

OPTIMIZING ACCOUNTING OPERATIONS IN THE DIGITAL AGE: THE ROLE OF ERP AND RPA INTEGRATION

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Abstract

In today's Industry 4.0 era, information technologies are constantly being developed, and enterprises that want to remain relevant in the public's eye have to rely on their help. Over the course of time, the flow of information has increased, making it necessary to find innovative solutions to manage the large volume of data. Therefore, ERP systems (Enterprise Resource Planning) and RPA (Robotic Process Automation) solutions are two of the useful technologies that can be used to ease complex processes. In this paper, the attention is focused on the use of these solutions regarding accounting. It will describe the process by which a software robot automatically introduces the accounting entries into the integrated ERP system - SAP, module FI (Financial Accounting). Such a solution is approached in order to reduce the high workload of the employees, for the execution time to be much lower and the risk of human errors to be removed. In particular, the benefits generated by the integrated use of ERP and RPA will be highlighted, providing a starting point for economic entities that want to optimize their processes towards digitalization.

Keywords: RPA- Robotic Process Automation, ERP – Enterprise Resource Planning, SAP FI, UiPath

Clasificare JEL : M15, L86, M41, M21

1. Introduction and context of the study

Since the 90s, economic entities have turned to the use of Enterprise Resource Planning (ERP) systems to integrate the operations of various departments such as finance, production, distribution, human resources, controlling and many others into a single platform [1]. With the help of these enterprise resource planning systems, workflows are improved and operational processes are more easily managed [1]. Also, communication is facilitated both between staff of different departments and with business partners [2].

The implementation of an ERP system is quite expensive, depending on the needs of each individual entity, and requires considerable initial investment [3]. If necessary, customized ERP solutions with new functionalities that are compatible with existing processes can be used [3].

At the same time, it is important to note that the employees and managers of enterprises are the people who interact the most with the implemented ERP system, therefore, the organization must provide users with all the necessary resources to successfully adapt to the new changes [4]. Their work can be simplified by using automation-based solutions such as RPA (Robotic Process Automation) technologies. Due to the fact that they can be used to automate repetitive processes, employees are able to focus on activities that require manual intervention, increasing their job satisfaction [5].

The most common activities that have been automated with the help of RPA are data processing, opening and closing applications, automatically extracting information, automatically filling in fields and many others [6]. These software technologies can be easily adopted and, as in the case of ERP systems, can be used for processes within the various departments of the economic entities.

Taking into account the aspects presented above, it can be seen that the implementation of these solutions, ERP and RPA, can represent a significant advantage for enterprises because their use can generate a multitude of benefits. Therefore, in order to increase these benefits, enterprises that want to approach an innovative solution can choose to integrate ERP systems with RPA technologies [7]. Some of the advantages are mentioned in the attached figure in the following lines.

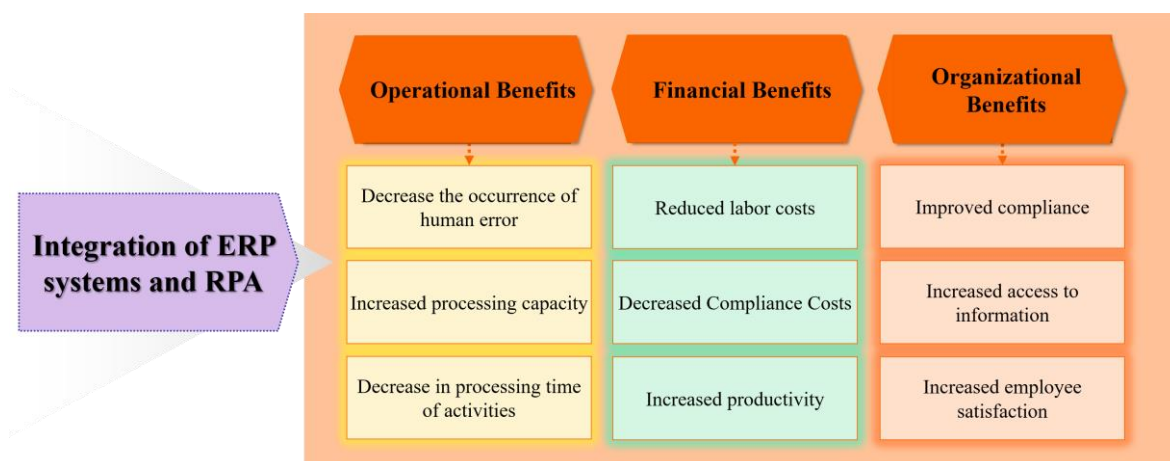


Figure no. 1 Benefits generated by using ERP and RPA solutions

In this study, it will be described a solution for automating the process of recording accounting transactions in the enterprise resource planning system - SAP with the help of a software robot built using the tools provided by the UiPath platform.

2. Literature review

As digital transformation is redefining all sectors of the economy, optimizing accounting operations has become a central goal in many organizations. The literature suggests that Enterprise Resource Planning (ERP) and Robotic Process Automation (RPA) technologies play a key role in this modernization process. ERP solutions are already well-established in many organizations for centralizing data and automating essential processes such as invoicing, accounting, and inventory management [8]. Integrating RPA into ERP, however, promises advanced automation, allowing for the reduction of repetitive manual tasks and increased operational efficiency [9].

2.1. ERP systems and their role in accounting optimization

The literature highlights that ERP systems make a significant contribution to streamlining accounting functions by enabling the centralization of data and providing transparency into financial performance [10]. These platforms integrate multiple processes, providing a clear picture of an organization's finances and eliminating redundancies. Studies indicate that organizations using ERP solutions benefit from better data accuracy, improved internal control, and rapid access to relevant information for informed financial decisions [11]. At the same time, the literature shows that despite significant advantages, ERP implementation can involve major challenges, including high costs and resistance to change on the part of staff [12].

2.2. The RPA solution and its potential in automating accounting processes

RPA has become a key technology in optimizing accounting operations by automating repetitive tasks such as account reconciliation, invoice processing, and periodic reporting [13]. According to the literature, RPA is effective in automating processes involving large volumes of data and predefined rules, eliminating human errors and reducing the time required to complete these tasks [9]. Thus, RPA allows accountants to focus on value-added activities such as financial analysis and strategic planning [14]. Moreover, research shows that RPA can be implemented relatively quickly and at lower costs than ERP systems, facilitating its widespread adoption in organizations of all sizes [15].

2.3. ERP and RPA integration - synergies and challenges

ERP integration with RPA is an emerging area of research, with a focus on creating a seamless flow of data and automated processes for faster and more accurate accounting operations [6]. At the same time, research emphasizes that integrating the two technologies requires careful planning and coordination between IT and accounting departments to avoid potential data compatibility and security issues [14].

2.4. Effects on accounting and organizational performance

The literature suggests that ERP and RPA, when effectively integrated, contribute to increased organizational performance and improved accounting functions. This integration leads to more transparent and better controlled processes, reduced reporting time, and improved financial compliance [16].

Conclusions on existing literature and future perspectives

In conclusion, the literature shows that ERP and RPA integration is a viable strategy for optimizing accounting operations in the digital age. Although the impact of this integration is major, current research highlights the need for further studies on best practices in implementation and the long-term impact on organizational performance. Future prospects suggest that with advances in AI and machine learning, ERP and RPA could be combined to create a fully automated environment in which accounting processes become predictive and proactive, contributing to a true digital transformation of the finance function [15].

3. Research methodology and results

The integration of ERP and RPA technologies can be considered as a relatively new approach that economic entities can capitalize on in order to optimize operational processes. Based on the advantages that these solutions can generate when they are used individually, their integration can amplify the positive aspects, such as improving the management of operations,

reducing errors, making information more easily accessible and reducing process execution time [7].

One of the most well-known suppliers of ERP systems is SAP, software that is used in different industries, providing users with specific modules for each individual department of the economic entity [17]. SAP FI (Financial Accounting) is the module responsible for managing all financial records, where accounting transactions can be recorded [18]. Thus, an image that reflects the economic reality of the organization will take shape, at the same time, all legal provisions will be respected.

In the case of RPA technologies, the UiPath platform is one of the most widely used tools for automating operational processes [19]. The first step before implementation is to identify activities that are repetitive, and which could be easily performed by a software robot [19]. Some of these tasks could be those within the accounting department, so in the following lines a solution will be presented based on UiPath software robots for automating the recording of accounting transactions in SAP.

In SAP FI, to add new accounting entries, the transaction codes FB50 and FB60 are being used. For internal transactions, such as the funding of a specific account, is used transaction FB50, whereas FB60 is used when you want to register an invoice from the supplier. Following the entry of these transaction codes, the employees must manually fill in the text boxes with information such as the date on which the original document was issued, the account, whether it is a debit or credit account, the total amount mentioned in the document and, if necessary, the vendor's code. All this information can be easily entered automatically by a software robot in a significantly shorter time, human errors being reduced. Therefore, the accuracy of the data stored in the system increases. The software robot created using the UiPath tools will extract the necessary data from an Excel document and insert it into the windows of the SAP system, the FI module.

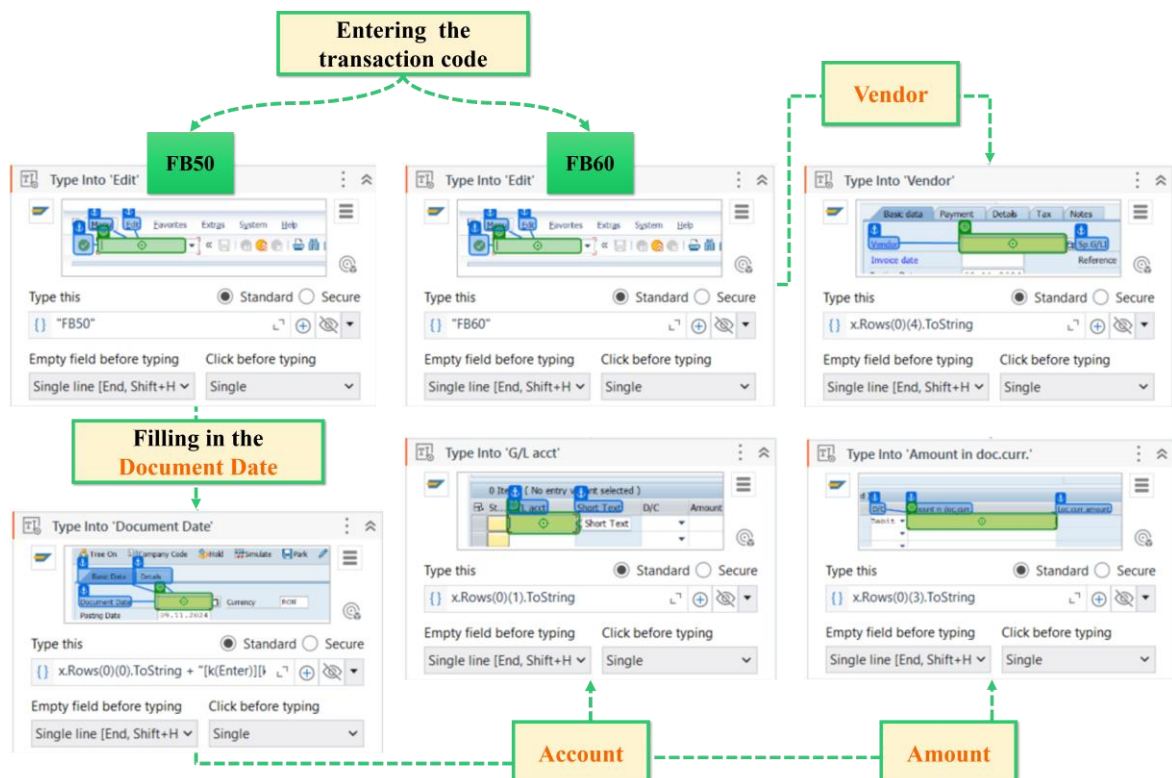


Figure no. 2 Automating the process of posting accounting entries into the SAP system using UiPath tools

In the application, the activities used to open the Excel document and to read the information in the spreadsheet will be added at the beginning, these are "Use Excel File" and "Read Range". Next, it will automatically fill in the required transaction code, in this case FB50 or FB60, in the SAP search bar using the "Type Into" activity. In order for this to work properly, it is recommended to set anchors when indicating on the screen where the transaction codes should be entered. Subsequently, also using the "Type Into" activities, it is shown to the robot the areas in SAP where to insert the current information in the Excel cells. For code FB50, these would be the document date, account, debit or credit and amount. In addition, in the case of the window that appears after using the FB60 code, it is also necessary to fill in the box corresponding to the vendor. In the figure below, examples of activities from the application are attached to show exactly how they are used in practice.

4. Conclusions

Taking into consideration all the aspects mentioned in the previous sections, it can be noted that the use of integrated ERP systems with RPA technologies is a suitable solution for economic entities that want to maximize performance and increase productivity. In this study, it has been presented the advantages that these solutions can generate, describing a case study on the use of a software robot to automate accounting entries in an ERP system. The robot was built using the RPA tools offered by the UiPath platform, and the ERP system used is SAP, the module in which the work is done is FI, which deals with the management of the financial aspects of an entity. Therefore, it was possible to see how repetitive operations that do not require human expertise can be simplified, increasing efficiency and compliance.

It is also important to mention that the idea behind this software robot can be applied to automate other processes within the SAP system. Furthermore, this research can be a starting point for organizations looking to digitalize processes, both in accounting and other departments.

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