Report on the analysis of the business process "Verification of client data (individuals) within the lending process"

1. Introduction

1.1. Purpose of the analysis

To study the process parameters: execution speed, cost/expenses of the process, process results (quality of the output product).

To analyze the possibilities of optimization and automation, improve the process parameters.

1.2. Description of the analyzed process

The business process "Verification of client data (individuals) within the lending process" is a component of the lending process block in the Bank. The lending block for individuals is critical for the Bank, since 30% of the profit earned in the Bank comes from this Block.

The main purpose of the verification process is to check the client's data for compliance with their legal requirements and the Bank's internal requirements. Based on the verification results, a decision is made to approve/refuse lending.

1.3. Sources of information

As part of the preparation for analysis and collection of information stage:

- interviews are conducted with performers, managers and owners of the process; as part of the interviews, the process execution is monitored in real time;
- data from information systems in which employees work to execute this process (task & process mining) are collected;
- local legal acts/internal regulatory documentation (LLA/IRD) are analyzed;
- regulatory regulations of state actors and other financial institutions are analyzed.

2. Description of the current process

2.1. Process participants

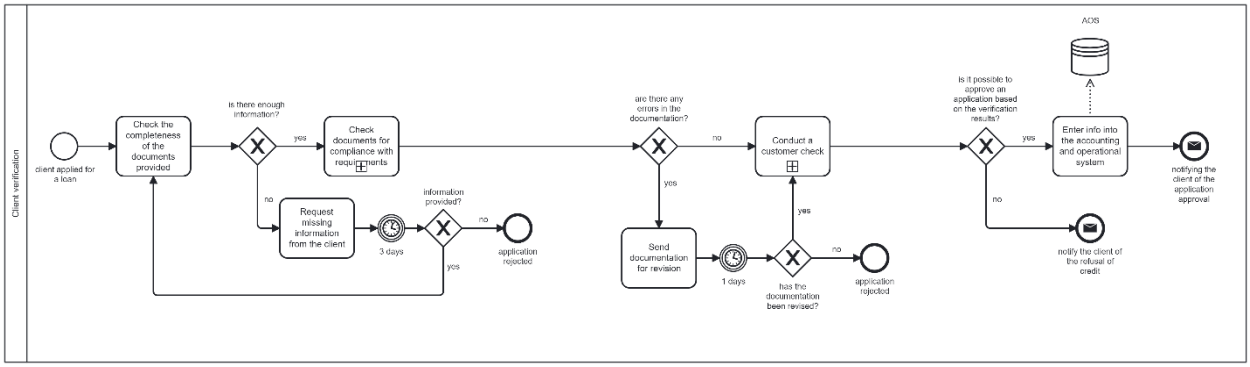
Employee	Role	Department	Contact details
Director of the Retail Products Department	Process owner	Retail Products Department (RPD)	rpd_coo@bank.com
Functional manager	Manager	Operations office	oo_manager@bank.com
Verifier	Executor	Operational office	oo_verify@bank.com
Front office employee	Executor	Front office	fo@bank.com
Underwriting Service Employee	Executor	Underwriting Service	underwriting@bank.com
Security Service Employee	Executor	Security Service	so@bank.com

Stakeholders:

- Clients - individuals
- Process performers

- Front office service, underwriting service, security service
- Bank employees in a broad sense

2.2. Graphical representation



2.3. Stages of the process

The process of verification of individuals consists of the following stages:

Stage	Description	Contractor	Deadline
Checking the completeness of the provided documentation	The verifier checks the package of documents: the client must provide a scan of the passport and a scan of the income certificate. Documents are attached to the Automated Information System (AIS), in which the Verifier conducts all activities for the process	Verifier	Within half an hour after submitting documents
Request for missing information	If the client has provided an incomplete set of documents or the scans of the documents are not of good enough quality to understand the necessary information, the verifier sends a request for missing information: • To the front office employee, if the client applied offline • To the client via the application, if the client applied online	Verifier	After identifying the missing information. The deadline for providing missing information is 3 days.
Checking documents for compliance with requirements	The verifier visually checks the passport and income certificate for non-compliance with the requirements of the Bank and legislation	Verifier	Within half an hour after submitting the documents
Request for revision of documentation	If errors in the documentation were identified during the verification process for compliance with the	Verifier	After identifying errors in the documentation.

Stage	Description	Contractor	Deadline
	requirements, the verifier sends a request for revision: • To the front office employee, if the client applied offline • To the client via the application, if the client applied online		Correction period - 1 day.
Client verification	After the verifier confirms that the documentation meets the requirements, the client information is transferred to other Bank departments for verification: • The underwriting service compares the client's income data, personal data and data from the Bank's database. Then it forms a conclusion on the possibility of providing a loan • The security service checks the client's personal data, the Bank's database and the databases of authorized bodies. Afterwards, it forms a conclusion on the possibility of concluding an agreement with this client	Underwriting Service, Security Service	Verification period – 1 day
Notification of refusal	Based on the results of the verification, the verifier sends an automatically generated notification of refusal, if a corresponding decision was made	Verifier	Immediately after receiving the conclusion from the relevant services
Entering the approved loan application into the Bank's accounting and operational system	If, based on the results of the verification, a decision was made to issue a loan to the client, the verifier enters information about the client (personal data, data on his current account, the amount of the approved loan) into the accounting and operational system Bank system	Verifier	Immediately after receiving a conclusion from the relevant services
Approval notification	The Verifier sends an automatically generated approval notification if the corresponding decision has been made	Verifier	After entering the information into the Bank's accounting and operational system

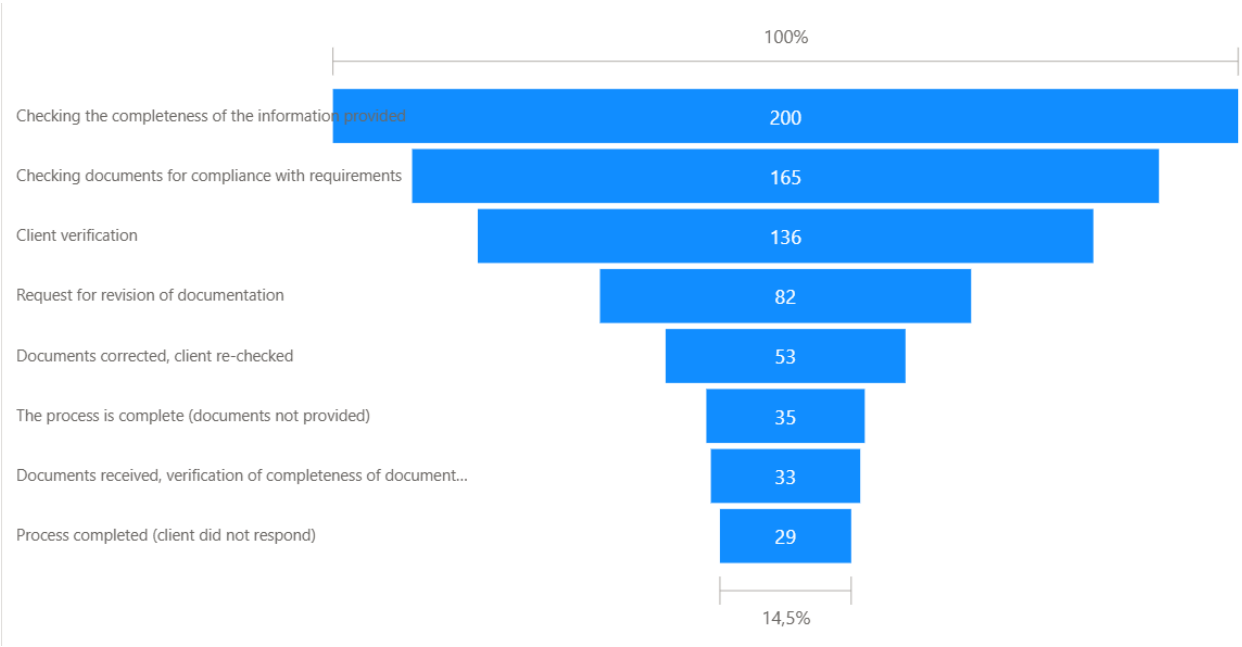
Responsibility Assignment Matrix (RACI):

Stage	Verifier	Manager	Director of the RPD	Front Office Staff	Underwriting Service	Security Service
Checking the completeness of the provided documentation	R	A		R		
Request for missing information	R	A		R		
Checking documents for compliance with requirements	R	A				
Request for revision of documentation	R	A		R		
Client Verification	R	A			R	R
Notification of refusal	R	A	CI		I	I
Entering the approved loan application into the Bank's accounting and operational system	R	A				
Approval notification	R	A	I		I	I

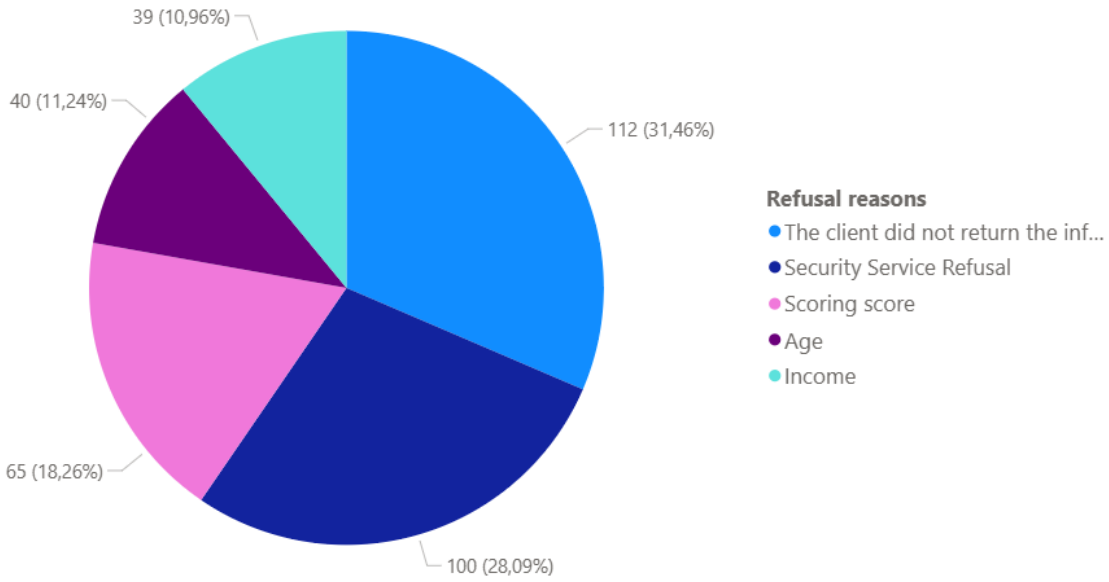
2.4. Process metrics

Metric	Standard indicator	Actual indicator
Time to execute one process instance	Verifier: 15 minutes per 1 application (excluding time for documentation revisions) Underwriting service: 30 minutes Security service: 60 minutes Total: 105 minutes	Verifier: 7 minutes per 1 application (excluding time for documentation revisions) Underwriting service: 12 minutes Security service: 34 minutes Total: 53 minutes (average value)
Number of executed process instances per day	150 loan applications/day	≈ 200 loan applications/day (adjusted for seasonal peaks)
Cost of man-hours for one process instance	Total cost of man-hours for one process instance: $10	Verifier – $0.53 Underwriting service – $0.91 Security service – $3.09
% of approved applications	95	10 (from the selected data sample)

The logs of the Automated Information System, in which the data verification process is carried out, were analyzed. Below is the conversion of the process stages (200 copies)



A diagram of the distribution of reasons for refusals to clients in lending is also presented



3. Identified problems and bottlenecks

3.1. Description of problem areas

1. Lack of performance monitoring systems. Lack of a system for recording employee errors

2. Lack of a system for transmitting information when an employee is absent from the site (the employee is on vacation/sick leave/quit)

3. Process bottlenecks:

Bottleneck	Description
Request for missing information	17.5% of all requests are rejected due to the fact that the client does not provide the missing information
Request for revision of documentation	41% of all requests are sent for revision of the documentation provided by the client. Of these applications, 35% are rejected because the client did not provide the information required for completion

4. Main reasons for loan refusal:

Reason for refusal	Description
The client did not provide the necessary information	31.46% of all rejected applications
Security service failure	28.09% of all rejected applications
Low scoring score	18.26% of all rejected applications

3.2. Causes of problems

Problem	Reasons
Lack of execution monitoring systems. Lack of a system for recording employee errors	Heavy workload of managers who do not have time for additional checks at the verification stage. Lack of strict regulation of the verification process by regulators, so the Bank establishes the order of the process and control procedures independently. In this case, control procedures were excluded.
Lack of a system for transmitting information when an employee is absent from the site (the employee is on vacation/sick leave/quit)	Existing banking communication and electronic document management tools do not allow (are not convenient to use) to transmit current information on the process.
17.5% of all applications are rejected due to the fact that the client does not provide the missing information	Presumably, this may be due to the complexity of the information submission procedure, or the inefficiency of the client managers. Additional analysis is required. It may be necessary to change the UI/UX of the web application.
41% of all applications are sent for revision of the documentation provided by the client. Of these applications, 35% are rejected due to the fact that the client did not provide the information necessary for revision.	Presumably, this may be due to the complexity of the procedure for submitting information and processing the loan application, or the inefficiency of the client managers. Additional analysis is required.
High percentage of security service refusals and due to a low scoring score.	Additional analysis is required to compare possible lost profits and inherent risks. Additional analysis of the client base and the offered lending products is required.

4. Recommendations for process improvement

4.1. Possible solutions

1. Automation of routine tasks using artificial intelligence tools.

To automate the verifier's tasks, it is possible to propose implementing RPA. Since the main advantage of RPA is interaction with the GUI, using this technology seems to be the best option.

Stage	Description	Contractor
Checking the completeness of the provided documentation	The robot is triggered when a request appears. The robot checks the application for the required documents.	RPA
Request for missing information	If the documentation is insufficient, the robot sends an automatically generated letter (a pre-defined template) to the client. When information is provided, the robot makes a second check	RPA
Checking documents for compliance with requirements	The robot (using OCR and ML technologies) determines whether the provided documents comply with the requirements of the Bank and regulators.	RPA
Request for revision of documentation	If necessary, the robot sends an automatically generated letter (a pre-defined template) to the client. When information is provided, the robot makes a second check verification.	RPA
Client verification	Without RPA implementation	Underwriting service, Security service
Notification of refusal	In case of refusal, the robot sends an automatically generated letter (pre-defined template) to the client.	RPA
Entering the approved loan application into the Bank's accounting and operational system	If the application is approved, the robot transfers the necessary data from the client documentation, conclusions of the security and underwriting services, and other banking sources to the Bank's accounting and operational system.	RPA
Approval Notification	If the loan is approved, the robot sends an automatically generated letter (pre-defined template) to the client.	RPA

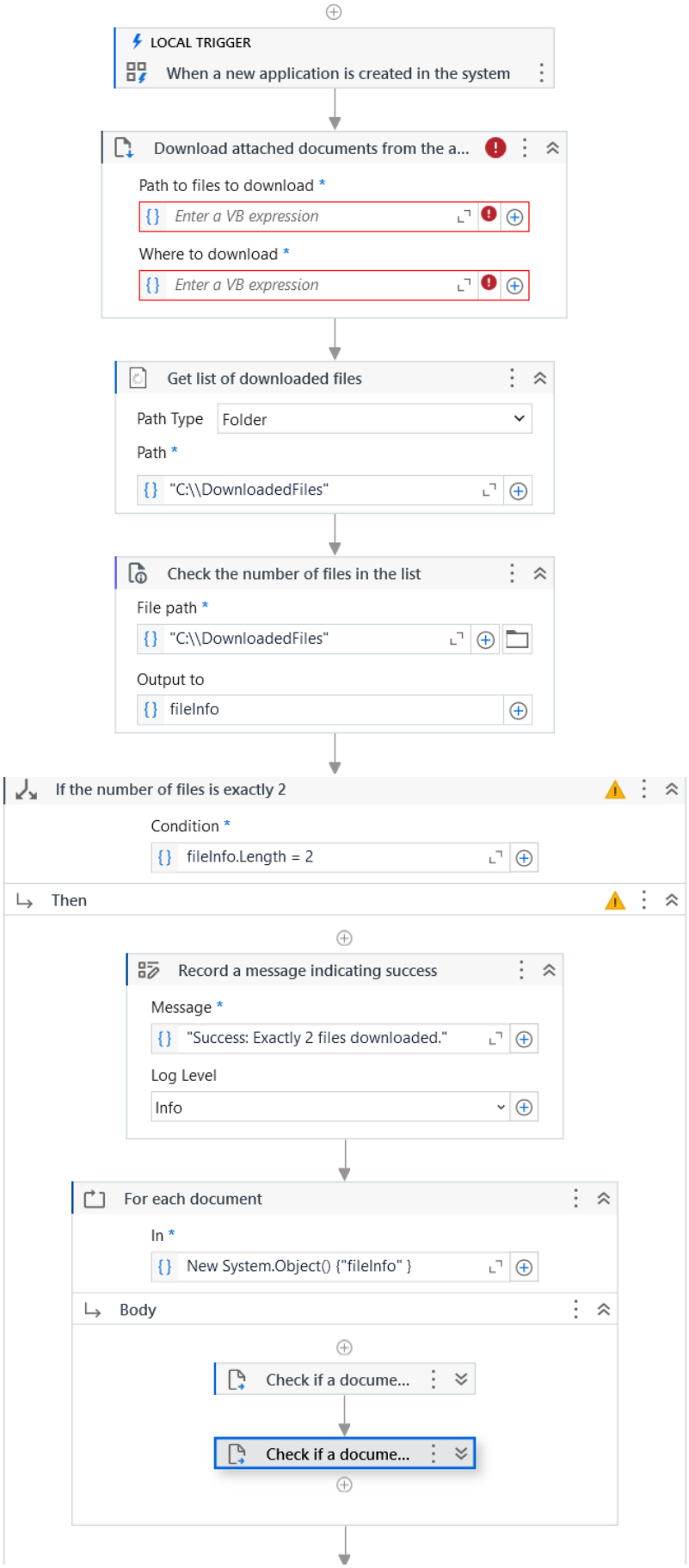
This will free up verifiers from the process completely.

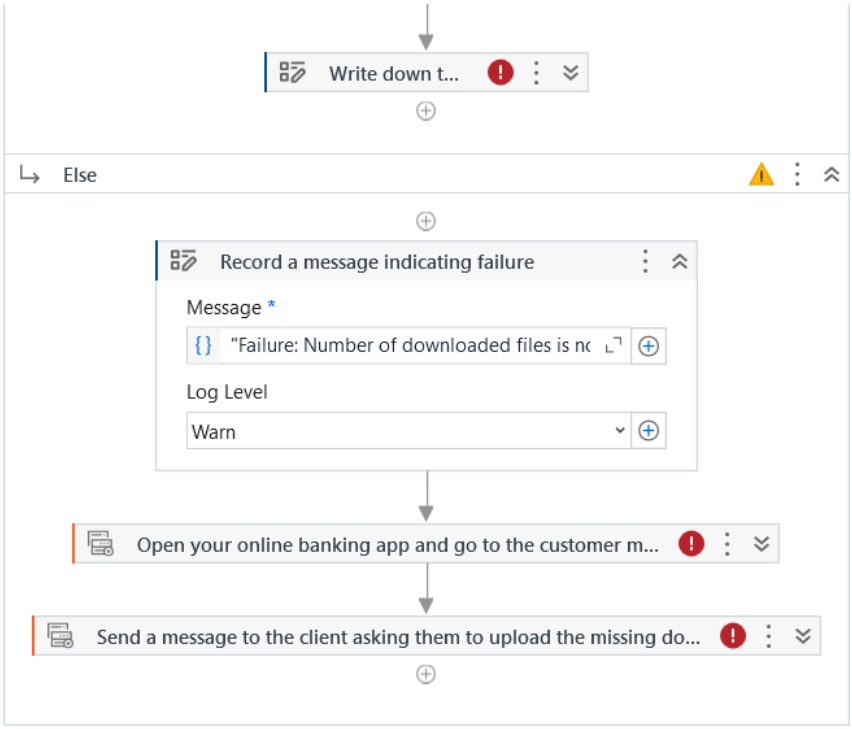
Below is an example of automation of three stages (Checking the completeness of the provided documentation → Requesting missing information → Checking documents for compliance with requirements) using RPA (UiPath).

A new approach to process management may look like this:

- RPA is orchestrated using Camunda or another BPM system (PEGA, Business Studio)
- Information on completed operations is logged for subsequent analysis and building predictive models
- If changes occur in the process, they are entered into the BPM system and the RPA behavior algorithm

- The effectiveness of the process and its changes are assessed in the BPM system





2. Additional optimization activities (e.g., security service and underwriting service) require additional analysis.

4.2. Expected results

Expected result	Comment
Reduction in time to process 1 request	On average, a verifier spends 7 minutes to process 1 request. With the implementation of RPA, the execution of 1 request (depending on the provided capacities) will be on average 10 seconds. Thus, the time savings will be 5300%.
Costs for processing 1 request	On average, the cost of one instance of the process is $4.53. The cost of one day of work (200 requests/day) is $906. To automate this process (using UiPath, without involving internal specialists), the Bank will need (cost data is the average for the market): • RPA solution development: $15,000 (one-time) • RPA licenses (1 unattended bot + Studio): $12,000 per year • Technical support: $3,000 per year → Total for the first year: $30,000; for subsequent years — $15,000 per year • The efficiency of the process and its changes are assessed in the BPM system Thus, the cost of one day of RPA operation (for the first year) will be - $120. This does not take into account the additional benefits of increased productivity and scaling the use of RPA solutions in other Bank processes. Savings after automation of this process will be: $786 per day. Costs will decrease by 86.8%.

Expected result	Comment
Logging of all robot actions	Since all robot actions are recorded in the log, this data can be used for further analysis, establishing process efficiency metrics and process improvement, which is impossible to do now without a monitoring system.

4.3. Potential implementation risks

Possible risk	Risk mitigation measures
Integration issues (risk of RPA conflict with other Bank systems)	1. Determine which systems and databases RPA will interact with, what data to use 2. Determine integration capabilities (API, interaction via GUI) 3. Determine work scenarios in case of RPA failures
Employee resistance	1. Determine which staff may be cut 2. Determine the possibilities of transferring employees to new tasks, retraining or upgrading their skills
Insufficient control after RPA implementation	1. Create a monitoring system for the new process. Implement KPI 2. At the first stages of implementation, use the human-in-the-loop model, when the robot's actions are approved by an expert employee. Within a few months of monitoring, most of the exception situations that need to be included in the RPA algorithm will be processed
Legal restrictions when using RPA technology	1. Check the algorithm's compliance with the requirements of personal data legislation 2. Include RPA in the register of personal data processing tools in the Bank 3. Update internal documents (LLA, IRD) 4. Conduct a security audit after implementation 5. Train employees to interact with RPA

4.4. Implementation plan

In this case, the Bank already has a Process Optimization Office, which is engaged in, among other things, the implementation of AI tools to improve process efficiency. Thus, the Process Optimization Office acts as the executor in this implementation project.

Proposed stages:

1. Identification of stakeholders (process owner, process managers, verifiers and other Bank employees)
2. Calculation of Cost-Benefit analysis/ROI based on the results of the process analysis.
3. Description of the TO-BE process using RPA technology. Collection and formalization of requirements for the RPA scenario.
4. Designing a test instance of the process using RPA technology.
5. Testing on a pilot group (a limited number of loan applications) and improving the process instance.
6. Assessing the transformation of the personnel and preparing new roles for employees. Training/transferring employees involved in the process.
7. Full-scale implementation of RPA in the process with a complete replacement of employee functionality. Creation of documentation (regulations/procedures/instructions).
8. Assessing the effectiveness of the implementation within 2-4 weeks after implementation, recording the first results.

This implementation project can take from 2 weeks to 1 month. The process owner and the Process Optimization Office are appointed as those responsible for the project.