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Research and development of software robots for automating business processes of a commercial bank

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Abstract

The article discusses the applicability of the robotization of business processes in the banking sector, justification, development and practical use, the key benefits.

Keywords: robotization of business processes; Robotic Process Automation (RPA); software robots; business processes; information security of financial and economic structures; RPA solutions

1. Overview

Robotic Process Automation (RPA) – is a modern, innovative technology that allows companies to significantly increase operational productivity by replacing people with software robots, in order to free and redistribute human resources from repetitive, routine tasks to more complex and interesting tasks that bring great added value. This technology allows organizations to develop and configure software (software robots) to perform repetitive, uniform operations at the user interface level of automated systems. Robots perform operations specified by the developer in accordance with a clear algorithm. They receive data, sort it, process it and carry out certain actions with them, without changing the IT structure of the company. This approach is especially relevant for the banking sector, it allows you to implement this technology much faster than other solutions.

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Robots completely imitate the user's work at computer, therefore they are ideally suited for solving monotonous tasks. They interact with other systems in the way people do, only much more efficiently: they work around the clock, make no mistakes and cost much less than employees.

Key benefits of RPA:

- software robots perform tasks faster than humans, without making mistakes
- software robots are available to perform tasks around the clock
- software robots allow the organization to free and redistribute human resources, reducing from 50 to 70% of operating costs and having a positive impact on P&L (quick payback)
- software robots interact with existing systems and applications through the user interface, and do not require changes in IT infrastructure in the company
- software robots record every action and allow flexible control of operational productivity

2. What tasks can be delegated to robots?

It is necessary to approach the search for tasks seriously, otherwise there is a risk to spend a lot of time and effort, and the result will never appear on the horizon.

First, you need to comprehensively assess the feasibility of implementation. The assessment should include four parameters:

- FTE – number of **full time employees**, involved in a process
- ST – **support team** of RPA process
- CF – **complexity factor** of process
- VF – **volatility factor**

By measuring each indicator, you can place any process on the coordinate system, where there will be complexity along the ordinate axis, and the number of employees involved in the process (FTE) along the abscissa axis. The coordinate system with the processes marked on it can be divided into four quadrants of rating criteria (Fig. 1):

- R1 – certainly advisable
- R2 – rather appropriate
- R3 – rather impractical
- R4 – impractical

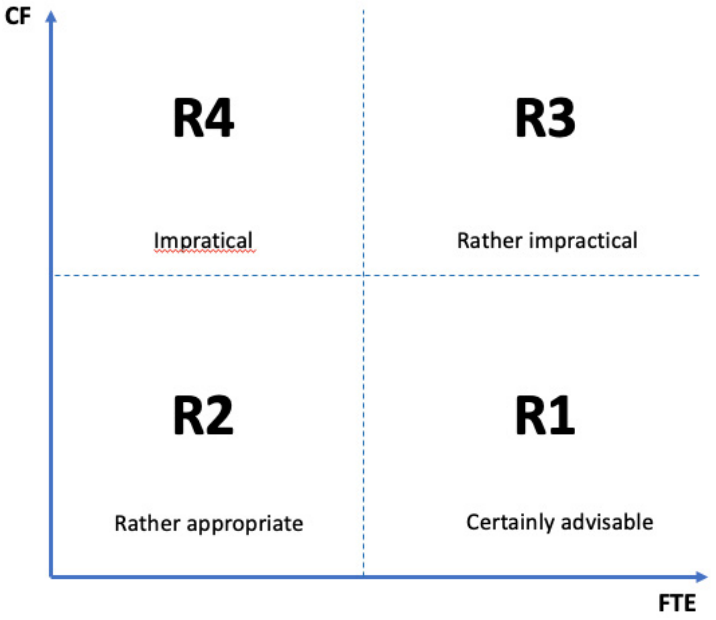

Fig 1. Quadrants of rating criteria

Based on the experience of implementing RPA in the bank, all this gives from 40 to 80% reduction in direct costs for processing business processes [1]. In addition, the technology is easily scalable, if you need to accelerate the execution of a business process, you simply connect another robot, instead of organizing the search for a new employee, his training, and equipment of the workplace.

In practice, there are two of the most common approaches to software robotics:

- **Placing the robot on the employee's computer.** In this case, the robot does not replace the employee by 100%, but only performs some of the same, small tasks, acting as a digital assistant. Most often, at the same time, tasks that arise from time to time and do not require the allocation of an employee for them for a full time are robotic. As a solution, you can consider installing a robot module on an employee's computer, in addition to already installed systems. When a task for the robot appears, the user simply launches the program and it automatically fulfills the task. You must understand that at this time, the employee can not perform tasks on the computer, he is busy with the robot. But at this time, the employee can make a phone call to the client, solve work issues with colleagues or go for lunch.
- **Dedicated virtual workstation for the robot.** In this scenario, a virtual environment is created in which only robots work. In this environment, there may be hundreds of different robots that simultaneously perform their tasks around the clock. This scheme is applicable for the massive use of software robots for a large number of tasks.

Robotization lends itself equally well to all sectors of the economy. But some organizations are particularly prone to software robotics, because they use a large number of man-hours for similar tasks that can be assigned to software robots. First of all, this:

- banks and financial organizations
- insurance companies
- medicine companies

Classic examples of banking business processes recommended for automation using Robotic Process Automation:

- opening a bank account
- updating customer information
- financial monitoring
- data cleaning and reconciliation [2]
- consolidation of financial statements
- process of making a burden on the registry
- processing of incoming / outgoing payments
- loan administration

3. How to implement a robot?

The implementation approach should be divided into 3 main stages (Image 2):

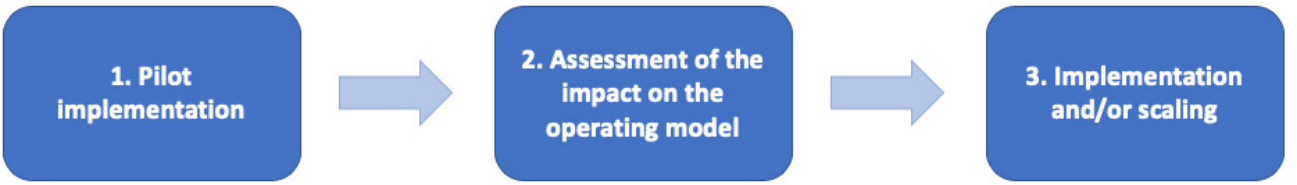

Fig 2. Implementation stages

The first stage is detailing and pilot implementation.

At this stage, the most important thing is to correctly determine the process, because much depends on the success of the RPA implementation on it. At the first stage, a classic series of actions takes place:

- Analysis of the process “AS IS” and “TO BE”
- Definition of target architecture
- Conceptual design, verification of the feasibility of the robot
- Development, testing and debugging
- Demonstration

After the pilot is implemented, the head of the RPA direction decides on scalability, and the RPA team proceeds to the next stage.

The second stage is the assessment of the impact on the operating model:

- Description of the “as is” and “as will be” process
- Calculation of the economic effect
- Analysis of current and target indicators
- Software purchase
- Preparation for test / industrial operation

As a result of the stage, you will have a plan for the robotization of the process, as a result of which the fixed indicators for budget / speed / quality growth will be achieved, the ground prepared for direct development.

The third stage is the implementation and / or scaling:

- Development of an algorithm according to the method of flexible techniques
- Robot setup
- Its integration into the management system
- Implementation and industrial operation
- Robot tuning according to test results
- Evaluation of the effectiveness of his work

4. Conclusions

This stage, in case of successful implementation and well-coordinated work of both teams, brings business users the desired result and increased operational efficiency indicators.
As practice shows, the question is not whether the innovation will appear, the only question is how quickly it will take its place. Previously in production, industrial robots have already supplanted people from certain processes. Now we are witnessing a similar stage in business processes, and this movement is irreversible. In the future, most likely, humanity will create labor codes and norms governing the use of robots, rather than prohibiting them.

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