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The Application of RPA Technology in the Financial and Taxation Domains of SMEs in the Digital Era

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Abstract: *Within the digital context, RPA (Robotic Process Automation) financial robots have emerged as indispensable tools for enterprise transformation. Using Yaji Design (Guangzhou) Ltd. as a case study, this paper devises an application scheme for RPA robots within the financial and taxation sectors of small and medium-sized enterprises. The implementation assisted the company in refining processes related to accounts receivable and payable, expense reimbursements, and tax management. Moreover, the aftermath of these process enhancements was assessed, focusing on the workload intensity of financial personnel and the overall work quality of the finance department. Ultimately, this research outlines supplementary measures centred around RPA-driven business process optimisation, offering a valuable reference for the digital transformation and cost-efficiency improvements of small to medium-sized enterprises.*

Keywords: *Digital transformation, RPA (Robotic Process Automation), Small and medium-sized enterprises*

1. Introduction

Since the 20th National Congress of the Communist Party of China, the central government has repeatedly emphasized the need to accelerate digital development and promote in-depth integration between the digital economy and the real economy. In January 2022, the State Council issued the "14th Five-Year Plan for Digital Economy Development", which clearly proposes to vigorously promote the digital transformation of industries and implement a special action to empower small and medium-sized enterprises (SMEs) with digitalization. Under the current environment of intensified market competition and rising factor costs both domestically and abroad, the digital transformation of SMEs has become an inevitable trend. Robotic Process Automation (RPA) is a software technology that can automate repetitive, rule-based, mechanical and substitutable human workflows by mimicking user actions and interacting with systems. This can naturally address the pain points of high staff workload, large business volume and prone-to-error financial tasks, making RPA an essential tool for enterprises to achieve digital transformation in finance[1]. Therefore, since Deloitte introduced the "Little Diligent" robot in 2017, PwC, KPMG, EY and other accounting firms have successively launched their own financial robots, kickstarting the application of RPA in finance[2]. Various large enterprise groups have introduced robots for account reconciliation, tax filing, tax verification, accounting, invoice authentication and more in their shared service centers, accelerating the digitalization of finance[3]. However, SMEs, an important driving force for economic growth, are constrained by limited budgets, low level of informatization and lack of awareness. Despite the strong demand, few SMEs have implemented RPA[4]. In academia, most studies have focused on the shared service centers of large enterprises, while research on RPA applications in SME finance and taxation has been scarce. Therefore, this study investigates the current business processes and problems of a SME, Yaji Design (Guangzhou) Co., Ltd. (Yaji Company), and proposes optimized workflows leveraging RPA technology. Corresponding measures are also recommended to complement the RPA-enabled business process improvements. This study provides references for similar cases to optimize and assist SMEs in digital transformation and enhancing efficiency.

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2. Yaji Company: Current Financial Status and Needs Analysis.

2.1 Company Profile.

Established in 2020, Yaji Design (Guangzhou) Co., Ltd. evolved from the "Yaji" design studio, specializing in comprehensive design solutions, encompassing architecture, interior decoration, and landscape design. With a focus on holistic strategic design, the company manages and coordinates project designs for a range of design and engineering firms. Its portfolio spans public architecture, hotel design, commercial entertainment venues, residential developments, and exhibition spaces. Yaji Design stands out for its innovative thinking and systematic management, particularly in strategic collaborations, including in-depth schematic developments, detailed construction diagrams, and the refinement of interior and decoration designs. The company's organizational structure is presented as Figure 1.

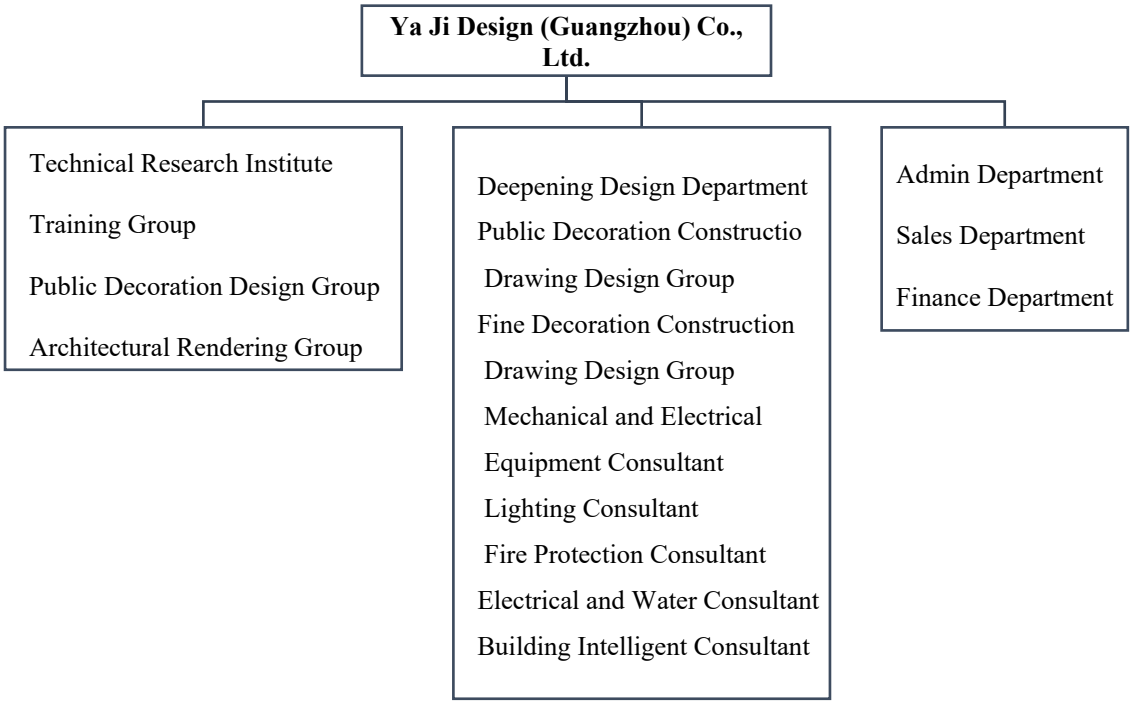

Figure 1: Organizational structure of Yaji Design (Guangzhou) Co., Ltd.

2.2 Profile of the Finance Department at Yaji Company.

The Finance Department of Yaji Company shoulders several primary responsibilities, which encompass: crafting the company's financial strategies and budgets; determining financial goals; creating business budgetary plans and cash flow projections; executing accounting operations and producing financial statements; assessing the firm's financial health; fulfilling financial reporting stipulations; overseeing tax-related tasks while adhering to tax regulations; and administering the company’s assets, ensuring their judicious allocation and utilization.

The department is structured as figure 2 including six pivotal roles: Finance Manager, Cashier, Tax Accountant, General Ledger Accountant, Accounts Receivable and Payable Accountant, and Cost Accountant. While the Finance Manager is entrusted with the holistic management and strategic direction of the department, the Cashier focuses on cash flow management. Tax-related affairs fall under the purview of the Tax Accountant, and the General Ledger Accountant oversees general accounting. The Receivables and Payables Accountant manages outstanding accounts, and cost accounting is spearheaded by the Cost Accountant. Collaboration between these roles guarantees the seamless operation of Yaji's financial endeavors.

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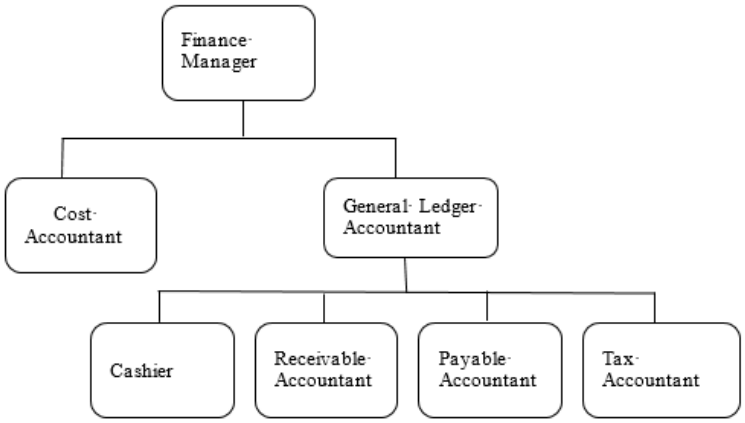

Figure 2: Structure of financial department.

2.3 Analysis of the Principal Financial Operational Procedures of the Company.

2.3.1 Accounts Receivable Module Assessment.

The accounts receivable function encompasses six core activities: credit validation, invoice generation, management of receivables, receipt annulment, and document archiving. Initially, the sales team completes a receivable form based on sales contracts. This is subsequently reviewed by the finance manager, then handed to the tax accountant for invoice issuance, and finally managed by the cashier for payment collections. An in-depth analysis of Yaji Company's receivables revealed significant challenges stemming from a vast array of scattered amounts, leading to substantial manual and time-intensive reconciliation. Moreover, despite the capability of the finance team to swiftly consolidate receivables, the limitations in human resources hinder efficient collection from multiple vendors, resulting in sustained high receivables for the company.

2.3.2 Accounts Payable Module Assessment.

Accounts payable activities span multiple facets, including fund disbursements, supplier reconciliations, and accounting management. Due to the company's multifaceted operations involving numerous suppliers, the finance team expends significant resources monthly processing payment orders, inputting invoices, and managing VAT adjustments. This results in consistently high operational costs. Additionally, the sheer volume of transactions amplifies manual entry errors, facilitating blame shifting among employees and undermining organizational oversight.

2.3.3 Current Evaluation of the Expense Reimbursement Module.

Yaji Company's finance department oversees the reimbursement processes for over 100 employees. Our research identified the following issues within their system:

Yaji Company's prevailing procedure mandates employees to scan and upload various attachments per reimbursement criteria, classify these manually, and enter invoice and banking details. The efficacy of the subsequent audit largely depends on the diligence and proficiency of the submitting individual. Moreover, the surge in electronic invoice adoption presents challenges, as the same invoice can be repeatedly submitted, increasing the risk of undue reimbursements and potential tax inspection liabilities.

Identifying relevant reimbursement documents, verifying invoice authenticity, directing financial flows, and conducting audits form the crux of the company's expense accounting responsibilities. This demands meticulous attention to detail, resulting in a taxing workload that compromises efficiency.

2.3.4 Analysis of the Present Tax Management Module.

The company's tax module primarily focuses on invoice administration, tax filings, and tax provisioning. Our survey of Yaji Company's finance division unveiled:

Yaji's tax procedures, especially those related to VAT invoices, are intricate and demand each invoice be manually uploaded. The absence of a bulk VAT certification mechanism compounds the challenges. This archaic system, dependent on individual validations and data entry, is time-consuming.

Given the present practices, Yaji's tax liabilities are manually determined by the finance department's tax accountants. Errors in any preceding steps inevitably distort the final tax calculations, making this

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approach both intricate and error-prone.

3. Financial Process Redesign Leveraging RPA Technology.

Ideal processes for RPA adoption exhibit attributes like high transaction volumes, extensive manual tasks prone to errors, substantial human resourcing needs, and reliance on structured data. Prime candidates involve standardized, redundant tasks that enable round-the-clock digital operation without intricate human judgment. Processes of medium suitability may be irregular, incorporate offline portions, or require some discretion. Unsuitable processes tend to be dynamic with ambiguous guidelines or handle challenging unstructured data. Evaluation of shared services reveals RPA alignment in areas like expense settlements, purchase-to-payment, sales-to-receivables, and tax administration due to their repetitive, rule-based nature despite manual complexity.

3.1 Refinement of Receivable Management Workflow.

As alluded to previously, Yaji Company confronts challenges in the efficacy, precision, and contentment levels of its accounts receivable operations. Prominent among these challenges are the manual reconciliation methods adhering to the "triple-congruent" audit stipulations, a protracted invoicing routine lacking reliability assurances, and the imminent deployment of electronic specialized invoices across the nation. This underscores the pressing necessity for an RPA-facilitated overhaul of the accounts receivable procedure. The project team has delineated the following refinement blueprint:

Contrasting the nascent accounts receivable mechanism, the enhanced model retains integral phases such as contract endorsements, credit appraisals, system upkeep, and order acquisition. Subsequent to order reception, the sales auxiliary can digitally capture and relay the client's order. Using OCR, RPA processes this input, deduces essential data, and transpires a sales directive. Once clients acknowledge their deliveries, the sales subsidiary can seamlessly commence the invoicing routine. Manual interventions for invoice applications are obviated, with RPA autonomously forwarding these applications contingent on metrics like delivery volumes, sales order valuations, and client particulars. The need for hands-on scrutiny by receivable-focused accountants is rendered redundant; reconciliatory tasks seamlessly ensue within RPA's astute auditing framework, simultaneously facilitating invoice generation and ledger recordings. Payment receipts activate a sagacious reconciliation and timely alerts are dispatched to sales representatives. The modernized invoice creation routine preemptively integrates protocols for the dissemination of digital specialized invoices. Employing RPA, it's feasible to dispatch these digital invoices (bypassing print requirements) straight to clients, exemplifying end-to-end automation.

Key RPA integrations within the receivables workflow encompass sophisticated order data recognition, intuitive invoice data creation, adept auditing processes, streamlined invoicing, and sharp payment reconciliations.

3.2 Optimization Design for Accounts Payable Management Process.

The present accounts payable workflow chiefly focuses on enhancing efficiency and precision, and on confronting the emerging challenges tied to electronic specialized invoices. This entails three key resolutions: firstly, navigating the novel format of electronic specialized invoices and the concurrent demands of both electronic and paper forms; secondly, facilitating the automation of three-way matching; and thirdly, instituting payment automation. Given these prerequisites, an RPA-driven accounts payable enhancement strategy was conceived, underscoring RPA's distinct role at each juncture. RPA permits scripting overhauls atop the foundational procedure, rendering a unified transition framework that activates the entire payment channel with a single click.

When juxtaposed with the traditional accounts payable mechanism, the refined version eliminates the need for print submissions in procurement, instead harnessing RPA's prowess for autonomous invoice data extraction—both paper and electronic formats. This data then seamlessly interfaces with pertinent entries in the SAP environment, encompassing orders, invoices, and goods receipts. Upon successful validation, electronic accounting certificates are auto-generated, concurrently initiating input tax verification and upfront payment discernment. Upon executing mass payment tasks via RPA for outstanding accounts, payment certifications are generated automatically.

Through RPA, advancements are achieved across areas like purchase order data extraction, supplier

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data discernment, invoice categorization, validation, tripartite matching automation,certificate generation, supplier reconciliation, e-invoice documentation, and procurement settlements.

3.3 Optimization Design for the Expense Reimbursement Process.

Upon the initiation of an expense claim, the claimant delineates the respective category of the expenditure. Consequently, the sophisticated expense management system, predicated upon this categorization, provides guidance on the requisite supporting documentation. These documents are then uploaded by the claimant to the imaging platform. Leveraging OCR (Optical Character Recognition) technology, the system is empowered to autonomously ascertain the compliance and completeness of the expense claim attachments, validate the authenticity of the invoice, and detect potential instances of invoice duplication.

A paramount criterion for this automated information assimilation is the meticulous standardization of diverse expense categories. This necessitates predefining templates for the pertinent supporting documents, ensuring that the OCR operates optimally in capturing the desired data. For instance, in the case of travel-related claims, the system mandates the uploading of associated approval forms and pertinent invoices, guiding claimants through a systematic uploading procedure.

The capabilities of OCR are further accentuated as it extracts pivotal data from the original documents, methodically archiving this concise information in categorized databases. In its operation, the OCR facilitates an expansive scan of original attachments, gleaning and auto-populating pivotal details from these documents—ranging from summaries and unit prices to product names—thereby significantly mitigating potential discrepancies during manual data entry. This intricate process of sifting through voluminous data enables the astute recognition of paper invoice data. Additionally, RPA (Robotic Process Automation) technology is adept at discerning the veracity of data on physical invoices, juxtaposing scanned information with its original counterpart, fulfilling the tasks of document recognition, categorization, and comparison, which, in turn, streamlines the auditing procedures of subsidiary financial entities.

3.4 Design for Optimizing Tax Management Processes.

The RPA for tax reporting is primarily utilised by the Yaji Company. It functions to automate the calculation of output and input tax amounts, pre-emptively scrutinise tax data prior to submission, produce provisional tax computations, and generate tax reporting forms for various institutional tiers, culminating in the streamlined declaration process and mitigation of the company's tax-related risks.

Automated Tax Reporting. Manual tax reporting has historically been inefficient for SMEs, with prolonged processing times, high error rates, and reduced operational effectiveness especially when spanning multiple jurisdictions and platforms. To address this, robotic process automation (RPA) has been leveraged to automate declarations. The RPA bot autonomously extracts foundational financial data from systems. Then, guided by configured rules and process directives, it organizes the data into appropriate tax categories to auto-generate the forms. Next, the bot conducts a preliminary audit benchmarked against standards, enabling cursory human review. Finally, it interfaces with various tax portals to input, validate, and submit the tax data automatically. This RPA-driven approach replaces manual reporting, delivering cost savings and substantially reducing errors. The bot orchestrates and optimizes the end-to-end tax declaration process.

Automated VAT Invoice Generation. Amid the issuance of Value Added Tax (VAT) invoices, finance professionals are tasked with the aggregation of crucial data fragments, spanning from invoicing entities and their associated tax identifiers to product taxonomies. They are then required to navigate the VAT-controlled invoicing software, drawing from sales orders to engender VAT invoices. For SMEs witnessing considerable sales volumes, the act of VAT invoicing emerges as an unduly laborious and time-intensive endeavour, a scenario exacerbated during month-end periods, where workload surges to thrice or even quadruple the norm. Recognising the inherent standardised, structured, and repetitive underpinnings of the VAT invoicing process, the deployment of RPA-based automations was deemed apt. Under this modus operandi, governed by pre-ordained RPA operational controls and taxonomic rules, financial personnel are merely required to consolidate purchasing and sales tax datasets. This curated data serves as fodder for the bot, which is empowered to autonomously discern invoicing mandates, validate said datasets, and consummate the invoicing procedure. The human touchpoint is relegated to the tail-end of this process, where the finance team undertakes a final review, appending the necessary endorsements post the invoice's printout. Such an approach has been instrumental in drastically

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truncating the invoicing lead time for each sales transaction, providing much-needed reprieve to the beleaguered finance workforce.

4. Anticipated Outcomes Following Process Transformation.

4.1 Mitigation of the Work Intensity within the Finance Department.

There has been an evident curtailment in labour expenses coupled with an augmentation in operational efficacy. Through the adoption of financial automation tools, a preponderance of repetitive tasks has been superseded. This not only facilitates a diminution in operational durations but, as per the guidelines delineated by RPA for monotonous manual engagements, engenders a consistent 24-hour operational continuity. In the execution of analogous tasks, it has been observed that the RPA framework necessitates a mere 5%-15% of the duration traditionally allocated to manual processes. Concomitantly, advancements in the procedural blueprint have obviated the imperatives of manual vetting, rectification of inaccuracies, and protracted communication intermissions, culminating in a palpable surge in process efficiency[5].

4.2 Enhancement in the Calibre of Financial Services.

Post the incorporation of RPA-driven process optimisations, a discernible elevation in the service quality of the Yaji Company's finance division has been manifested. In the context of the reimbursement process post-optimisation, RPA has been inducted to supersede select manual tasks. This intervention has precipitated a decline in the predilection towards manual oversight errors, expedited the turnover of expense claims, and amplified the service efficacy extended to reimbursement applicants and vendor entities. In the realm of fund disbursement, RPA's adeptness in automating payment trajectories, orchestrating reconciliations, and facilitating receipt inquiries has significantly diminished the erstwhile error propensities, thereby attenuating associated fiscal risks[6]. With respect to tax submissions, the institution of automated tax declarations and invoicing paradigms has considerably abbreviated the durations requisite for subsidiary tax submissions and sales personnel invoice generations, thereby enhancing service quality proffered to tax stakeholders and frontline operatives. Moreover, the veracity of foundational data assimilation and the meticulousness of fiscal computations intrinsically dictate the precision of fiscal disclosures. The refined automation of account management has been instrumental in mitigating discrepancies resultant from manual oversights, guaranteeing the fidelity of the concluding financial disclosures.

4.3 Optimisation of the Financial Team's Functional Paradigms.

Within the overarching organisational schema, grassroots personnel have been extricated from engagements of nominal added value. This liberates them from the shackles of rudimentary, monotonous, and redundant fiscal tasks, catalysing a transition towards a more strategic accounting ethos. Consequently, the finance division has been streamlined, now predominantly comprising roles such as financial computation experts, procedural technologists, and chief financial overseers.

5. Conclusion

This study embarked on an intricate exploration of business process optimisation predicated upon RPA and its concomitant supportive measures. The findings elucidate that unwavering endorsement from the managerial tier, ensuring a robust human capital framework, and technological safeguards emerge as the linchpins for orchestrating a successful optimisation narrative. Pertinently within the financial sector, the evolution and intelligent metamorphosis of processes become instrumental in resonating with burgeoning business paradigms and preparing for forthcoming opportunities and challenges. Nonetheless, such a transition also promulgates elevated prerequisites, especially for financial custodians, who are impelled to not only commandeer foundational accounting nuances but also possess an intimate understanding of IT and RPA dynamics.

A palpable limitation of the current discourse lies in its predilection towards a singular case study, potentially precluding a comprehensive reflection of the multifarious enterprise landscapes. Prospective studies might contemplate an incorporation of an expanded repository of case studies or leverage quantitative methodologies to further validate the conclusions drawn herein.

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In an era punctuated by rapid technological strides and a perpetually metamorphosing business milieu, organisations are mandated to incessantly evaluate and refine their operational methodologies, ensuring their sustained competitive edge. While this research proffers a framework and blueprint in this regard, it necessitates further empirical studies for its corroboration and refinement.

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