject Matter Experts (SMEs) at ValueDX Technologies. This hands-on approach facilitated the step-by-step documentation of the manual AS-IS workflow, effectively capturing critical user responsibilities, system dependencies, process triggers, and existing operational pain points.

The elicited data was then subjected to rigorous process, business rule, and exception analysis to differentiate between repetitive activities suitable for RPA and complex tasks necessitating human judgement. By cross-referencing these operational characteristics against software capabilities, a precise automation feasibility assessment was established. These analytical findings were synthesized to architect the optimized TO-BE process model. Ultimately, this methodology culminated in the creation, stakeholder review, and formal sign-off of the BRD, which functioned as the foundational blueprint guiding developer coordination, system testing, and final User Acceptance Testing (UAT).

A. RESEARCH OBJECTIVE

The primary objective of this research is to comprehensively analyse the Insurance Claims Processing workflow, gather and document business requirements, and assess the feasibility of automating suitable process activities using RPA and AutomationEdge. Secondary objectives involve understanding the existing AS-IS process to identify operational bottlenecks, application usage, and user activities. Furthermore, the study aims to document business rules, validations, and exceptions through Process Owner collaboration, evaluate technical automation opportunities for rule-based tasks, and formulate a structured Business Requirement Document (BRD) detailing the proposed TO-BE process.

IV. DATA ANALYSIS AND DISCUSSION

TABLE I. KEY PROCESS PARAMETERS AND OPERATIONAL VOLUME

Process Parameter	Observation / Operational Metric
Process Identification	Automated Insurance Claims Processing
Frequency	Weekly and Monthly
Weekly Volume	Approximately 500–1,000 claim cases/files
Monthly Volume	Approximately 2,000–4,000 claim cases/files
Input Files per Case	2–5 files received via Email or Customer Portal

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Process Parameter	Observation / Operational Metric
Applications & Data	PostgreSQL, Excel, Email, Customer Portal
Processing Nature	UI reading/writing, data massaging, API interface, database access
Documented Step-wise Time	Approximately 28–43 minutes based on listed major-step ranges
Process Output	One Excel file per case containing claim status, approval/rejection, fraud-check result and settlement amount

Table I outlines the foundational operational metrics of the Automated Insurance Claims Processing workflow. The data reveals a substantial processing volume, handling between 2,000 and 4,000 cases monthly, with each case comprising 2 to 5 input files. The existing manual execution takes an estimated 28 to 43 minutes per case, utilizing applications like PostgreSQL, Excel, and Email. This high transaction volume, coupled with the structured nature of UI reading, API interfacing, and database access, highlights a significant operational workload. By establishing these quantitative baselines, the table demonstrates why the current manual capacity is strained and underscores the business necessity for a scalable, automated solution.

TABLE II. AS-IS PROCESS ANALYSIS AND OPERATIONAL BOTTLENECKS

Process Step	Existing Method & Applications		
Claim Receipt	*Email, Customer Portal*	*Claims Executive*	*2–3 minutes*
Claim Verification	Manual checking	Claims Executive	Not specified
Policy Validation	Manual check (PostgreSQL)	Claims Executive	Not specified
Document Checking	Manual review of 2–5 files	Claims Executive	Not specified
Fraud Review	Manual assessment	Fraud Detection Team	5–10 minutes
Claim Evaluation	Manual assessment	Claim Officer	Not specified
Reporting/Updates	Excel, System records	Claims Executive	Not specified
Process Step	Existing Method & Applications	Human Role Involved	Processing Time (Est.)
Claim Receipt	Email, Customer Portal	Claims Executive	2–3 minutes

Table II details the existing manual AS-IS state of the claims workflow. The analysis demonstrates that critical stages, such as claim verification, policy validation, and document checking, are heavily reliant on repetitive human effort by Claims Executives. This manual dependency elongates overall processing time and introduces significant data-entry risks. Furthermore, specialized tasks like fraud review demand up to 5–10 minutes of intense specialist scrutiny. Ultimately, the table illustrates that the current manual architecture is highly vulnerable to volume fluctuations, establishing a clear business justification for re-engineering standard, rule-based tasks

TABLE III. BUSINESS RULES, VALIDATIONS, AND EXCEPTION MANAGEMENT

Process Component	Validation / Business Rule		
Policy Status	*Validate policy against active database records.*	*Invalid, expired, or unmatched policy details.*	*Routed for manual review by Claims Executive/Officer.*
Document Completeness	Ensure presence of 2–5 mandatory input files.	Missing or incomplete supporting documents.	Claims Executive requests follow-up from the customer.
Claim Legitimacy	Cross-check against defined fraud indicators.	Claim identified as suspicious or high-risk.	Routed to specialized Fraud Detection Team.
Claim Evaluation	Assess settlement amount based on standard rules.	Complex cases or ambiguous settlement limits.	Escalated to senior Claim Officer for professional judgment.
System Availability	Continuous access to PostgreSQL and internal portals.	Application unavailability or database failure.	Fallback to manual logging or delayed processing pipeline.
Process Component	Validation / Business Rule	Exception Scenario	Routing & Decision Maker

Table III systematically categorizes the core business rules, validation requirements, and exception scenarios extracted during stakeholder requirement gathering. It demonstrates that insurance claims processing is governed by strict operational logic, where deviations—such as unmatched policy details or missing documents—create a definitive exception path. While standard claims proceed through routine validation, exceptions are categorically routed to specialized personnel,

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such as the Fraud Detection Team or Claim Officers, for manual resolution. This clear delineation ensures that subsequent automation respects established business compliance constraints without bypassing necessary expert oversight..

TABLE IV. AS-IS BASELINE VS. PROPOSED TO-BE AUTOMATION RESULTS

Core Metric / Activity	Business Rule		
	AS-IS / Manual State	*TO-BE / Automated State*	*Expected Business Improvement*
Claim Data Entry	Manual extraction	Automated extraction and record update	Reduced repetitive effort and data-entry risk
Policy Validation	Manual extraction	Automated rule-based validation	Faster and more consistent processing
Document Checking	Manual review	Automated completeness checks where rules permit	Reduced manual handling
Status Updates	Manual system updates	Automated routing with human review	Reduced repetitive effort and data-entry risk
Suspicious Claims	Manual identification and review	Automated routing with human review	Faster prioritisation and controlled handling
Reporting	Manual Excel record compilation	Automated report generation	Better operational visibility into claim status
Exceptions	Manual investigation	Rule-based routing to specific users	Controlled exception handling by appropriate personnel

Table IV contrasts the existing manual AS-IS baseline with the proposed TO-BE automated state to highlight the expected business improvements post-implementation. The transition from manual data entry and verification to automated extraction and rule-based validation is projected to drastically reduce repetitive effort and accelerate processing consistency. Furthermore, automating routine status updates and Excel report compilation will eliminate tracking delays, thereby enhancing both operational visibility and the overall customer experience. Importantly, the TO-BE model establishes a controlled handling mechanism where exceptions and suspicious claims are seamlessly routed to designated human experts for faster prioritization.

V. FINDINGS, CONCLUSIONS AND SUGGESSIONS

A. *Findings*

The The requirement analysis at ValueDX Technologies reveals that while the insurance claims processing workflow follows structured business rules, its overall operational efficiency is severely constrained by manual dependencies and volume fluctuations. Upstream, the claim receipt, verification, and document checking stages experience notable bottlenecks, with manual processing driving the standard cycle time to an estimated 28–43 minutes per case. Core operations demonstrate strict adherence to policy guidelines; however, sudden volume variations (handling 2,000–4,000 claims monthly) create significant processing delays and data-entry risks during peak periods. Furthermore, while repetitive administrative tasks—such as data extraction, policy validation, and status updates—are highly feasible for RPA (AutomationEdge), complex exceptions require alternate handling. Specifically, suspicious claims and ambiguous settlement evaluations cannot be fully automated and demand manual intervention by the Fraud Detection Team or Claim Officers. On the requirement engineering front, the project establishes that drafting a comprehensive Business Requirement Document (BRD) is critical to preventing ambiguity between stakeholders and developers. Ultimately, automating standard rule-based tasks while retaining human judgment for exceptions represents the critical pathway for enhancing scalability, accuracy, and process visibility.

B. *Conclusions*

In conclusion, the operational requirement study conducted at ValueDX Technologies highlights the critical transition from manual BFSI processes to optimized, technology-driven workflows. The claims department successfully manages substantial processing volumes; however, operational efficiency is continuously challenged by high manual effort, policy validation complexities, and delayed status updates that impact overall customer visibility. The analysis demonstrates that Insurance Claims Processing is highly viable for Robotic Process Automation, specifically for repetitive, rule-based operations like data extraction, database validation, and report generation. Despite the high potential for automation, structural hurdles such as fraud detection and missing documentation dictate that exception management cannot be bypassed. The project establishes that successful deployment relies fundamentally on rigorous Business Analysis—mapping the AS-IS state and formalizing a Business Requirement Document (BRD) before any technical configuration begins. Ultimately, implementing this controlled TO-BE automation framework will provide the necessary infrastructure to reduce manual processing delays, mitigate data-entry risks, and secure a highly scalable operational model while retaining essential human oversight for complex claims.

C. *Suggestions*

*a) **For Management:** Implement a controlled, end-to-end RPA strategy for routine, rule-based claims activities to immediately reduce manual processing bottlenecks and mitigate data-entry errors.*

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b) ***For Process Operations:*** *Define clear exception-handling workflows and retain strict human intervention protocols, ensuring the automated system routes suspicious or complex files directly to specialized Claim Officers.*

c) ***For IT & Technical Teams:*** *Utilize the approved Business Requirement Document (BRD) as the strict development baseline and perform rigorous User Acceptance Testing (UAT) against these parameters prior to production deployment.*

d) ***For Continuous Improvement:*** *Deploy advanced KPI monitoring to actively track processing time, pending claims volume, and SLA compliance, ensuring the implemented automation delivers measurable operational visibility.*

D. Implications

This study offers significant practical and strategic implications for key stakeholders across the BFSI automation ecosystem. For corporate management and operational leadership, the findings provide an actionable diagnostic roadmap to transition legacy, manual systems into highly scalable, automated workflows that improve turnaround times. For business analysts and process engineers, the emphasis on rigorous requirement elicitation, AS-IS mapping, and BRD preparation reinforces the necessity of bridging business pain points with technical execution before any bot development begins. For IT and RPA development teams, the insights highlight the urgent need to structure automations with robust exception routing, ensuring that bots seamlessly integrate with human workflows (e.g., the Fraud Detection Team) rather than forcing complete, unsupervised automation. Finally, for future technological adoption, these foundational RPA implementations pave the way for integrating more advanced capabilities, such as Intelligent Document Processing (IDP) and Artificial Intelligence, to eventually handle unstructured claim documents and predictive compliance monitoring.

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REFERENCES

[1] Alladi, A., & Desik, P. H. A. (2015). *Workflow automation process for a reinsurance company using BPM tool: A stakeholder engagement perspective*. Semantic Scholar. https://www.semanticscholar.org/paper/c8729ef770f9a22f775465b8ea2c7cc5c0928fac

[2] Berko, A., Polivenok, D., & Shestakevych, T. (2023). Information systems for automating work flows: A comparative analysis. *Vìsnik Nacìonal'nogo unìversitetu "L'vìvs'ka politehnika". Serìâ Ìnformacìjnì sistemi ta merežì*. https://science.lpnu.ua/sites/default/files/journal-paper/2023/jul/30923/n30487maket-245-252.pdf

[3] Ermolaeva, A., Nemtsev, V., Solomatin, P. S., & Selivanova, M. (2021). *The analysis of implementation of robotic process automation RPA: The experience of Russian and foreign companies*. Semantic Scholar. https://www.semanticscholar.org/paper/43c9b4f572f830850a0f7bb8b4a52ed649bf3ec7

[4] Firmanto, A. (2010). Penerapan konsep sistem manajemen workflow sebagai otomatisasi proses bisnis klaim asuransi: Studi kasus PT. Asuransi Jiwa Sinarmas. Semantic Scholar. https://www.semanticscholar.org/paper/31f0cb0712529e95aa05b4a8a148c00a7f4af732

[5] Gallo Velásquez, S. L. (2017). Diseño de un modelo de automatización para el proceso de indemnizaciones de siniestros de seguros de salud en la industria aseguradora colombiana. Semantic Scholar. https://www.semanticscholar.org/paper/21ecac535aa97c12211e9959afff60221157d3df

[6] Khidhir, A. M., & Shihab, N. (2013). Analysis of requirements phase as a step for software engineering automation. *Al-Rafidain Journal of Computer Sciences and Mathematics*. https://csmj.mosuljournals.com/article_163527_e64c0cc71291d1620172fa3a4cba9b08.pdf

[7] Oza, D., Padhiyar, D., Doshi, V., & Patil, S. (2020). Insurance claim processing using RPA along with chatbot. *Social Science Research Network*. https://www.semanticscholar.org/paper/a8208511f25d00406f671ab12773ebb4bc90854f

[8] Pavlović, B. (2020). *Izazovi u primeni softverskih robota u procesu rešavanja šteta*. Semantic Scholar. https://www.semanticscholar.org/paper/73d9564641343d07ddce9a1f944bf7dc7f47e910

[9] PICC Property. (2013). *Application of vehicle insurance claims based on JBPM workflow technology*. Semantic Scholar. https://www.semanticscholar.org/paper/92aa7503cb2a523760ae987cedfb71785348ca1

[10] Pietersen, L.-A., Lefela, T. D., & Lamprecht, C. (2026). A conceptual governance framework for managing robotic process automation implementation challenges in insurance claims handling. *South African Journal of Information Management*, *28*(1). https://doi.org/10.4102/sajim.v28i1.2169

[11] Pingili, R. (2024). The basics of robotic process automation in insurance claims. *International Journal for Multidisciplinary Research*. https://www.ijfmr.com/papers/2024/6/30854.pdf

[12] Sneha, S. (2020). The automation of claims processing: A case study on UiPath implementation. *International Journal for Multidisciplinary Research*. https://www.ijfmr.com/papers/2020/3/12117.pdf

[13] Sreeja, G., & Shanthini, M. (2018). Robotic process automation for insurance claim registration. *International Journal of Approximate Reasoning*. http://www.journalijar.com/uploads/329_IJAR-22629.pdf

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