

# Invoice Processing Using OCR Methodology in UI Path Robotic Process Automation

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**Abstract:** This project uses Gmail, UiPath, and Google Forms to automate the invoice processing processes. Customers use Google Forms to provide order details, and Google Sheets automatically stores the information. After extracting this information, UiPath makes the required computations (such as prices, taxes, and discounts) and creates an invoice in an Excel template. Lastly, Gmail sends the invoice to the client automatically by integrating with UiPath. This automation improves cash flow and operational efficiency by lowering manual labor, minimizing human error, and guaranteeing timely, correct bills. Accuracy, consistency, and customer happiness are all improved by the system.

## INTRODUCTION

Since it guarantees that the financial transactions for goods and services are accurately recorded, handled, and monitored, invoice processing is a crucial task for companies of all sizes. Orders are received, invoices are created, and clients are sent them as part of the manual, paper-based invoice processing process. This procedure is frequently laborious and prone to human mistake, which can lead to inefficiency, inaccurate data entry, and delayed payments. Automation is a crucial tool for improving accuracy and efficiency in invoice processing, which becomes more complicated and volumetric as firms expand. Businesses may greatly reduce human error, administrative time, and the possibility of missed payments by automating the whole invoice processing process, from data entry to invoice production.

The conventional method of processing invoices has a number of drawbacks, including the requirement for substantial manual supervision, repetitive data entry, and delayed payments as a result of processing errors. Additionally, companies have to manually gather client information, compute totals, taxes, and discounts, generate bills, and mail them to

customers. If done by hand, these procedures take a lot of time and may result in mistakes. Automating these processes not only saves time but also guarantees that invoices are prepared accurately and distributed to clients on time as businesses transition to digital transformation. This emphasizes the necessity of automation systems such as UiPath, which may assist companies in smoothly automating the complete invoice processing cycle. As a pioneer in Robotic Process Automation (RPA), UiPath enables companies to automate repetitive processes that normally demand for human involvement. It provides a platform on which companies can create workflows that mimic human behavior to complete activities like data extraction, calculation, and invoice template completion. UiPath provides robust automation features for companies wishing to automate invoice processing. These features can be coupled with a number of systems, such as Gmail for communication, Excel for data processing, and Google Forms for data gathering. The ability of UiPath to interact with many applications and data sources allows organizations to fully automate the process with little human intervention, which is the main advantage of utilizing it to automate invoice processing.

Google Forms is a user-friendly tool that lets companies make personalized forms to collect data from customers, including product requests, quantities, prices, and any other order information. Users' answers are automatically saved in a Google Sheets document that is connected to the form as they complete it. Accessing the given data in a structured manner for additional processing is made simple by this integration. By automatically collecting and saving data, Google Forms removes the need for human data entry and guarantees that no information is overlooked or entered erroneously. Because of this, it's the perfect tool for gathering

product requests, order information, and other customer data required to create invoices.

The next stage is to extract and process the data after it has been gathered using Google Forms and stored. UiPath is useful in this situation. Businesses can design an automated process to retrieve pertinent data from Google Sheets by utilizing UiPath Studio. Because of its interaction with the Google Sheets API, UiPath can extract data straight from the spreadsheet. UiPath may carry out the required computations after the data is recovered, including multiplying quantities by prices, computing taxes, applying discounts, and producing the final invoice amount. An Excel template or any other appropriate format might be used for this. Businesses can automate the entire process using UiPath, reducing the need for manual intervention and guaranteeing accurate and timely invoice creation.

In the automated workflow, sending the invoice to the client comes after the data has been processed and the invoice has been generated. Since Gmail is the communication channel used to distribute the invoices, it is essential to this step. Businesses can send emails with bills as attachments automatically thanks to UiPath's interaction with the Gmail API. Businesses can automatically create an email with the invoice file attached and send it to the right client by utilizing UiPath's Send Gmail Mail Message activity. By taking this step, the time-consuming and error-prone manual emailing of bills is no longer necessary. By ensuring that invoices are issued to clients directly and promptly, the interface with Gmail enhances customer satisfaction and speeds up the payment process. An end-to-end workflow for automating invoice processing is created by integrating Google Forms, UiPath, and Gmail. Businesses may increase the overall effectiveness of their invoice creation and delivery process while lowering manual labor and errors by simplifying data collecting, processing, and communication. In addition to saving a significant amount of time, our automation system guarantees that invoices are sent to the right people on time and accurately. Automation is even more important for companies that handle a large number of bills since it guarantees consistency and scalability in the invoicing process. Additionally, the solution is accessible and simple to deploy for companies of all sizes thanks to the usage of cloud-based applications like Gmail and Google Forms.

There are drawbacks to automating invoice processing despite all of its benefits. The initial setup and integration of the different technologies required is one of the biggest challenges. Companies need to make sure that UiPath is set up correctly to communicate with Google Sheets, Excel, and Gmail, and that their Google Forms are appropriately designed to collect the necessary data. Businesses may also encounter difficulties when handling intricate invoice formats or unique situations that need for manual intervention. From tiny firms to major corporations, this automation method has real-world applications in a variety of industries. Automation may drastically cut down on the amount of time spent on administrative duties in small and medium-sized enterprises (SMEs), freeing up resources for expansion and innovation.

Using RPA to handle invoices has many benefits, such as increased productivity, decreased human error, lower costs, and quicker processing times. Additionally, through improved documentation and traceability, RPA assists firms in meeting audit and regulatory obligations. Businesses from a variety of industries are investing more in RPA technologies as a result of the worldwide shift toward digital transformation. This is done to enhance their financial operations and make sure they stay competitive and adaptable to changes in the market. These repetitive procedures are largely completed by human labor in traditional invoice processing. Employees must manually enter data from invoices into financial systems, cross-check facts, and settle disputes, which is frequently laborious and prone to errors. The volume of invoices rises as businesses grow, making it more challenging to maintain efficiency and accuracy. Furthermore, manual processing frequently results in lost early payment discounts, delayed payments, and possible vendor disputes. Over the past few decades, there has been a significant change in the way invoices are processed. In the beginning, accounts payable departments mainly relied on paper invoices, manual data input, and sluggish approval workflows, making manual processing the standard. Missed payments, vendor conflicts, and an excessive administrative load were the results of the process's numerous inefficiencies, mistakes, and delays. Invoice processing started to move toward automation as digital technologies advanced, but until the introduction of robotic process automation (RPA), these technologies' full potential was not realized. By simulating human interactions

with software programs, RPA has ushered in a new era of automation, allowing businesses to automate extremely repetitive operations like data entry, approval workflows, and reconciliation procedures.

The main elements of RPA are an orchestrator that coordinates bot activity, a central control platform that controls the bots, and the bots themselves, which are designed to carry out specific tasks. Because RPA can interface with both historical and modern systems.

The flexibility of RPA sets it apart from traditional automation. RPA works by simulating human interactions with pre-existing applications, whereas traditional automation necessitates extensive programming and interface with IT systems. Because of this, RPA may be implemented more rapidly and at a lower initial cost, which makes it a desirable choice for businesses trying to improve operational efficiency.

RPA's capacity to automate approval workflows is a key advantage in the processing of invoices. Invoices usually need to be sent for approval, which frequently involves several supervisors or departments.

Based on pre-established rules, RPA can automatically route invoices to the appropriate approver, monitor approval statuses, and initiate payments upon receipt of approvals. RPA significantly lowers costs as well. Because fewer workers are required to oversee the invoice process, businesses may redirect resources to higher-value tasks like customer service or strategic planning. Furthermore, RPA removes the expense of human mistake, which can be costly in terms of money and time when inconsistencies result in miscommunications or missed payments. Employees can transition from transactional to analytical roles by using RPA to handle the repetitive activities of data extraction, invoice matching, and validation. This allows them to concentrate on financial forecasts, vendor relationship management, and negotiating tactics. Furthermore, by providing comprehensive insights and analytics, RPA improves visibility throughout the AP process, assisting finance teams in making better choices about working capital management and cash allocation. Notably, RPA offers significant scaling advantages in accounts payable. The number of invoices that need to be processed increases with an organization's size. More

personnel, more effort, and more mistakes would be needed for traditional systems. However, RPA allows the system to adjust to more complicated procedures without sacrificing efficiency. business, preserving effectiveness and cutting down on overhead.

RPA guarantees that bills are accepted, matched, and paid on time by automating approval workflows and linking invoice processing directly with payment systems. Because companies show a high degree of dependability and respect for vendor conditions, this can lead to higher vendor loyalty. Additionally, automating invoice disputes—which are frequently a cause of conflict between companies and their suppliers—can expedite the settlement of issues, leading to fewer conflicts over payments and a more cordial relationship with suppliers. Better negotiating power with vendors is another benefit of RPA. Businesses can negotiate advantageous conditions, such early payment discounts or better pricing, by continuously making on-time payments and building a reputation for accuracy. These terms have a direct impact on the bottom line. Businesses now have access to a multitude of real-time data that was previously unavailable as invoice processing becomes more automated. The analytics produced by the bots that gather and process invoice data can offer important financial insights on the cash flow, liabilities, and payment patterns of the company. Finance teams can more easily track payment schedules, evaluate vendor performance, and spot cost-saving opportunities when they have real-time visibility. RPA bots, for example, can notify financial managers of late payments or possible inconsistencies, or they might flag early payment discounts. Predictive models can be developed using the data produced by RPA systems, giving companies insight into their cash flow requirements and enabling them to make better financial decisions. RPA's contribution to environmental sustainability in invoice processing is a sometimes disregarded advantage. Paper-intensive, traditional invoice processing involves printing, shipping, storing, and eventually shredding physical papers. This uses important natural resources like paper, ink, and electricity in addition to producing a large amount of garbage. RPA solutions, on the other hand, assist businesses in moving toward a paperless workflow in which all invoices are converted to digital format and handled electronically.

Businesses can minimize their carbon footprint by

reducing their dependency on paper by automating the capture and processing of invoices. Because less physical resources are needed, there are also fewer invoices. RPA's ability to improve agility and business continuity is one of its unspoken benefits. Businesses need to be able to quickly adjust to changing conditions in the fast-paced, uncertain commercial world of today. Regardless of outside influences like changes in the economy, modifications to regulations, or unforeseen disruptions like the COVID-19 outbreak, RPA helps businesses to continue operating consistently.

For instance, RPA bots can readily grow to manage an unexpected spike in invoice volume without the need for extra human personnel. Businesses can guarantee ongoing processing even during holidays or off-peak hours because bots may work around the clock. Because of its adaptability, RPA is a perfect fit for sectors like manufacturing and retail that see demand swings. Since invoices contain sensitive financial information such as bank account information, payment details, and vendor information, data security is a major concern while processing invoices. Organizations using traditional manual processes run the risk of unauthorized access, human mistake, and data breaches.

Security protocols like encryption and authentication are integrated into RPA technologies. Only the data required to process invoices and guarantee that private data is handled in accordance with company security standards can be safely accessed by bots. The possibility of internal security breaches. Furthermore, RPA's audit trails offer a thorough documentation of every transaction, which is helpful for keeping an eye on user activity and identifying any suspicious or unauthorized conduct. Organizations may promptly detect and address security threats by keeping a thorough record of automated operations. This keeps invoice processing secure and complies with data protection laws such as the CCPA and GDPR.

RPA is an essential tool for companies trying to protect their financial data and uphold client trust because it helps alleviate many of the data security issues that come with manual processing. Organizations must always look for methods to increase productivity, save expenses, and boost customer satisfaction in a business environment that is becoming more and more competitive. RPA gives companies a distinct competitive edge in invoice

processing by facilitating more effective and efficient operations. Businesses may process invoices more quickly, make fewer mistakes, and guarantee on-time payments by automating laborious operations. These benefits all add up to a more streamlined and effective financial operation.

Companies get a competitive edge in vendor relationships when they can process invoices more quickly and accurately. As was previously mentioned, companies that pay invoices on time and accurately are viewed as trustworthy partners, which promotes loyalty and trust. Better contract terms, discounts, and vendor collaboration can result from this dependability, which would further improve the company's standing in the marketplace.

RPA will probably be a key component of the next generation of financial automation, in addition to continuing to develop in the future. RPA will be crucial to incorporating cutting-edge technologies like blockchain, smart contracts, and predictive analytics into financial operations as more businesses adopt them. For example, smart contracts can automate payments depending on pre-programmed terms, and blockchain can offer an immutable database for tracking bills. Furthermore, RPA's ability to comprehend and handle complicated documents, such as invoices, which frequently come in a variety of formats, will continue to be enhanced by natural language processing (NLP). This will make it possible to process invoices more intelligently, removing the requirement for human oversight by allowing RPA to handle handwritten or unstructured data.

Automation technologies like UiPath are definitely going to play a big role in invoice processing in the future. Automated workflows will become even more integrated and seamless as companies continue to implement and improve them, giving them more flexibility and scalability. The possibilities of invoice automation will be further improved by advancements in artificial intelligence and machine learning, which will let systems to manage increasingly complicated jobs and make data-driven judgments. The development of automated workflows will be made possible by the integration of cloud-based applications like Google Forms and Gmail, guaranteeing that companies of all sizes may utilize these technologies to optimize their operations.

## LITERATURE SURVEY

Due to the growing need for accuracy, efficiency, and cost reduction in business operations, the field of invoice processing automation has seen tremendous growth in recent years. Manual data input, computations, and document handling are conventional components of invoice administration, which can result in delays, inefficiencies, and human mistake. Automation tackles these issues by utilizing technologies like cloud-based platforms, AI-driven tools, and robotic process automation (RPA) to increase overall accuracy, decrease operating costs, and streamline workflows. One possible method for automating the creation, computation, and transmission of invoices is the integration of many tools, such as Google Forms, UiPath, and Gmail.

One popular tool for gathering data in a variety of corporate processes is Google Forms, which is a component of the Google Workspace package. It enables companies to design personalized forms for client submissions, instantly recording important information. Scholars have observed that cloud-based data collecting technologies, such as Google Forms, are becoming increasingly important for streamlining organizational processes. Businesses may effectively handle order and invoice information by automatically storing submitted data in Google Sheets, generating a digital repository that is accessible and useful for additional processing. Automating monotonous corporate tasks has been transformed by the use of robotic process automation (RPA), especially with technologies like UiPath.

One of the most promising technologies for automating repetitive, rule-based processes across a variety of industries is robotic process automation, or RPA. One area where RPA has demonstrated significant promise is in the processing of invoices, a fundamental task in accounts payable (AP) departments. RPA makes it possible to automate manual processes including reconciliation, approval procedures, and invoice data extraction. The purpose of this literature review is to provide an overview of the main studies and conclusions about the application of RPA in invoice processing, emphasizing the advantages, difficulties, and potential developments noted by different writers.

## SCOPE AND OBJECTIVES

The project's focus is on automating invoice processing through the use of Gmail, UiPath, and Google Forms. By tackling the inefficiencies and

difficulties related to manual invoice production, data entry, and communication, this solution seeks to simplify and streamline the invoicing procedure. Data will be collected using Google Forms, processed in UiPath, invoiced, and distributed over Gmail as part of the automation process. Additionally, Google Sheets will be used to create a unified system for monitoring client information and invoices. This solution will be made for companies like small and medium-sized businesses, e-commerce platforms, and service providers that need to send out invoices on a regular basis for their goods or services. Although this work can be modified for scalability as business needs change, it does not address more extensive interfaces with intricate enterprise resource planning (ERP) or payment processing systems.

This project's main goal is to develop an automated system that enhances the production and distribution of invoices in terms of efficiency, correctness, and timeliness. Utilizing Google Forms, UiPath, and Gmail, the system will automate the creation of invoices, expedite data collecting, and enable prompt email delivery. One of the main objectives is to remove the inaccuracies and inefficiencies that frequently accompany the manual preparation of invoices so that companies can concentrate more on strategic work. Automating the data collection procedure is the primary goal. Customer information, including specifics about the goods or services they need, quantities, costs, and contact information, will be gathered via Google Forms. The danger of data inconsistency is greatly decreased by standardizing the format in which this information is submitted, guaranteeing that only accurate and comprehensive customer information is gathered.

Automating the invoice generation procedure is the next goal. Following the client's order submission via the Google Form, UiPath will process the information, compute totals, taxes, discounts, and other relevant information, and then use a pre-made template to automatically create an invoice. This increases accuracy and lowers human error by doing away with the need to manually enter these facts into spreadsheets or accounting systems. The system will automatically email invoices to clients via Gmail after they are generated. Every invoice will be delivered straight to the client with a customized email attached. Businesses may guarantee invoices are delivered safely and on time without requiring

human participation by automating email distribution. Using Google Sheets to establish a consolidated data management system is another crucial goal. Google Sheets will be used to manage and record all invoice information, including client details, invoice status (paid or unpaid), and due dates. Businesses will be able to track unpaid invoices, swiftly access historical data, and make sure that, when needed, follow-up measures are done. Making sure the system is accurate and effective is another goal of this endeavor. To guarantee that form input errors—such as inaccurate pricing or missing information—are kept to a minimum, the automation will incorporate data validation procedures. Businesses may be sure that the information used to create bills is correct by automating this validation process, which results in more accurate billing.

Additionally, the system is made to be scalable. Without requiring any adjustments, the automated solution will be able to handle increasing numbers of invoices as firms expand and their volume rises. The system will be flexible and adaptable to varied business demands since it can be adjusted for multiple pricing models, currencies, and client-specific invoicing criteria. Lastly, the goal of putting this automated system into place is to increase cash flow and operational efficiency. Due to manual processing or human mistake, invoices and payments are frequently delayed. These procedures can be automated to produce and transmit invoices more quickly, which would improve cash flow management and speed up payments. Additionally, workers can spend less time on administrative duties like preparing and submitting invoices and more time on activities that provide value.

#### EXISTING METHOD

**Data collection:** Order details are manually sent by clients by phone, email, or other channels. The staff in charge of billing frequently manually enters this information in a document or Excel file.

**Data entry:** Workers enter the order information from the client's correspondence into a template for an invoice, usually in Excel or another spreadsheet application. This stage necessitates meticulous data entry, and mistakes, including inaccurate pricing or tax computations, are likely to occur.

**Invoice Calculation:** Using the client's supplied information, prices, taxes, and discounts are

manually determined. Even if employees utilize pre-configured Excel formulas, accuracy still needs to be ensured, which takes time and attention.

**Invoice Generation:** Following completion of all computations, an Excel template—which may or may not be standardized throughout the company—is used to construct an invoice. To guarantee that the finished document looks professional, formatting changes may be necessary at this point.

**Email Communication:** The client receives a manual email with the invoice saved in a PDF or other file format. This stage usually include writing an email, attaching the invoice, and making sure the right person receives it.

#### PROPOSED WORK

**Data collection with Google Forms:** Customers use a Google Form to submit their order information, and the results are automatically entered into a Google Sheets document. By using Google Forms, data entry is standardized and the likelihood of human input errors is decreased.

**Data Extraction and Validation with UiPath:** The order information are taken out of Google Sheets using UiPath, an RPA tool. Important factors like product specifications, quantities, costs, taxes, and discounts are included in this. To make sure that all necessary fields are filled out and that the data is correct, the RPA robot can also validate the data.

**Calculation and Generation of Invoices:** After the data is collected, UiPath uses pre-established business rules to carry out the required computations, including taxes, pricing, and discounts. Accuracy and consistency are ensured by doing these computations automatically using the retrieved data. A pre-configured Excel template is then used to generate the invoice. UiPath ensures that the format is consistent and professional by filling in the details, including customer information, order items, total price, taxes, and discounts.

**Email Automation with Gmail:** UiPath automatically sends the invoice to the client after it is generated by integrating with Gmail. Pre-configured with a template, the email contains customized information such the invoice number, payment details, and deadlines.

Automatic Follow-up: If the invoice is not paid within a predetermined amount of time, the system can also be configured to automatically send follow-up emails or payment reminders. This stage lessens the need for manual tracking by further automating the procedure.

### METHODOLOGY

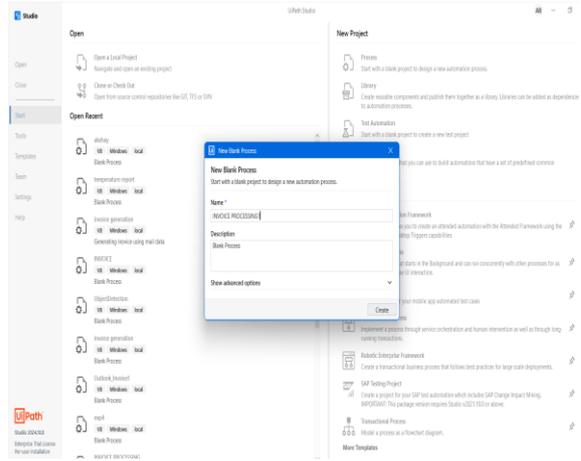
The approach uses Gmail, UiPath, and Google Forms to automate the invoice processing process. Google Forms is used by clients to provide order details, and a Google Sheets document is automatically generated. This ensures constant, real-time data capture for subsequent processing and does away with human data entering. Using a pre-configured Excel template, UiPath creates invoices after extracting the data from Google Sheets and doing the required computations (such as pricing, taxes, and discounts). In data processing and computation, this automation guarantees precision, consistency, and the eradication of human error. Without any manual involvement, the created invoice is then prepared for dispatch.

The invoice is automatically sent to the client via email after it has been created thanks to UiPath's integration with Gmail. The invoice is attached to the email, which is already set up with pertinent information. The technology may also automatically alert users when payments are past due, which enhances cash flow and operational effectiveness. This approach guarantees a faster, more accurate invoicing procedure while minimizing manual labor and errors.

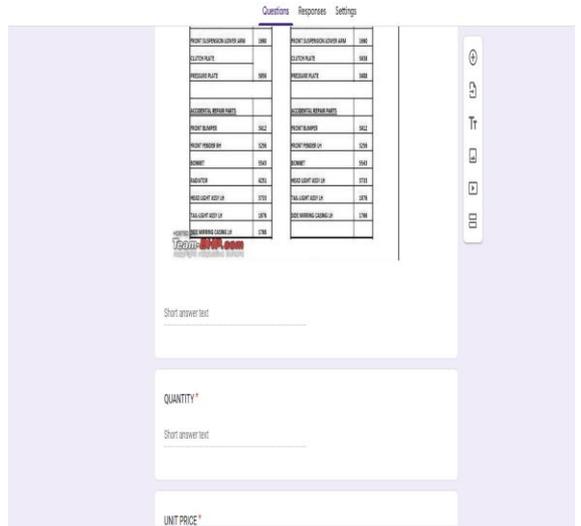
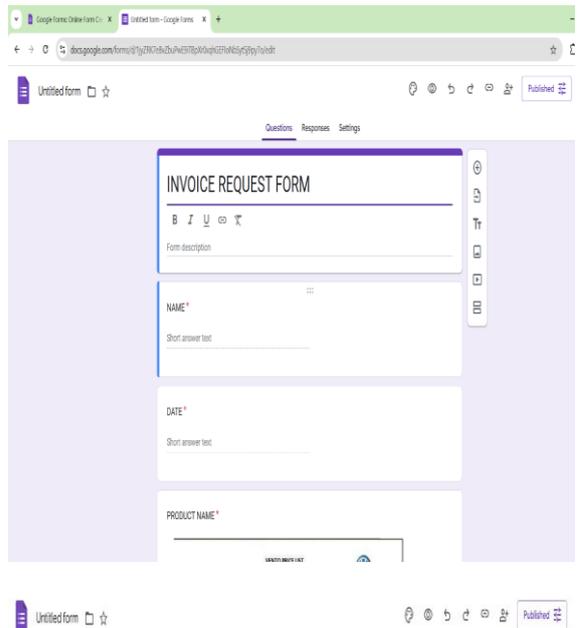
### CREATION AND EXECUTION

The automation workflow is developed using the UiPath platform. The following are the main steps in this development process:

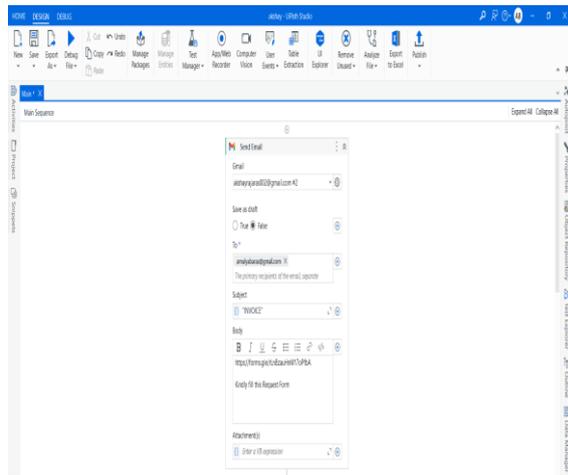
Step 1: Sign in to UI Path Studio, then add a series activity and build a process called "Invoice processing."



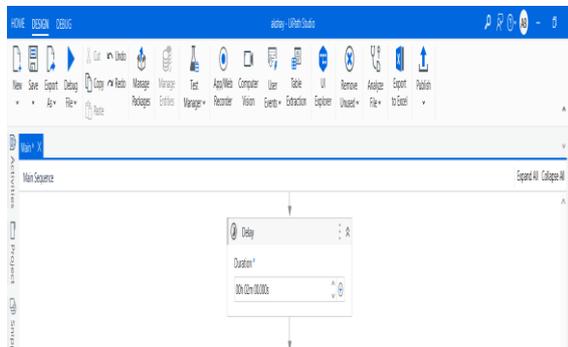
Step 2: Add an image reference to the price list to a Google Form that includes the user-requested information (ex. name, items, and unit price).



Step 3: Include a send email activity to send the generated forms to the client's email address. Set the subject line to INVOICE and include a pricelist image for the client to refer to in the email.



Step 4: Add a delay activity in step four to wait for the customer to submit their requests via forms.

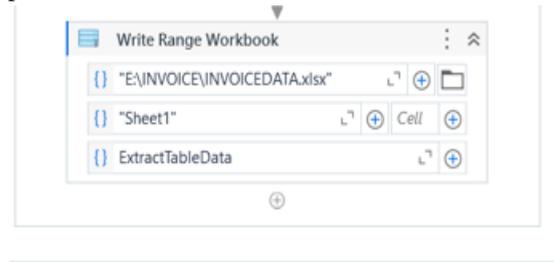


Step 5: Add an application or browser activity to retrieve the URL of the invoice request form. In the DO section, select the table extraction option at the top of UI Path Studio to extract client request data. Then, add a variable called "Extract data table" to store the values of the data in data tables.

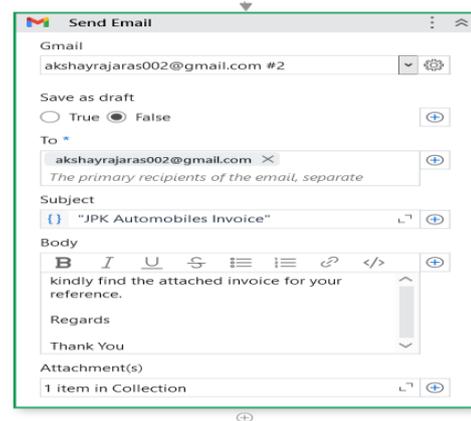


Step 6: Drag and drop the "write range workbook" activity," select the file icon in the activity to add

the excel sheet path, name the sheet "sheet1," and then utilize the variable extract data table that was produced.



Step 7: Next, include the send email activity to send the excel sheet with the created invoice to the specified user email address.

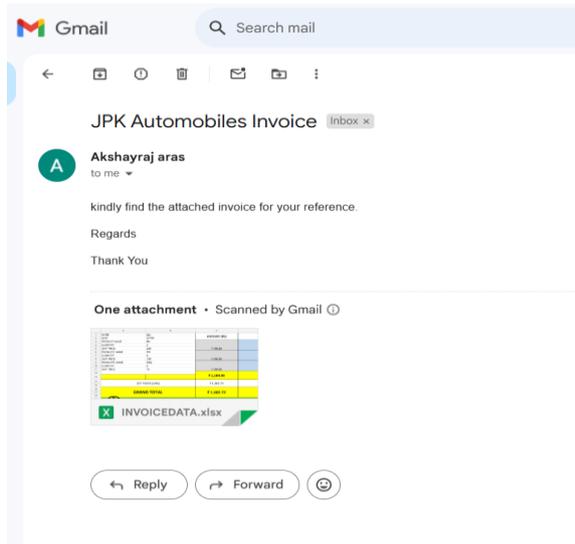


## EXPERIMENTAL RESULTS

The speed and precision of operations were greatly improved by the installation of the automated invoice processing system. Approximately 70–80% less time was spent processing and sending invoices; currently, invoices are generated and sent via email in 12–15 minutes.

NAME	AKSHAY B	AMOUNT (RS)	DOLLARS
DATE	20-05-2030		
PRODUCT NAME	Air filter		
QUANTITY	5		
UNIT PRICE	500	₹ 1,000.00	\$12.00
PRODUCT2 NAME	Gear box		
QUANTITY	5		
UNIT PRICE	500	₹ 1,200.00	\$14.40
PRODUCT3 NAME	Air filter		
QUANTITY	5		
UNIT PRICE	500	₹ 1,200.00	\$14.40
<b>TOTAL</b>		<b>₹ 3,400.00</b>	<b>\$40.800</b>
	GST TAXES (18%)	₹ 4,012.00	\$48.14
<b>GRAND TOTAL</b>		<b>₹ 4,012.00</b>	<b>\$48.14</b>

**JPK AUTOMOBILES**



### CONCLUSION

In summary, the use of Google Forms, UiPath, and Gmail to automate the invoice processing workflow has been shown to be a very successful way to improve operational efficiency, accuracy, and cost-effectiveness. The system successfully decreased mistakes by 90%, cut processing time by 70–80%, and made sure that invoices were delivered on time and consistently. While reducing human work resulted in cost savings of 40–50%, the integration of automated computations and email sending enhanced cash flow and customer satisfaction. Furthermore, the company was able to manage higher order quantities without the need for extra staff thanks to the solution's scalability. All things considered, this automation helped to increase operational growth and enhance financial management in addition to streamlining the invoicing process.

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