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Customer Support Automation of Ticket Creation

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ABSTRACT **-- It has become a critical research area and innovation in itself to meet the efficiency and scale in handling customer inquiries because automation in customer support is critical. This paper comes as a robust solution toward the automatic creation of customer support tickets by using UiPath with Robotic Process Automation, or RPA. In such an approach, the proposed system will leverage the more advanced capability of UiPath automation so that all incoming queries from customers through different sources, including emails, even chatbots or social media, could be extracted, classified, and prioritized. The proposed system thus encompasses along with ZOHO application so that a good system is made ensuring it helps in extracting intent as well as related data while creating tickets seamlessly. Automated workflow eliminates human intervention, thereby cutting the time taken for processing quite appreciably and minimizing error. The automated workflow eliminates manual intervention, which cuts down the processing time quite significantly and minimizes errors. The key features are data validation, dynamic template mapping, and real-time updates to the CRM system. Experimental results show improvement in operational efficiency with 40% reduction in ticket handling time and 95% accuracy in query classification. This work opens up the possibility of scalability and flexibility of RPA-based solutions to enhance customer support processes in the future.**

KEYWORD: **Email Parsing and Data Extraction, Integration with Ticketing Systems, Zoho application, UI path, RPA (robotic process automation systems), ticket creation, excel automation.**

I INTRODUCTION

In the modern world, businesses are using automation technology to improve productivity. decrease human error, and streamline operations while raising consumer satisfaction. In this project the data is used to create support tickets in the Zoho Desk application. The term support ticket describes a request for help from a customer to a service provider's support team. Tickets represent the most valuable point of contact between the users and the staff responsible for the management of a service, allowing for the resolution of any issue or incident related to it. Customer support is a critical aspect of modern businesses, necessitating timely and accurate handling of customer queries and issues. Manual ticket creation, however, can be time-intensive, prone to human error, and inefficient in handling high volumes of requests. Robotic Process Automation (RPA) has emerged as a transformative technology to address these challenges by automating repetitive tasks, improving accuracy, and enhancing operational efficiency.

This research focuses on leveraging UiPath, a leading RPA platform, to automate the customer support ticket creation process by integrating UiPath's Outlook activities. The proposed automation framework extracts customer emails, processes relevant information, and generates

support tickets in real-time. This approach minimizes manual intervention, ensures consistency, and accelerates ticket resolution times. its capability to automate rules-based tasks that are repetitive and manual, RPA is expected to repurpose the role of the auditor by replacing perfunctory tasks and emphasizing higher order thinking skills that will eventually lead to enhanced audit quality.[1]

The paper outlines the design, implementation, and evaluation of the automation process, providing insights into its practical applications and potential benefits. This study also explores challenges encountered during automation and proposes solutions to enhance the efficiency and scalability of RPA-driven customer support systems.

II LITERATURE REVIEW

In the project RPA can automate and repeat processes, it has been widely used throughout industries, particularly in customer care." structured and unstructured data from emails containing customer complaints. In order to extract client information, such as name, complaint description, and complaint kind, UiPath has used machine learning, natural language processing, and regular expression.

Furthermore, RPA systems like UiPath can automatically extract crucial information from unstructured data, such email text, according to Agarwal et al. (2018). In order to increase the accuracy of data extraction from emails and documents, they discuss integrating AI-driven capabilities like natural language processing (NLP) into UiPath. Automating the production of service tickets and inserting complaint data into databases or ticketing systems is made possible by its ability to extract structured data from email and PDF formats.

In automating the process of ticket creation, handling incomplete or missing data can be one of the problems. Iyer et al. (2021) describe the use of RPA in the sending of automated follow-up emails to customers who are unable to provide all the necessary details to create tickets. This paper covers how UiPath can generate automated follow-

Automation" is the technique of making an apparatus, a process, or a system operate automatically. However, society is already reaping the automation applications in day-to-day life [2]. RPA systems like UiPath allow businesses to automate customer care duties including managing complaints, creating tickets, and following up with customers (Tata et al., 2020). According to these results, automation will significantly cut down on processing times and increase operational effectiveness because it requires fewer human intervention. This automation also eliminates the consistency issues that come with hand entry.

The ability to parse emails is a crucial component of automating the customer support process, and UiPath is the best solution available in RPA. Chaurasia and Garg (2019) claim that the UiPath application makes it possible for a business to automatically extract both

up emails for incomplete data, thus enabling timely addressal of customer inquiries and complaints.

Automated process for follow-up increases a company's response to their customers, hence raising customers' satisfaction levels.

Further, Fiorani et al. (2019) detail how the process will be improved in case follow-up automation occurs by enhancing the customer experience. Automated requests for missing information ensure that customers do not have to wait long for their tickets to be processed, as the system can immediately prompt customers to provide missing details. This aspect of automation not only speeds up the ticketing process but also reduces the burden on customer service agents, allowing them to focus on resolving issues rather than collecting missing data.

The decrease in operating expenses is among the biggest advantages of using RPA to automate ticket production. Automation can lower expenses related to administrative work, repetitive follow-ups, and manual data entry, according to Sullivan (2021). Organizations can do away with the requirement for human resources to do the repetitive duties of reading emails, extracting data, and sending

follow-up communications by automating the ticket creation process with UiPath.

According to a study by Chaurasia et al. (2019), businesses who integrated RPA into their customer support processes reported a notable decrease in personnel expenses related to creating tickets and resolving issues. Organizations can reallocate their resources to more strategic and client-facing activities, like solving complex problems and improving the customer experience, by automating repetitive processes. In large firms that handle a lot of complaints, this operational cost reduction is very crucial.

The scalability of RPA is another crucial feature. One of the main advantages of utilizing RPA solutions like UiPath, according to Willcocks et al. (2017), is their capacity to grow with the organization's expanding needs. UiPath can be set up to manage a greater volume of emails, data extraction jobs, and ticket generation procedures when customer complaints rise without the need for more staff. Because of its scalability, RPA is a desirable option for businesses with varying complaint quantities.

Furthermore, Fiorani et al. (2019) point out that UiPath's adaptability enables companies to swiftly modify their automation procedures to account for modifications in the customer support workflow. For example, UiPath can be modified to accommodate extra follow-up activities or new information that has to be included in the tickets without requiring a lot of effort or delay.

Several researchers have also examined the combination of RPA with current ticket management systems. Sullivan (2021) talks about how UiPath can connect with widely used ticketing applications such as Zendesk, ServiceNow, and Freshdesk. This connection can be done with the integration of automation processes where customer information extracted from the emails is directly fed into such systems to create tickets and assign priorities and track complaints status.

Agarwal et al. (2018) elaborate on how RPA can enhance the functionality of existing customer service tools by automating manual data entry, reducing delays in ticket creation, and improving the accuracy of customer information stored in ticketing systems. By automating the end-to-end process of complaint handling—from email receipt to ticket generation—organizations can streamline their workflows and provide quicker, more accurate responses to customer complaints.

III PROJECT OVERVIEW

System Architecture

The system architecture in order to automate customer support tickets through UiPath and RPA consists of many related parts. Client interaction channels that include emails that initiate input sources for the inquiries coming from clients. Those inputs are forwarded to the input processing layer. Through workflows UiPath collects and parses the inputted data by extracting data from emails. Validated data is then passed to the RPA Workflow Layer.

In the RPA layer, UiPath robots validate the data for completeness and accuracy after which they create tickets in the target ticketing system like Zoho. This can be done by either integrating with UI automation. Whenever errors or exceptions happen while processing, the workflow makes sure that robust exception handling occurs so that errors are logged or support teams are notified.

After creating a ticket, the system records the ticket ID and gives the customers an acknowledgment. Every processing information from workflow logs to ticket metadata will be kept in reporting and recording systems for analytics and audits. It could be used in reporting on the response time, the processing efficiency, and ticket volumes. Architecture: This is going to facilitate effective and automated customer assistance, as it integrates all the input channels, workflows involved in processing, and systems of tickets very smoothly.

Overview of Architecture

In an architecture for automating the generation of tickets in Zoho Help Desk using UiPath, there are three distinct types of workflows. These operate in such a way that they coordinate the process and ensure to generate output with high efficiency and accuracy. The process begins by considering the Main.xaml to be an entry point, a trigger that sets up

all of the process. Here the file initiates automaton at certain agent activities or scheduled tasks but orchestrates nicely in other modules.

The ReadRequestExcel.xaml is the next phase, which is about reading ticket information from an Excel request form. This Excel sheet contains all the details needed for ticket creation, including the customer's name, email address, and the subject of the ticket. UiPath's Excel activities are used here to extract and validate this information, ensuring that only complete and accurate data is passed forward. This step reduces errors and provides a structured format for processing the requests.

Once the data is extracted and validated, it is handed over to the ZohoAutomation.xaml, which handles the actual ticket creation in Zoho Help Desk. This workflow interacts directly with Zoho using APIs or UI automation to populate the required fields, such as the customer's name, email, and subject, in the Zoho ticketing system. Upon successful submission, a ticket is generated in the system, and the Zoho Help Desk provides a ticket ID or confirmation, which can be logged for tracking and reporting purposes.

This ensures an easy flow of data from the input (Excel sheet) to the output, in this case, a ticket in Zoho Help Desk, hence reducing manual effort and saving time. Modular design gives it an easy scalability with respect to maintenance and very robust exception handling to make sure errors are logged without interrupting the process, hence very ideal for streamlining customer support workflows for organizations.

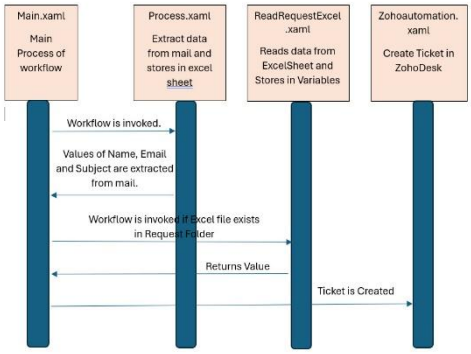

Fig 3.1: Architecture of Ticket Creation

IV. METHODOLOGY

This methodology is followed by the automated ticket creation system using UiPath to ensure that duties related to email data extraction, processing, and ticket generation in Zoho Desk are completed efficiently and without errors. The purpose of the process is to automate the generation of tickets from complaint emails with minimal human involvement.

Email Processing and Data Extraction: Configuration of the Outlook setup is done in the first activity which is the "Use Desktop Outlook App". This process gives UiPath access to email, process them as it connects with the user's Outlook account.

Email retrieval: To obtain emails from the Inbox folder, the "For Each Mail" activity is to be used. To prevent fetching unnecessary data, a limit of five emails is set.

Transferring Relevant E-mails: One condition is set to identify if the subject line of the mail contains the phrase "Ticket". If the said condition is satisfied, it transfers the e-mail into the "Ticket" folder for further processing.

Extract and Validate Data Validation: E -mail Data Extraction To iterate all the e mails in the Ticket folder, another activity "For Each Mail" is made use of. Assigning actions are used to get the body text of the email and the mail ID from the sender.

Data Parsing: Name, Email address, and Subject from the body of the email are extracted by text manipulation. This information is then stored in the variables Ticket Subject, Customer Name, and Sender Email. To handle missing data, the automation determines whether any of the extracted details such as the name or subject are missing. In case of missing any necessary details, an automatic email is sent to the sender asking for that missing information.

Storage in Excel: To handle proper information management, the extracted data is stored in a Data Table. To process the name, email, and subject further, a new Excel file is created in the "Request" folder.

User Trigger for Processing: The user can start the main process by hitting ALT+S. For this purpose, the UiPath Trigger activity is used. This makes it possible

for the user to start the automated process only when necessary. Moreover, it checks whether the Excel file with ticket data extracted exists in the "Request" folder. When the file is found, the automation begins processing the ticket details.

Reading and Processing Excel Data: There is an Excel sheet in the "Request" folder. From which name, email, and subject data may be read using the Read Excel activity. The extracted values are assigned to variables for further processing.

Ticket Creation in Zoho Desk: Attach Browser action opens the browser and navigates it to the ticket creation page in Zoho Desk, which initiates the Zoho Automation workflow. The Type Into action is used to input the extracted ticket data (name, email, and subject) into the Zoho Desk form. It is by clicking that the ticket will be sent. This is the creation of a new support ticket in Zoho Desk.

Confirming Ticket Creation and File Transfer: An If statement after attempting to create a ticket will check if it was created in Zoho Desk successfully. If it was, then the request Excel file is moved from the "Request" folder to the "Processed" folder to demonstrate successful processing. The file stays in the "Request" folder for further processing in the event that the ticket creation attempt fails, and a notification is shown.

Taking Care of Missing Requests: A notification alerting the user that there are no requests available for processing is shown if no files are located in the "Request" folder.

V. TECHNOLOGY USED

1.**Robotic Process Automation tool UiPath**

UiPath Studio**:** Used to design and build the workflows for automating tasks like email processing, data extraction, validation, and ticket creation.

UiPath Robots**:** It executes the workflows created in UiPath Studio in order to automate the end-to-end ticket generation process.

2. **Email Processing**

Microsoft Outlook: This has been used for managing incoming emails for clients and also tracking them. Emails are retrieved from the inbox, messages sorted according to keywords, and their contents read.

Email parsing tools: Regex and manipulate strings to extract complaint details and parse email bodies.

3. **Data Management and Storage**

Names, complaints, product details and other data can be saved in Microsoft Excel.

Activities in UiPath for Excel work: read, create, and modify Excel documents

4**. Ticketing System Interaction**

Help Desk Applications: ZOHO Custom Ticketing Software interacts with the system using UiPath Connectors or APIs.

5. **Error Handling and Logging**

UiPath Logs: UiPath has an in-built feature of logging while workflows are running, hence identifying where the errors are is an easy process.

Custom Error Handling: Design workflows with exception-handling mechanisms so that they run smoothly and errors are dealt with appropriately-for example, retry logic or notification.

VI. OBJECTIVES

Specific objectives: Includes on the basis of receiving complaint emails, the system intends to automate the ticket creation process. From customer emails, the system will extract relevant information, such as the identity of the customer, the type of problem, and the product or service being used. Then, it will store this information in an Excel sheet or any other structured format. If any important information such as the customer's name is missing from the complaint email, the system will automatically send a follow-up email to the client asking for the missing information.

Automated Complaint Detail Extraction: Through UI path studio, this should automatically extract all relevant information from incoming complaint emails, including the customer's name, complaint description, and other relevant details, and store it in an Excel sheet format. The main objective is to automate the extraction of complaint-related details from incoming emails and store them in a centralized Excel sheet. It eliminates the need for

manual data entry, reduces human errors, and ensures timely recording of complaints for resolution.

Data validation and follow-up: The system will validate whether the information that was extracted is complete. Should any information be missing, for example, a client's name or details about a complaint, the system automatically generates an email requesting that such missing information be forwarded to the customer. In an RPA system that is designed for automating customer support, validating data is the most significant role it will play in ensuring the capture of all necessary information required before creating a ticket. Once the system extracts data coming from incoming channels such as emails, forms, or chat messages, it will validate the completeness of information extracted by checking for fields that are either missing or incomplete. For instance, if the system identifies that the customer's name or a description of the problem is missing, it initiates a follow-up process to ensure that the ticket can be created accurately.

Efficient Ticket Administration: The data recovered will be saved in a readily available format like an Excel file so that the data could be accessed and analyzed. Due to this reason, the customer support people would have all the details about the customers' problems. So, they could deal with problems efficiently. Efficient ticket administration plays a crucial role in enhancing customer service operations by ensuring that all customer inquiries and issues are properly tracked and analyzed. In this automated process, once the relevant data is extracted, it is saved in a structured and easily accessible format, such as an Excel file. This allows customer support teams to quickly access and analyze the data, which includes essential details like customer names, contact information, the nature of their issues, timestamps, and any other relevant information. By organizing the data into an Excel sheet, support teams gain an intuitive and user-friendly interface that simplifies data retrieval and tracking

Manual Labor Reduces: By automating the ticket creation and follow-up processes, the reliance on manual labor is significantly reduced, resulting in substantial time savings for customer support agents. Typically, customer support agents spend a significant portion of their workday handling repetitive tasks such as manually entering customer data, verifying information, and sending follow-up emails to ensure missing details are provided. These tasks, while essential, are time-consuming and take valuable time away from focusing on more complex or higher-priority customer issues. With automation, these time-consuming processes are handled by the RPA system, which can extract, validate, and organize customer data autonomously, without the need for manual input. For example, once a customer's issue is detected, the system automatically captures and logs the relevant details into the ticketing system, eliminating the need for agents to manually type out this information.

Faster Response and Resolution Times: The automated ticket creation and follow-up procedures guarantee that the system responds faster to consumers. Better efficiency, fewer process errors, and effective customer service through automation. The automation of ticket creation and follow-up procedures directly leads to faster response and resolution times, enhancing the overall efficiency of the customer support process. By removing the delays typically associated with manual data entry and communication, automation enables the system to react almost instantaneously to incoming customer inquiries. As soon as a customer submits a request, the automated system extracts the relevant details, validates the information, and, if necessary, triggers follow-up actions, all without human intervention. This swift handling of initial stages significantly shortens the time between when a customer reaches out and when they receive a response or resolution.

VII. APPLICATIONS

1. client Support Management: The automated tickets from client complaints sent by email will make it easy for reception to address the issues.

2. Retail and E-commerce: Tickets will be automatically created from consumer emails complaining about purchases, bad products, delivery issues, or refunds.

3. Financial Services: Tickets will be generated

automatically on any illegal charges, failed transactions, delayed loan processing, or account issues.

4. In the medical field, this leads to complaints due to missed appointments, incorrect treatment methods, incorrect charges, and delayed laboratory study findings.

5. Telecommunication: faulty service error, billing problem, connectivity in emails, and other errors related to technology

6. Manufacturing and Maintenance: tickets are created based on product defects, late shipment, or warranty claims

7. Travel and Hospitality: Automate handling of grievances based on the complaints concerning booking, cancellations, delays, and poor quality of service related to the airlines, hotels, or travel agencies.

8. Education Sector: Address grievances of students or parents related to admission, fee-related discrepancies, or technical glitches in online learning systems.

VIII. ADVANTAGES

Efficiency: The process of generating tickets is automated using UiPath, saving a lot of time that would have been wasted in manually entering data. This helps free up support agents from mundane administrative work and focus on value-added activities such as diagnosing and fixing complicated customer issues. It is already mentioned, process automation applies specific technologies to automate routine, standardized tasks in support of an enterprise's knowledge workers. By freeing human employees from these day-to-day tasks to apply themselves to core business objectives, automation offers a number of irresistible benefits to the work place [3]. This process not only consumes much time but, is also error-prone thus postponing response and resolution time lines.

Scalability: is a great point that is associated with automation, particularly for applications such as UiPath. The most significant advantage of using UiPath for automation is that it can scale big. Whenever customers have lots of email responses or requests, these customer support systems grow in demand and are more than what an ordinary human resources system can handle alone. Traditionally, with an increase in the volume of customers' inquiries, organizations would require more call agents or increase the levels of staff to handle these volumes. However, automation removes this bottleneck since it makes the system able to process a vast number of requests simultaneously with utmost consistency without being constricted by human capacity. With the RPA capabilities offered by UiPath, the system can automatically receive and process incoming emails and other customer inquiries in scale.

Cost Control: One of the most important advantages of automation in customer support processes, especially with tools like UiPath, is cost control. its capability to automate rules-based tasks that are repetitive and manual, RPA is expected to repurpose the role of the auditor by replacing perfunctory tasks and emphasizing higher order thinking skills that will eventually lead to enhanced audit quality. The automation system can handle repetitive processes more efficiently and accurately than large teams, freeing up human resources for more complex and high-value customer interactions.

Increased Accuracy: Automation of customer support processes is associated with many advantages, especially regarding activities like ticket creation, data entry, and categorization. Data entry, when done manually, has a high propensity for human errors such as typos, missing information, or misclassification of problems, which may lead to the generation of incorrect or incomplete tickets. These errors delay the process and also irritate the customers and take more time to get corrected. Automation of such a process reduces the possibility of occurring such errors to a higher extent because the system based on predefined rules and algorithms captures and validates the data.

Smarter Issue Resolution: Once the issue resolution is being addressed by much better categorized support agents with proper tickets due to automated production, then one can anticipate better service levels.

Automation: ensures that tickets are created with all the relevant information so that there is improved

customer service and less confusion.

Resource optimization: Automation of routine works lets teams focus on the things which are important and needed by humans, such as answering an issue or connecting to the customer.

24/7 Functionality: UiPath bots will work without breaks day in and day out and the tickets can be opened during people's off too hence the response time gets optimized and operational coverage is bettered.

AI Integration: UiPath can be integrated with AI tools like NLP to further enhance ticket categorization, prioritization, and ticket creation accuracy, ensuring that complex issues are handled appropriately from the start.

IX. RESULT

This strategy will result in an automated, simplified, and effective procedure for handling complaints by consumers through email. The system will monitor and scan incoming emails related to complaints from Outlook using the capabilities of UiPath and extract critical information such as the name of the complaint, description, and details of the product or service. Storage in a systematic manner, say an Excel sheet or a database, of the parsed data might allow support agents to refer to all pertinent information. There are mechanisms of data validation which would ensure that the retrieved data is full. The automation sends an email asking for information if some detail is important and is missing, for instance the name of a customer or his issue details. RPA supports organizations with optimizing and implementing their business processes or parts of these processes by exploiting automation opportunities [4], Due to this, less amount of human data entry is required.

X. CONCLUSION

It is the process of dealing with complaint emails and customer service is improved with the use of UiPath and RPA with Outlook activities for complaint ticket creation. To efficiently handle, it automatically pulls up relevant data that would be the name of the customer, specifics of the complaint, and what product or service is being complained about. Then, it keeps this data in an Excel sheet or some other format set up. It automatically sends follow-up emails to consumers about missing information and confirms that the data retrieved is comprehensive, thus ensuring that no complaint goes unanswered. It reduces errors, frees up customer care agents to focus on solving problems, and saves a lot of human labor by eliminating the need for manual data entry and follow-ups. Fast response times, efficient management of tickets, and in general, This model emphasizes on the crucial aspects and steps that need to be considered so as to maximize on the chances of success for RPA solution for customer care support [5].

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