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Methods for assessing digital maturity in banking during digital transformation

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ORIGINAL ARTICLE

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Abstract. The article discusses methods for assessing digital maturity in the banking sector. This digital transformation implying the need for prioritisation and timely assessment of the effectiveness of implemented initiatives. The research analyses existing maturity models such as MIT CISR, Gartner, Digital Quotient from McKinsey and Digital Acceleration Index from BCG, KPMG. The author dwells on the models main advantages and limitations in terms of application in CIS banks with significant restrictions in access to the talent market, a large amount of legacy IT systems, and significant inertia the scale of the organisation. The research presents the author's methodology adapted to the needs of banking institutions in the CIS region. This methodology covers a comprehensive assessment of key areas, including the maturity of IT and DevOps processes, the effectiveness of Agile methodologies, HR indicators such as staff turnover and the speed of adaptation of new employees, business metrics, including indicators of commercial efficiency, customer experience, and internal operational efficiency. The proposed approach includes both quantitative and qualitative assessment methods. Quantitative methods are based on data from internal banking systems such as project management systems, HR systems, automated dashboards from various IT systems of the bank, etc. Qualitative methods include expert assessments, anonymous employee surveys, and industrial benchmarking of competitors. The article describes the stages of implementing the methodology, starting from planning and data collection to calibrating the results and using them to form a transformational roadmap. The application of the methodology in a number of CIS banks over the past 5 years has demonstrated its effectiveness in increasing transparency in managing digital initiatives and accelerating the achievement of strategic goals. The results of the study emphasise the importance of a systematic approach to managing digital maturity and adapting global models to the specifics of the local market.

Keywords: agile maturity; banking sector; digital transformation; DevOps processes; HR indicators; business metrics; digital maturity; efficiency assessment; process optimisation; customer metrics

JEL codes: M12, M15, O32

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Introduction

Digital transformation requires a comprehensive approach to assessing the digital maturity of an organisation. It concerns with the key stages and functions. Indeed, it allows the company to consistently develop the necessary digital and business capabilities throughout the transformation[1]. Firstly, the assessment of digital maturity makes it possible to identify initial opportunities and critical areas requiring crucial banking sector modernisation. Secondly, regular assessment of digital maturity helps to follow the progress of transformation and make adjustments to the strategy based on the achieved maturity levels [1] in terms of changing market conditions and internal processes. Thirdly, modern IT systems and processes play a critical role for banks. Their stability and flexibility contribute to improving operational efficiency and customer experience [2] and exaggerate of new products to market. By improving business models, digital transformation has a significant impact on the financial results of companies [3]. For the CIS banking sector, digital transformation has become a key element of competitiveness, as investments in digital technologies allow banks to adapt to modern market conditions and offer innovative solutions [4]. These conclusions are confirmed by the opinions of top managers of the banking sector of the CIS countries. They implemented digital and agile transformations in 2019-2024. It emphasise the importance of continuous maturity

[1] *Deloitte. (2021). The digital maturity model and digital turns. Deloitte Insights. URL: https://www2.deloitte.com (Accessed 01.10.2024)*

monitoring for successful change management.

There are several recognised models for assessing digital maturity on the market, each has its own advantages and disadvantages. It is important to consider their applicability in the context of the CIS banking sector:

1. The MIT CISR model assessed the maturity of a company in four main aspects: strategy, organisation, processes, and technologies [5]. Although the model covers important elements, its implementation is potentially challenging and resource-intensive for banks with limited capacity, especially in CIS countries.

2. The Gartner model includes five dimensions: strategy, organisation, operations, customer experience, and technology[2], focusing on customer experience. It makes it useful for companies focused on customer service. However, for CIS banks, the model may be overly adapted to global corporate initiatives and require significant changes in organisational culture and management.

3. McKinsey's Digital Quotient (DQ) focuses on cultural change and leadership [6] emphasising the importance of talent and digital thinking. The model may be useful for large banks. However, its implementation in organisations with a conservative corporate culture can cause difficulties and require significant efforts in managing transformation.

4. BCG's Digital Acceleration Index (DAI) assesses 42 categories, helping banks focus on the technological and human aspects of transformation[3]. Nevertheless, the complexity of the model and its high data requirements may make it difficult to apply it in CIS banks because of the legacy systems prevailing and a low level of digitalisation.

5. KPMG offers a comprehensive model with an assessment of six areas: strategy, organisation, customer experience, operations, technology, and analytics[4]. Although this model is universal and concerns with all aspects of business, for CIS banks its complexity and focus on global strategies can become a serious obstacle, especially in conditions of local constraints and the existing legacy infrastructure.

The purpose of this article is to present the author's methodology for assessing digital maturity, adapted to the specific needs of the banking sector of the CIS countries. The methodology is based on practical experience in implementing digital transformations with an emphasis on applied aspects such as processes and technologies, in terms of the current level of digitalisation and the volume of legacy systems in the company. The methodology considers organisational and regulatory constraints specific to the regional banking sector. It makes it realistic and applicable for assessing and managing digital transformations. This methodology will be described in detail in the article and will offer optimal solutions for regional banking organisations.

Methods

The methodology presented in the article is an author's development adapted to the specifics of large organisations in the banking sector of the CIS countries actively involved in digital transformation. Over the past five years, this system has been tested and successfully implemented in a number of leading regional banks. The application of the methodology made it possible to systematise the approach to monitoring key aspects of transformation, ensuring transparency and manageability of changes at all levels of the organisation.

Quantitative and qualitative methods are used to assess digital maturity: These approaches make it possible to comprehensively assess both objective indicators and subjective aspects of organisational processes.

Quantitative methods include:

– Analysis of data from internal IT and HR systems. They provide key metrics of productivity, staff turnover, and project deadlines.

– Automated reports and dashboards provide real-time monitoring of process parameters.

– Statistical analysis of data such as Time-to-Market and average task completion time (Lead Time).

[2] *Gartner (2023). Creating a high-impact customer experience strategy. URL: https://www.gartner.com/en/marketing/research/creating-a-high-impact-customer-experience-strategy (Accessed 01.10.2024).*

[3] *BCG. (2021). The Digital Acceleration Index (DAI). BCG Report. URL: https://www.bcg.com/capabilities/digital-technology-data/digital-maturity (Accessed 01.10.2024).*

[4] *KPMG. (2023). Transformation of operations and technologies. KPMG Insights. URL: https://assets.kpmg.com (Accessed 01.10.2024).*

Qualitative methods:

– Expert assessments through surveys of key employees at the level of the team, department, and the entire organization.

– Anonymous surveys and interviews with employees to assess their level of engagement and satisfaction.

– Benchmarking using data on similar organisations and their maturity levels.

The proposed methodology for assessing digital maturity includes three key stages: planning, data collection, and calibration. These stages provide a consistent and systematic approach to a comprehensive assessment of digital maturity at the level of the entire company or its individual divisions.

Assessments are conducted at team, departmental and organisation-wide levels and the results are then aggregated to present a single picture to senior management. The data obtained is used to update the transformation roadmap at least once a quarter.

Below there is a description of the goals and key activities at each stage.

1. The planning stage

At the planning stage, the assessment perimeter is determined and a detailed action plan is developed to analyse digital maturity. This stage provides a clear understanding of the transformation goals, business priorities and data sources that will be used during the assessment.

The key activities of the stage include:

– Defining the goals and priorities of transformation. Strategic goals and key areas of change are being explored.

– Interviews with key decision makers and mapping of problem areas. It helps to identify the main obstacles to transformation.

– Defining a list of systems and data sources. It is important to determine exactly which information systems and external and internal data sources will be used to obtain an objective picture of digital maturity.

– Identification of performers for interviews and data collection. A list of key employees participating in the assessment process and providing information about the current state of digital processes is formed.

– Establishing a roadmap for the assessment process with key milestones and leaders. To ensure the success of the assessment, a roadmap with clear deadlines and the appointment of responsible persons is developed. It contributes to transparency and controllability of the process.

2. The data collection stage

The data collection stage focuses on obtaining, analysing, and structuring the information necessary for a comprehensive assessment of the company's digital maturity. Its main goal is to provide an objective and comprehensive analysis of the state of digital processes and infrastructure.

The key activities of the stage include:

– Interviews with key performers and monitoring their work. Problems are identified and the current state of the processes is analysed. Interviews with employees are conducted to identify problems and analyse the current state of digital processes.

– Assessment of IT systems, code, product artifacts, and documentation. Analysis of existing IT systems and their compliance with the best practices of development and digital maturity.

– Collecting HR data and conducting anonymous surveys. It includes an analysis of employee turnover metrics, vacancy closing rates, employee surveys to assess their satisfaction level.

– The analysis of the organisational structure and goal-setting tools. The analysis of the current organisational structure and the tools used to set goals and monitor their achievement is conducted.

– Collecting statistics on production processes. Assessment of productivity and efficiency of technological processes, including the speed of product deployment and the frequency of releases.

3. Calibration stage

At the calibration stage, the data obtained is analysed and discussed with management. It allows ones to synchronise priorities and adjust the transformation strategy.

The main tasks of the stage include:

– Systematisation and visualisation of data. For simplifying data interpretation, the results are presented

in the form of reports and graphs.

– Argumentation of the priorities of problem areas using industrial benchmarks. Based on benchmarks, key problem areas are identified and their importance for achieving the company's strategic goals is justified.

– Development of a prioritisation plan for problem areas. A plan to prioritise problems and initiatives aimed at eliminating identified inconsistencies is formed.

– Facilitating discussions with the LPR and fixing decisions. Discussions with managers to make final decisions on adjusting the transformation strategy are held.

– Preparation of the final report. The final result is the preparation of a report containing the results of the assessment, problem areas and an action plan to eliminate them.

Data collection and structuring is provided in accordance with the author's methodology. It describes the key areas of analysis, methods of collecting information, and ways to systematise it for further discussion.

The methodology concerns with six key areas of assessment:

1. Agile maturity

Agile maturity plays a key role in increasing the flexibility and adaptability of companies in the face of dynamic market changes. In the CIS countries, this approach becomes the basis of digital transformation [7], contributing to the optimisation of processes at all levels of the organisation. The use of Agile methodologies contributes to the formation of more innovative solutions focused on customers. The constant development and improvement of customer products allows banks to demonstrate a deep understanding of the needs of their audience[5].

Assessment areas:

– The effectiveness of key product roles: The qualifications of product owners, architects, and department leaders and their contribution to the success of products are assessed. The analysis examines architectural descriptions, road maps, and a metric tree. Additionally, interactions between roles are explored to identify potential conflicts.

– Team Ceremonies: The frequency and effectiveness of key Agile events (retrospectives, planning, strategic updates and their contribution to achieving team goals are analysed.

– The goal setting process: An assessment of the cascading of goals from the company's strategy to the goals of individual teams is conducted. The assessment is based on the following criteria:

– Realistic goals based on the available resources of the team.

– The ambition of the goals compared to the benchmarks of competitors.

– Alignment with corporate strategy through cascading goals from the bank level to the team level.

– The presence of cascading goals from strategy to the team level.

– Completeness of goals, implying the presence of goals for commercial results, customer metrics, efficiency of internal processes, IT and HR indicators.

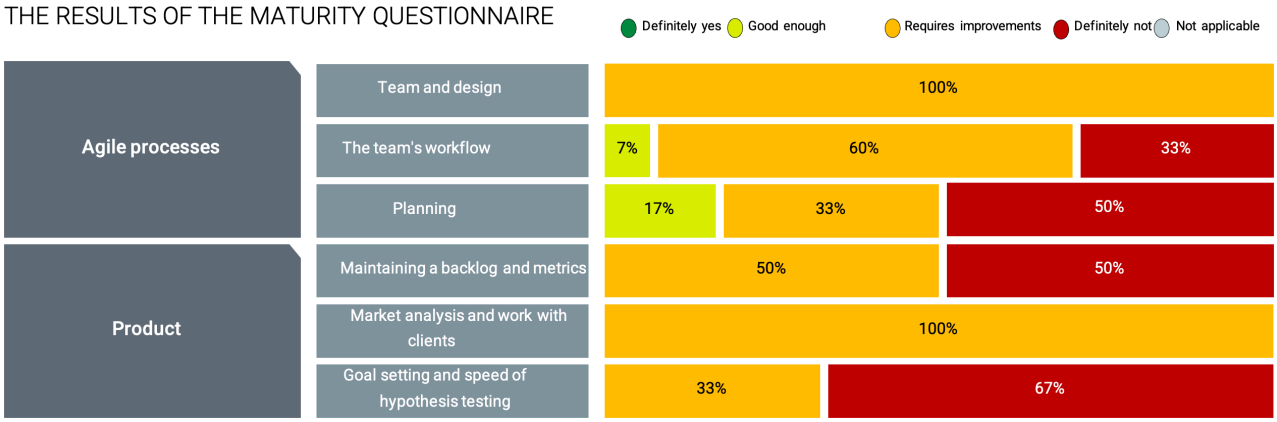

Figure 1. Example of expert survey results on agile maturity for one of the bank's departments
Source: composed by the author as part of a transformation project at a bank in Uzbekistan, 2024

[5] *Keita, B. (2020). Why Agile is extremely important for the banking sector. Invensis Learning Blog. URL: https://www.invensislearning.com/blog/agile-is-essential-for-banking/ (Accessed 01.10.2024).*

Expert surveys, goal-setting tools (for example, the use of the OKR framework), analysis of production artifacts of Agile events and their impact on productivity are used for assessment.

2. Team productivity

Team productivity assessment is a key element in managing digital transformation, especially in the face of fierce competition and the need to bring products to market quickly. To achieve this goal, quantitative metrics are used to objectively assess the results of team work and make informed management decisions. The methodology includes the assessment of the following basic metrics:

– The speed of task completion. Task completion speed is assessed based on data from trackers (for example, Jira, Trello, ServiceNow). The analysis includes a study of the task completion time, the state of the backlog and the processes of their formulation to identify the causes of delays and optimisation opportunities.

– The percentage of completion of scheduled tasks in the period (sprint). The percentage of tasks completed in the sprint is assessed based on data from the task trackers. The analysis allows ones to review the planning of sprints and quarters to clarify goals and priorities.

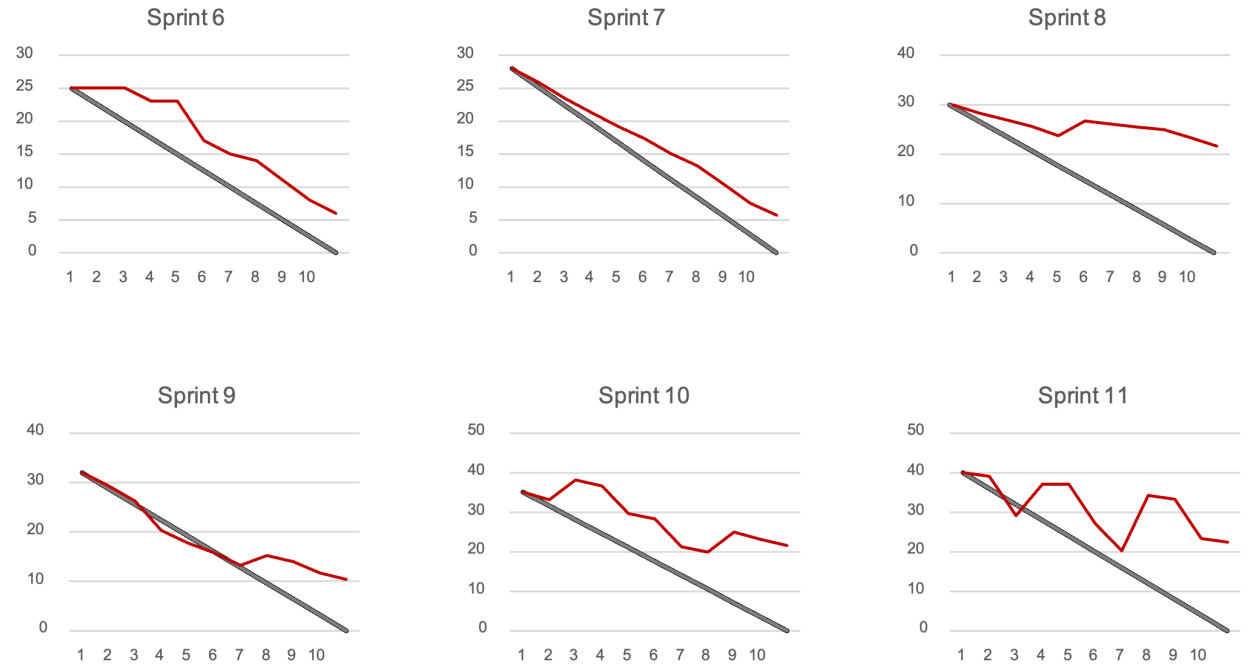

Figure 2. Example of creating automated reports in Jira to analyze task completion rates in sprints
Source: composed by the author as part of a digital transformation project at a bank in the Republic of Armenia, 2023

– The average time from the idea to the start of implementation (Definition of Ready). The average time from idea to implementation is assessed by analysing data from task trackers. The factors influencing the duration of training and optimisation ways accelerating the team's response to new requirements are being investigated.

– The average time to deploy code to a productive environment. The average code deployment time is assessed using data from CI/CD systems (for example, Jenkins, GitLab). The analysis helps to identify bottlenecks and optimise DevOps processes by automating pipelines.

– The frequency of releases in a productive environment. The frequency of releases is assessed based on data from task trackers. The analysis identifies the causes of delays and suggests ways to optimise release processes.

– Average incident response time. The average incident response time is analysed using data from IT systems (for example, ServiceNow). Incidents are prioritised, SLAs are set, and initiatives are being implemented to speed up the response.

3. IT and DevOps

A qualitative assessment of the maturity of IT and DevOps processes is a key element of the overall digital maturity of an organisation, especially in the banking sector. In modern conditions, the maturity of IT

systems is critically important to ensure stable and flexible operation. It directly affects the competitiveness of banks. The high criticality of the IT infrastructure in the banking sector is due to the growing share of digital products and channels in the banks' portfolio. Without mature IT and DevOps processes, successful digital transformation is impossible. These areas provide stability, speed and flexibility in the development and operation of new solutions [8]. IT and DevOps are the foundation for automation, digital services, and innovative technological solutions.

Figure 3. Example of the proposed approach to measuring metrics and assigning responsibility for addressing problem areas

Source: composed by the author as part of the digital maturity assessment project at a bank in Azerbaijan, 2019-2020

The assessment of IT and DevOps processes includes many parameters that allow ones to determine the level of maturity and the ability of a company to effectively manage its technological resources. Below there are the six most significant areas for assessment:

– Availability of key IT services. The assessment is based on regular monitoring of the availability of key systems and services, analysis of downtime using monitoring systems (for example, Zabbix, Nagios, AppDynamics). The degree of stability of the IT infrastructure and the ability of the system to ensure uninterrupted operation are revealed. In the banking sector, the availability of services is critical, as downtime can cause significant financial losses and reduced customer satisfaction.

– Continuous Integration. Continuous integration is assessed based on data from CI systems (for example, Jenkins). The analysis covers the frequency of builds, their success, and automated testing. Two significant DevOps metrics are cycle time and execution time. The cycle time is the period that begins from the beginning of the sale until the moment of receipt of the first income. The execution time is the period from the time of a request for a software or service to its completion. Continuous integration allows ones to quickly make changes to the code with immediate testing and error detection. It speeds up the development process and reduces the number of defects. This is especially important in the banking sector, where the requirements for the quality and security of the code are extremely high.

– Automation of testing. Test automation is assessed by the proportion of automated tests, their frequency and effectiveness. It speeds up the verification of new versions, increases the speed of development, and reduces the risk of errors.

– The percentage of code coverage by modular and integration autotests. The percentage of code coverage by autotests is measured using SonarQube and JaCoCo. A high level of coverage indicates the maturity of

testing and helps to quickly identify defects, minimising risks to the banking environment.

– The release pipeline. The release pipeline is assessed by the speed and frequency of releases, as well as the deployment time. This automated chain of processes accelerates the release of new versions and supports reliable operation using DevOps practices [9]. In the banking sector, this ensures the stability and security of releases, reducing the time to market new products and services.

– Test data management. The management of test data is assessed by the processes of its generation, updating, and use in test environments. The analysis includes Informatica or IBM InfoSphere. For the banking sector, test data management plays a critical role in ensuring high-quality tests and rapid deployment of updates.

– Information security. The maturity of information security is assessed using reports from Splunk or IBM QRadar. The frequency of updates, the number of incidents with data leaks, and the response time to them are analysed. It helps to identify the vulnerabilities.

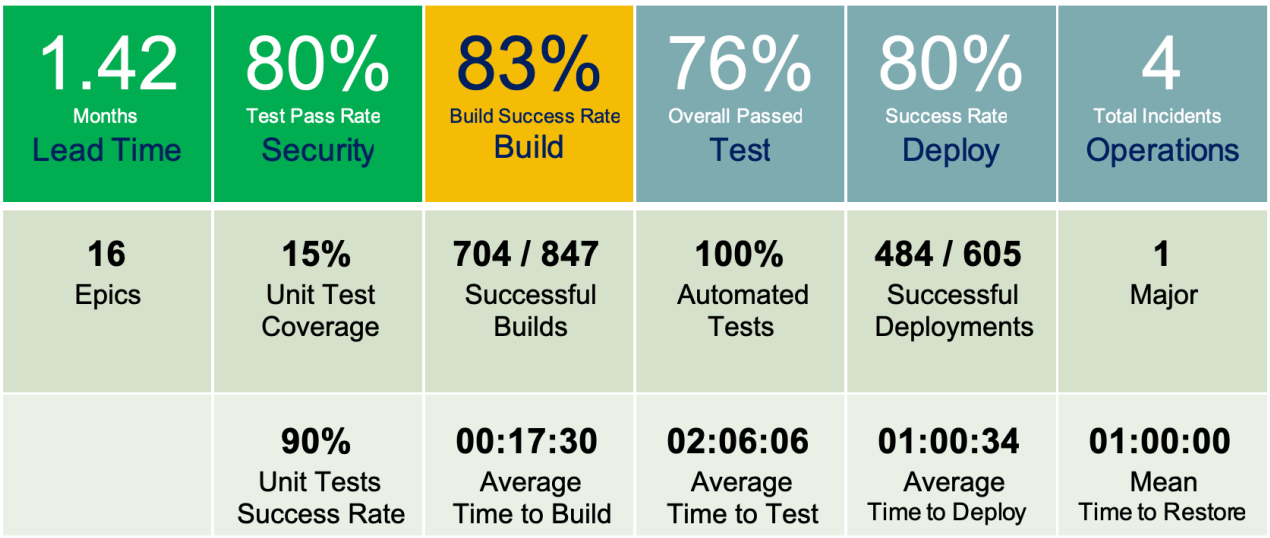

Figure 4. Example of an automated dashboard for displaying key measurable IT and DevOps metrics of a department

Source: composed by the author as part of a digital transformation project at a bank in the Republic of Armenia, 2023

4. HR indicators

The maturity of HR processes is critically important for the company's adaptation to the labour market, especially in the context of the "war for talent". For banks, competition with digital companies makes it more difficult to attract and retain specialists. It is critically important for banks to have a mature HR system attracting the high-qualified specialists, retaining them, and maintaining a high level of their satisfaction and motivation.

The six key assessment areas included in the methodology are listed below:

– Staff turnover. Staff turnover is assessed through data from HR systems such as SAP SuccessFactors. The analysis includes the frequency of dismissals and the percentage of vacancies. It helps to identify the factors of team instability. In the banking sector, staff turnover is particularly critical. The loss of key specialists can slow down the implementation of important digital initiatives and increase the cost of finding and training new employees.

– The closing time of vacancies in key departments. The time from the moment of opening a vacancy to its successful closure is estimated based on data from HR systems (for example, SAP SuccessFactors or Oracle HCM Cloud). This indicator allows ones to evaluate the effectiveness of the recruitment process and the speed of attracting specialists. Recruitment processes play a key role in digital transformation. The companies from various industries need to attract employees with IT competencies, knowledge, and skills to digitalise their products, services, and processes [10].

– Employees engagement. Employees engagement is assessed through anonymous surveys and analysis

of their participation in company initiatives. In the banking sector there is often a rigid hierarchy. Therefore, maintaining engagement is important to stimulate innovation and team flexibility.

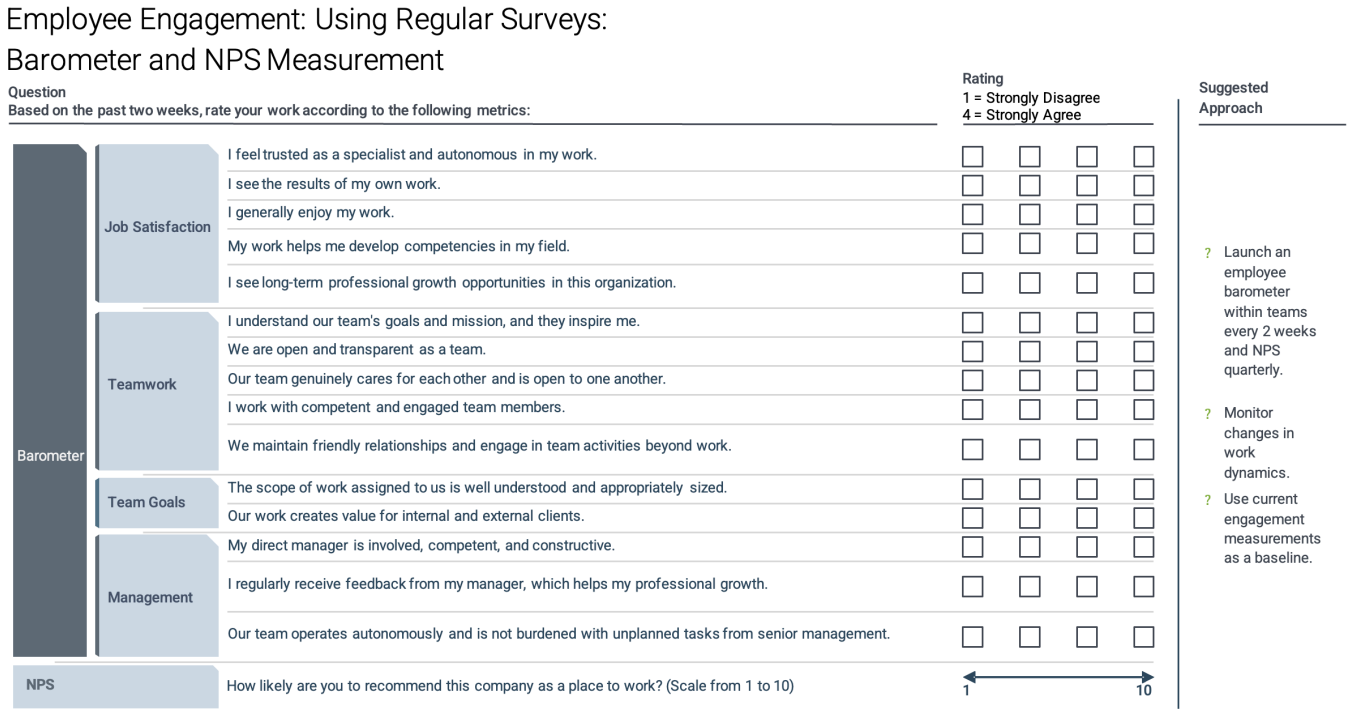

Figure 5. Example of the structure of an anonymous employee engagement survey
Source: composed by the author as part of a digital maturity assessment project at a bank in Azerbaijan, 2019-2020

– Employees satisfaction. Employee preparation is assessed through questionnaires and interviews exploring their attitudes to change and participation in training initiatives to improve digital skills.

– The percentage of internal movements. To assess this indicator, an analysis of HR systems data related to employee movements between different departments within the company is used. A high percentage of internal movements indicates a mature system of career growth and employee development. It reduces staff turnover and increases motivation. In the banking sector, the possibility of career transfers is an important element of the strategy for retaining key specialists.

– The speed of new employees' adaptation. The assessment is based on the analysis of feedback from managers, data from HR systems, and structured surveys of new employees during the probation period. In an environment of high competition for digital talent, the rapid adaptation of employees is a competitive advantage for banks when introducing new digital initiatives.

5. Business metrics

For successful digital transformation, banks should implement the customer metrics for assessing the effectiveness of internal processes.

The methodology offers a structured approach for measuring all three areas:

– Commercial results. Commercial metrics are the basis for assessing business performance. Key indicators include the operational profitability of the client and the cost of his involving. These metrics are important for determining the financial stability of the bank and allow ones to adjust the strategy of the product portfolio to minimise costs and increase revenue from key products.

– Client metrics. Metrics of customer satisfaction and loyalty play a key role in competitive conditions [11]. For example, NPS assesses the willingness of customers to recommend a bank, and CSI evaluates the level of satisfaction at different stages of interaction. These metrics provide banks understaning how well their products and services meet customer expectations, as well as identify service weaknesses. In the context of digital transformation, such indicators are of particular importance for maintaining a competitive advantage.

– Efficiency of internal processes. The efficiency of internal processes is measured through the proportion of digital transactions and the average time of transactions such as deposits and withdrawals. Optimisation

of these processes helps to reduce costs and improve the quality of service.

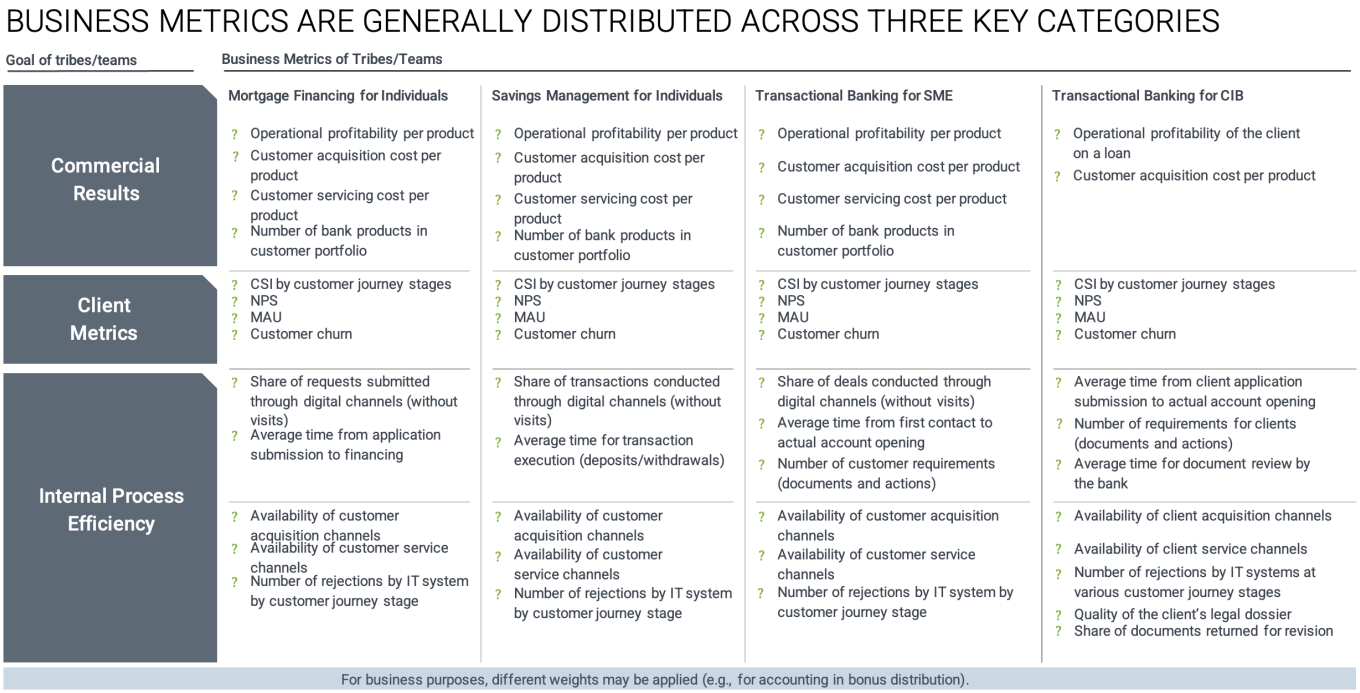

Figure 6. Example of the proposed structure for evaluating business performance indicators based on the evaluation scope

Source: composed by the author as part of a digital maturity assessment project at a bank in Azerbaijan, 2019-2020

Results and Discussion

The application of the technique has shown high efficiency. According to the heads of CIS banks, the implementation of the valuation model has become a key factor in successful digital transformation. During the use of the model, the key advantages are as follows:

1. A reduced set of parameters providing an analysis in conditions of limited resources.
2. Focus on technological and process optimisation to accelerate results and reduce resistance to change.
3. The convenience of structuring and visualisation for quick access to data for decision-making.
4. Integrating the results into a transformational roadmap involving key LPR.
5. Flexible monitoring to review priorities in response to changes.

More than 80% of companies continue to use the methodology for internal evaluations. One of the CIS banks has adapted it to automate data collection at all levels of management. The weighted methodology improved the accuracy of the analysis, and integration with HR and IT systems provided automatic data updates.

Within three years, 60% of the companies have being used this technique at the bank level initiated establishing of similar monitoring systems at the level of individual teams and product groups. It allows ones to follow the results of the transformation in more detail and use the model to generate local roadmaps.

During the assessment of the digital maturity of one of the largest banks in the CIS, the methodology made it possible to identify key gaps in the product development processes. According to the analysis of Time-to-Market metrics, key projects were delayed due to insufficient automation of integration and release processes. It was eliminated through the introduction of DevOps practices.

The analysis of HR indicators demonstrated improved companies understanding of management decisions methodology related to shifting priorities or changing the structure of business units. Employee surveys showed that more than 70% of respondents noted an improvement in awareness of the reasons for management decisions after the implementation of the proposed monitoring system.

Conclusion

The purpose of the research was to describe a methodology for assessing digital maturity adapted for CIS banks. The results of projects completed in 2019-2024 and the results of internal surveys of top management confirmed methodology effectiveness in monitoring and managing key parameters of digital maturity. It provides a structured approach to transformation management, increases transparency of processes, improves interaction and flexibility.

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CONFLICT OF INTEREST

The author declares no conflict of interest.

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