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Digital transformation projects for organisations: main stages and key performance indicators

Abstract. This article describes the main goals and objectives of digital transformation, aimed at modernising and re-engineering business processes in companies in the current economic environment. The authors considered the stages of digital transformation and their impact on transformation in companies, it was revealed that digital transformation proceeds in several unique stages, reflecting the different stages of maturity and organisation of the business entity. In such a case, companies need to carefully assess the level of readiness of business processes for digital transformation, this is due to the fact that such processes are mostly highly innovative and involve high financial investments. The paper considers certain approaches to the economic justification of digital transformation projects in modern companies, namely feasibility study and financial and economic justification. The first approach is a set of research methods and making calculations to assess the economic, financial, technical, environmental and other conditions of investment. In turn, the second method is a description of the economic effect of its implementation, based on financial and/or statistical analysis of the current situation of the project, as well as related to the prediction of economic and other consequences of such projects. The authors have studied various recommendations for the application and analysis of KPIs; the recommendations of the Ministry of Digital Development of Russia, which include 20 KPIs, are widely used. In the concluding part of the article, the authors suggested that half of the indicators could be applied in the system of key performance indicators of the project, while some of them would be irrelevant.

Keywords: digitalization; digital transformation; transformation stages; feasibility study; key performance indicators; financial and economic feasibility of the project; digital technologies

Introduction

Today, the phrases "digital maturity" and "digital transformation" have already become common for research theorists and business practitioners. In the digital economy, business seeks to maximise the use of available resources, build the architecture of business processes in an optimal way, optimise existing business processes, and extract commercial value from the available data on administrative and business activities, competitor and customer activity. Further, they need to build a model of interaction with customers in different segments. In addition, companies need to comply with regulatory requirements. All of this leads to the need for companies to digitise and build digital maturity to eventually reach the stage of digital transformation.

The article is aimed at analysis of modern approaches in the field of economic substantiation of digital transformation of projects. Tasks set in the article:

1. Study of the goals and objectives of ongoing projects on digital transformation.
2. Highlighting of digital transformation stages.
3. Study of approaches to economic substantiation of projects on digital transformation.

The object of this study is digital transformation. The subject is approaches to the economic substantiation of projects on digital transformation.

1. Materials and methods

The issues of digital transformation were raised by Babkina A.V. [1], Bharadwaj A., El Sawy O.A. [2] Hinings B. [3], Prokhorov A., Konik L. [4], Shelepaeva A.H. [5], Salahubova G.S. [6].

The key method of research was at the theoretical level analysis and synthesis, induction and deduction with further formation of current conclusions.

2. Results and discussion

At the time of the study, the scientific and business communities have not come to the same opinion and «official», there is no generally accepted definition of digital transformation, it seems interesting to formulate it. Digital Transformation — the process of changing the organization's management system on fundamentalization and revision of strategy, business models, key performance indicators system, products and architecture of business processes, customer engagement process and corporate culture, aimed at developing digital practices in the organization's activities. Digital transformation can also be seen as the level of digital maturity of an organization. However, since the assessment of digital maturity has to be detailed and customized for each organization, this article will understand the transformation solely from the point of view of the business re-engineering process [7].

Of course, digital transformation projects in each particular company have their own specifics, determined by the initial level of maturity, the desired outcome and external factors (for example, regulatory constraints may prevent digitisation of a particular process on the one hand, and lobby for digitalisation of other processes on the other) [8]. However, each project can be distinguished from the common goals and objectives at least at the top: to change business processes in such a way as to minimize the costs of their implementation, reduce their cost and improve the quality of the output product. Such a goal can be achieved taking into account modern digitalization trends by accomplishing the following tasks:¹

¹ Concept Digital Transformation 2030 [Electronic Resource] // Russian Grids, 2018. URL: https://www.rosseti.ru/investment/Kontseptsiya_Tsifrovaya_transformatsiya_2030.pdf (date of reference 10.03.2022).

1. Increase the company's commitment to new tasks and challenges.
2. Improve the availability of products and increase their availability to different customer segments.
3. Improve the company's efficiency.
4. Development and training of personnel potential companies and employees in necessary digital competencies.
5. Diversifying the company's product portfolio and making it more manageable.
6. Introduction of modern data technologies (AI, BigData, DataLake, dashboards, etc.).
7. Ensure scalability of business processes and business as a whole [9].

Thus, the goals and objectives of digital transformation projects depend on several factors: internal — «reference points» of the company, the readiness of infrastructure and personnel to implement innovations and external regulatory restrictions and relaxations, especially the interaction with customers, counterparties, partners and regulators [10].

Although the goals and objectives of digital transformation projects vary greatly from project to project, they are linked by the desire of owners to optimize their processes and get the best effects for business. As we have already noted, the digital transformation is unique in every company. There is no single approach to defining the stages or phases of digital transformation — a company is free to choose those approaches and practices that do not contradict current legislation and are most relevant to its specifics. A general representation of the stages of digital transformation is depicted (fig. 1).



Figure 1. Steps in the digital transformation of an organization [11]

Each of the steps in the schematic framework has its own set of attributes covering different aspects of the organization's activities.

Step 1 — «Business as usual».

Business model and organization of activities have no changes: all metrics, models, applied technologies, business processes, relationships with clients remain in the state of AS IS. There are no concerns about irrelevance in the digital economy.

Step 2 — «Activation».

The idea arises of the need for digital transformation in the organization. Small projects and changes are experimental. Slight increase in digital literacy of employees. Non-systematic attempts to improve customer relations and streamline business processes.

Step 3 — «Origin».

System approach to «digital experiments», increase of number of perspective directions of development and increase of tolerance to innovations in the whole organization. The emergence of agents of change promoting new approaches, technologies and methodologies [12].

Step 4 — «Formalization».

Formalizing approaches to digital transformation. Emergence of individual projects. One-time precedents for the formation of cross-functional groups, accountability for results and investment.

Step 5 — «Convergence».

Highlighting of special digital transformation commands that correct strategy and operating model. They are based on a business model and customer focus. The organization's new infrastructure takes the form of roles, knowledge, models, business processes and systems to support transformation.

Step 6 — «Improvement».

Digital transformation is becoming an integral part of business. Top management and the strategic cluster are aware of the necessity and usefulness of regular changes. An ecosystem has been built to identify and test innovative digital technologies, industry and market trends, as well as further scaling [13].

Thus, the digital transformation proceeds in several unique stages, reflecting the different stages of maturity and organization of the business entity. Despite the obvious innovation, projects on digital transformation in terms of organization and management do not differ from other projects of the organization. The same holds true for the financial and economic (FEO) and techno-economic (BFS) justifications.

Feasibility Study (BFS) — set of research and production methods for estimating economic, financial, technical, environmental and other investment conditions, with a view to selecting the best option for the project and deciding whether to proceed.²

Financial and economic substantiation of the project (FEO) — a description of the economic effect of its implementation, which is based on the financial and or statistical analysis of the current situation of the project, the forecast of economic and other consequences of the implementation of such decisions. Such a description contains an assessment of the impact (including indirect) of the project implementation on revenues and expenditures of the economic entity's budget³.

The above documents should identify stakeholders of the digital transformation project and assess the degree of its relevance, justification, estimate the costs required to implement the project, reflect its effectiveness for stakeholders and the company as a whole [14]. In addition, investment attractiveness indicators can be calculated. Each company has the right to independently create a list of the surveyed metrics within the framework of the legislation and interests of business and investors.

Such documents are part of the preparatory work for the start of the project. The identified key performance indicators should be checked during and after the project. It is worth noting that a set of such metrics is «symbiosis» metrics established by the state and developed by the business in the process of transformation. Table 1 provides a list of key performance indicators (hereinafter referred to as KPIs) of digital transformation recommended by the Russian Ministry of Digital Development.

Thus, half of the indicators can be applied in the project KPI system. Unsuitable KPIs are related to the evaluation of staff competences, investments in domestic technologies, as well as innovative technologies and interaction with customer groups in various segments. Thus, the assessment of the economic feasibility of the DT project should be carried out using the BFS and FEO, the system of investment indicators and in cooperation with the developed system of metrics, writing regulatory and «business» KPIs.

² Feasibility Study [Electronic resource] // Consultant Plus, 1997–2022. URL: http://www.consultant.ru/law/podborki/tehniko-jekonomicheskoe_obosnovanie_forma/ (date of reference 12.03.2022).

³ Methodological instructions for the preparation of financial and economic justifications [Electronic resource] // Garant, 1990–2022. URL: <https://base.garant.ru/71231150/> (date of reference 12.03.2022).

Table 1

**Assessment of the applicability of the Ministry's
KPI for digital transformation (hereinafter referred to as DT) projects⁴**

KPIs	Section	Status
1. Assessment of the reduction of transaction costs through digital transformation	Efficiency gain	Suitable for economic reasoning (hereinafter referred to as ER) of a DT project
2. Assessment of EBITDA increase through digital transformation	Efficiency gain	Suitable for ER of DT project
3. Measuring the reduction of capital costs through digital transformation	Efficiency gain	Suitable for ER of DT project
4. Estimation of Digital Revenue Growth	Revenue growth	Suitable for ER of DT project
5. Estimate the share of revenue from new business models in the total revenue of the company	Implementation of digital business models	Suitable for ER of DT project
6. Share of revenue in digital channels	Products and consumer interaction	Suitable for ER of DT project
7. Share of digital products/ services in revenue	Products and consumer interaction	Suitable for ER of a DT project
8. Number of active users of digital solutions (individual users)	Products and interaction with consumers	Not suitable for ER of a DT project
9. Number of active members users of digital solutions (companies)	Products and consumer interaction	Not suitable for ER of a DT project
10. Share of digital business processes in feature-supporting	Supporting functions	Not suitable for ER of a DT project
11. Share of cloud server capacity	Digital infrastructure and data	Not suitable for ER of a DT project
12. Number of active API users	Digital infrastructure and data	Not suitable for ER of a DT project
13. Proportion of data domains managed according to the standard	Digital infrastructure and data	Not suitable for ER of a DT project
14. Proportion of managers, professionals and employees with skills in digital transformation	Digital manpower, competencies and culture	Not suitable for ER of a DT project
15. Investment in digital transformation	Investment and a governance model for digital transformation	Suitable for ER of a DT project
16. Share of investment in digital transformation in total investment	Investment and a governance model of digital transformation	Suitable for ER of a DT project
17. Ratio of investment in digital transformation to revenue	Investment and a governance model for digital transformation	Suitable for ER of a DT project
18. Proportion of AI-based digital transformation initiatives as key technology	Investment and a governance model for digital transformation	Not suitable for ER of a DT project
19. Share of Russian software procurement costs	Investment and a governance model for digital transformation	Not suitable for ER of a DT project
20. Increase of investments in domestic decisions in the field of information Technologies	Investment and a governance model for digital transformation	Not suitable for ER of a DT project

Conclusion

The formation of the goals and objectives of DT projects are influenced by several factors: internal, which are determined by the readiness of the company and its personnel to digital

⁴ Methodical Recommendations for the Digital Transformation [Electronic Resource] / Minnumeral, 2020. URL: <https://digital.gov.ru/uploaded/files/metodicheskie-rekomendatsii-po-tsifrovoy-transformatsii-gk.pdf> (date of reference 17.03.2022).

transformation and openness to innovation, as well as external — the regulator's policy towards digital transformation, features of interaction with stakeholders.

To assess the economic viability of the DT project, it is necessary to use the BFS and FEO, it is also necessary to calculate a list of investment indicators, as well as to form a system of unique metrics combining different KPIs.

The successful implementation of digital transformation projects has proved to be a rare event. An in-depth cost-benefit assessment of DT projects is the key to a successful outcome. Consideration of cost principles, control of expected payback period, preliminary assessment of digital maturity and inclusion of a special system of metrics into the economic model will ensure cash savings and help maximize the positive effects of digitalization.

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Основные методы и этапы оценки процессов цифровой трансформации проектов в организациях на современном уровне

Аннотация. В рамках данной статьи описываются основные цели и задачи цифровой трансформации, направленные на модернизацию и реинжиниринг бизнес-процессов в компаниях в современных экономических условиях. Авторами были рассмотрены этапы цифровой трансформации и их влияние на преобразования в компаниях, было выявлено, что цифровая трансформация протекает в несколько уникальных по своей сути этапов, отражающих различные стадии зрелости и организации субъекта хозяйствования. В таком случае, компаниям необходимо тщательно оценивать уровень готовности бизнес-процессов к трансформации с помощью цифровых технологий, это обусловлено тем, что такие процессы в большинстве имеют высокую инновационность и сопряжены с высокими финансовыми вложениями. В работе рассмотрены определенные подходы к экономическому обоснованию проектов цифровой трансформации в современных компаниях, а именно технико-экономическое обоснование и финансово-экономическое обоснование. Первый подход представляет собой совокупность методов исследования и производства расчетов по оценке экономических, финансовых, технических, экологических и других условий инвестирования. В свою очередь второй метод является описанием экономического эффекта от его реализации, основывающемся на финансовом и (или) статистическом анализе текущей ситуации по проекту, а также связан с прогнозированием экономических и иных последствий реализации таких проектов. Авторами были изучены различные рекомендации по применению и анализу ключевых показателей эффективности, широко используемыми являются рекомендации Минцифры России, включающие в себя 20 ключевых показателей эффективности. В завершающей части статьи авторами было выдвинуто предположение о том, что половина показателей может быть применена в системе ключевых показателей эффективности проекта, а часть из них будет не релевантна.

Ключевые слова: цифровизация; цифровая трансформация; этапы трансформации; технико-экономическое обоснование; ключевые показатели эффективности; финансово-экономическое обоснование проекта; цифровые технологии

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