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Board of Directors and ICT Governance: A New Paradigm for Corporate Relations

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ABSTRACT

The following paper's **research subject** is to determine the role of the board of directors of an organization in the framework of information and communication technologies governance (hereinafter — ICT governance) at a company's digital transformation stage. The article **aims** to study and identify trends and features of ICT governance, taking Russian and foreign experience into account. **Methods** of generalization, synthesis, comparative analysis of up-to-date approaches are used in the paper to outline the role of the board of directors during a period of dynamic technological changes in the company and factors increasing its ICT governance effectiveness. The author summarizes and analyzes the ICT governance specifics, including the features of its application, the necessary organizational changes, as well as the main tasks of the board of directors in this domain, which determines the scientific **novelty** of the study. The effectiveness of ICT governance exercised by the board of directors is considered by the author as an assessment criterion of a company's readiness for digital transformation and a necessary tool to ensure that members of the boards of directors perform their duties. It is **concluded** that it depends on many factors and requires considering various organization specifics and its development strategy on a case-by-case basis. The research results may be relevant for the Russian corporate practice and further studies in this area.

Keywords: digital economy; corporate governance; ICT governance; board of directors; board of directors' meeting agenda

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ORIGINAL PAPER

Совет директоров организации и корпоративное управление информационно-коммуникационными технологиями: новая парадигма корпоративных отношений

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АННОТАЦИЯ

Предметом исследования является определение роли совета директоров организации в рамках корпоративного управления информационно-коммуникационными технологиями (далее — корпоративное управление ИКТ) на этапе ее цифровой трансформации. **Цель статьи** — исследование и выявление тенденций и специфики такого управления с учетом российского и зарубежного опыта. В работе используются **методы** обобщения, синтеза, сравнительного анализа подходов к определению роли совета директоров в период активных технологических изменений в организации и факторов, повышающих эффективность осуществления корпоративного управления ИКТ. Автором обобщена и проанализирована специфика такого управления, включая особенности его применения, необходимые организационные изменения, а также основные задачи совета директоров в этой области, что определяет **научную новизну** исследования. Эффективность корпоративного управления ИКТ советом директоров рассматривается автором в качестве критерия оценки готовности организации к цифровой трансформации и необходимого инструмента обеспечения исполнения членами советов директоров своих обязанностей. Делается **вы-**

вод о том, что она зависит от множества факторов и требует учета специфики конкретной организации и стратегии ее развития. Результаты работы могут быть актуальны для российской корпоративной практики и дальнейших научных исследований в данной области.

Ключевые слова: цифровая экономика; корпоративное управление; корпоративное управление информационно-коммуникационными технологиями; совет директоров; повестка дня заседаний совета директоров

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INTRODUCTION

Corporate scandals (Enron, WorldCom, etc.) and the bursting of the dot-com bubble in the early 2000s have led to a tightening of corporate governance legislation [1] and a revision of approaches to company governance. The adoption of new control and management standards has also contributed to a subsequent price surge for information and communication technologies (hereinafter — ICT, IT).[1] In 2004, at the beginning of a new legislative requirements introduction to comply with the Sarbanes-Oxley Act, US corporations spent more than 5 billion dollars, including $ 1 billion spent on ICT-related issues [2, p. 717].

Currently, the ICT market (Internet of Things, Big Data, Artificial Intelligence [3], etc.) is one of the most developed sectors of the global economy. In 2021, according to forecasts by Gartner, Inc., global ICT spending will be $ 3.9 trillion (up 6.2% compared to 2020).[2] The active digital transformation of business and society following the beginning of the COVID-19 pandemic in 2020 has reduced the negative impact of the pandemic on the ICT-associated costs (3.2% decrease compared to 2019[3]), proving the key importance of digital initiatives for organizations' success in the digital era. There is noted in the publication "Indicators of the Digital Economy: 2021: Statistical Book" that in 2020 ICT sector in the Russian Federation reached a volume of 2,985 trillion rubles and a growth rate of 103% compared to 2019, with a decrease in the GDP growth rate to 97%. In 2020, the share of households with Internet access increased significantly — 80% (in 2019–76.9%), including broadband — 77% (in 2019–73.6%). Exports of ICT services reached $ 5.9 billion and increased over the previous year (108%). The share of employees in ICT-related industries also increased (12% in 2019) and reached 13% of the Russian total employed population (9.2 million people), with the total number of ICT specialists employed in Russia making up to 2.5% (in 2019–2.3%).[4]

With the ever-growing demand for improving the ICT investment efficiency, ICT governance[5][4] during an organization's digital transformation, being, as a rule, one of the most underdeveloped elements of the corporate governance system, attracts more and more attention from experts [5]. The subject of the analysis in this article is the study of the role of the board of directors in the implementation of ICT governance, the tasks it solves, and the ongoing changes in the organizational structure of organizations during their digital transformation.

BOARD OF DIRECTORS AND ICT GOVERNANCE

It is noted that the difficulties in the digital transformation of an organization include ample factors, e.g., insufficient understanding of what additional value it brings to the organization, the company's unwillingness to integrate ICT into its activities, the issues of adapting the organizational structure to new digital tasks, ensuring a continuous improvement in the quality of business processes, complication of operational activities, ineffective use of data, lack of understanding of the potential volumes of ICT financing, harmo-

[1] In this paper, the terms information and communication technology and information technology are used as synonyms.

[2] Gartner. 2021. Newsroom. Gartner Forecasts Worldwide IT Spending to Grow 6.2% in 2021. URL: https://www.gartner.com/en/newsroom/press-releases/2020–01–25-gartner-forecasts-worldwide-it-spending-to-grow-6-point-2-percent-in-2021 (accessed on 10.03.2021).

[3] Op. cit.

[4] Digital Economy Indicators in the Russian Federation. Data Book. Moscow: HSE University. 2021. URL: https://issek.hse.ru/news/484525255.html (accessed on 19.03.2021).

[5] Within the framework of this study, ICT governance is understood as an integral component of the corporate governance system, the functionality of which is to make decisions in the field of ICT and establish appropriate responsibilities in order to coordinate the business strategy and the ICT strategy of the organization.

nization of business and ICT strategies, data and information confidentiality, human factor, negative user reactions in social networks, etc.[6] [6, 7].

ICT governance of emerging risks by the board of directors becomes an adequate response to ongoing technological changes [8] and necessitates taking into account many factors to form a balanced approach to tackle the issue. First of all, it is aimed at establishing responsibility for the implementation of the organization's business strategy, and its absence exposes the organization to significant risks [9] (operating costs, losses, etc.) [8]. In addition, it allows taking into account the interests of a wide range of stakeholders, including the company's employees, who are directly involved in implementing the digital transformation strategy.

Accenture's 2020 Global Digital Fluency study finds that only 14% of organizations have transitioned to digital maturity. By analogy with language skills, the authors propose using the term "digital fluency" concerning businesses, by which they mean an integrated model determined by the coefficient of technological intelligence of workers, use of digital technologies in business processes and operations, adoption of digital technologies and IT architecture, commitment to digital leadership and culture. Companies demonstrating "digital fluency" experienced a 20% increase in profits 2.7 times more often than other survey participants in the three-year study. That said, technologically advanced businesses are projected to be 5.4 times more likely to receive 20% profit growth over the next three years than their less technologically advanced competitors.[7] Given that digital transformation affects the entire enterprise and involves regular adjustments to the implementation plan, its planning should begin with assessing the organization's readiness for change and an analysis of the ICT benefits for its business model, sustainability, and efficiency. According to recent scholarship, readiness for digital transformation is proposed to be assessed based on the analysis of the operational and business models of the organization, as well as the model of interaction with customers [10]. In turn, the board of directors' governance over this process should ensure systematic implementation of the company's business strategy changes in compliance with approved standards and policies.

It appears that ICT governance exercised by the board of directors, along with innovation and data corporate governance, can be a starting point in assessing a company's digital transformation readiness [10]. However, effective ICT governance requires considering multiple factors. For example, the COBIT 5 methodology identifies seven factors contributing to the exercise of effective governance:

1. Principles, policies, and frameworks.
2. Processes.
3. Organizational structures.
4. Culture, ethics, and behavior.
5. Information.
6. Services, infrastructure, applications.
7. People, skills and competencies [11].

However, current corporate practice shows that boards of directors are not always able to pay due attention to these issues. Moreover, despite significant investments and associated risks, such issues are not a priority topic at board meetings and are most often addressed in the paradigm of traditional corporate governance with an emphasis on compliance and risk issues. The Information Systems Audit and Control Association (hereinafter — ISACA) explains this state of affairs for the following reasons:

- need for more technical knowledge of the subject compared to other items on the agenda;
- considering such issues as detached concerning the company's business;
- the complicacy of the subject.[8]

Statistics show that board members do not always have the necessary technological and professional knowledge and competencies required for executing a company's digital transformation.[9] The 2019 National Corporate Governance Index study indicates that among board members of the 100 Russian largest public companies in terms of capitalization, whose shares are listed on the Moscow Stock Exchange, there are only 3% of experts in the field of ICT, innovation,

[6] Forbes, One CEO Club. Digital transformation: The 5 most common challenges. URL: https://www.forbesindia.com/article/one-ceo-club/digital-transformation-the-5-most-common-challenges/53167/1 (accessed on 03.02.2021).

[7] Accenture. 2020. Honing your digital edge. URL: https://www.accenture.com/_acnmedia/PDF-141/Accenture-Honing-your-Digital-Edge-POV.pdf#zoom=40 (accessed on 04.02.2021).

[8] IT Governance Institute. 2003. Board briefing on IT governance, 2-nd ed. p. 14. URL: https://eventosfehosp.com.br/2017/material/sao_paulo/ti/jose/ITGI–Instrucoes-de-Governanca-de-TI-para-a-Alta-Administracao.pdf (accessed on 05.08.2021).

[9] Deloitte. 2017. Bringing the boardroom's technology gap. URL: https://www2.deloitte.com/insights/us/en/focus/cio-insider-business-insights/bridging-boardroom-technology-gap.html (accessed on 13.05.2021).

and digital technologies, i.e., averagely one specialist per board of directors.[10]

PwC's 2018 survey of board members of Russian enterprises shows that only 7% of respondents are involved in ICT implementation. In other cases, they hold responsibility for the company's management. In addition, 57% of board members meet with the Chief Information Officer (CIO) no more than once or twice a year, which goes against the emerging global practice of holding such meetings regularly. As a recommendation, the survey authors asked board members to improve their ICT knowledge, identify priority technologies and integrate them into the strategic governance process.[11]

Deloitte's data analysis on more than 4,000 US public companies tells that from 2010 to 2016 number of board members with ICT experience was insignificant. Still, the percentage of corporations that have appointed board members specializing in ICT grew from 10% to 17% during this period. However, the figure almost doubles (32%) for the companies with the highest performance. The study concludes that while having an ICT specialist among the board members may not be the only reason beyond the company's improved performance, many scholars have already recognized the benefits of having those experts among the high-rank managers.[12] Thus, the lack of understanding of digital transformation and ICT governance may hinder the board of directors' duty performance [12].

Initially, the placement of ICT experts in the boards of directors has been driven by the need to respond to transformation processes in the economy. Companies have been interested in professionals with ICT leadership experience who could bring a technological mindset to the company. Systematically, they can be grouped into four categories of managers:

1. Digital thinker. A board member who does not have extensive digital experience but has a conceptual understanding of the digital environment; has been a board member or a digital business adviser.

2. Digital disruptor. A board member who is deeply embedded in digital issues and generally has less general management breadth.

3. Digital leader. A board member with significant experience in managing a traditional business, which to some extent mitigates limited experience in the ICT field.

4. Digital transformer. A board member who has participated and succeeded in the digital transformation of traditional businesses; has no digital leadership experience but is competent enough in this area.

As a trend, it is noted that companies prefer to hire digital transformers with expertise in implementing digital transformation strategies, reengineering business processes and data-driven decision-making algorithms, and changing the corporate culture of the organization [13].

It should be noted that a digital board member is not a full-fledged replacement for the rest of the board due to their lack of digital transformation expertise. "Digital" board members may not have the requisite board experience, thus preventing them from contributing to the company's broader activities. It seems that all board members should be more or less knowledgeable about digital transformation and be collectively responsible for the bottom line. This position implies constant training of board members, attracting external experts for joint discussions, investing in tech startups, etc. Experience has shown that the most effective board members are those who are broad-minded, can educate other board members, and articulate how technological and digital change can impact an organization's business strategy [14].

BOARD OF DIRECTORS' MEETING AGENDA DURING THE DIGITAL TRANSFORMATION OF THE ORGANIZATION

As digital transformation becomes an increasingly important tool for maintaining the organizational resilience of enterprises, it becomes critical to ensure that the board agenda is aligned with ongoing technological changes in terms of business strategy and increase of company's competitiveness. Between 2010 and 2015, security-related issues (cybersecurity, data privacy, etc.) were the primary technology topics discussed by boards of directors. A more proactive approach to studying the results of ICT implementation as part of the board of directors' activities could significantly contribute to the

[10] Top Competence. 2019. National Corporate Governance Index. URL: https://corpshark.ru/wp-content/uploads/2019/12/National-CG-Index-2019-TopCompetence.pdf

[11] PwC (2018). Corporate digital governance. Results of a survey of board members of Russian companies. URL: www.pwc.ru/ru/services/corporate-governance/publications/russian-boards-survey-2018.html (accessed on 20.01.2019).

[12] Deloitte. 2017. Bringing the boardroom's technology gap. URL: https://www2.deloitte.com/insights/us/en/focus/cio-insider-business-insights/bridging-boardroom-technology-gap.html (accessed on 13.05.2021).

discussion on technological business opportunities and digital transformation.[13]

To assist organizations in setting priorities in this area, we will highlight the most common topics in this context that can be included in the agenda of board meetings:

- Information Security;
- Data confidentiality;
- Artificial Intelligence;
- Internet of Things;
- Mobile devices;
- Digital platforms;
- Digital business models;
- Cloud services and software rental;
- Audit and compliance in the field of ICT;
- Amount of investment and operating expenses related to ICT;
- Optimization of business processes using ICT [15].

The specified list of topics is not conclusive and should be arranged depending on the company's needs and development strategy.

DETERMINING THE STRATEGIC DEVELOPMENT OF THE ORGANIZATION

Although digital transformation and ICT issues are being increasingly addressed at board meetings, the meeting agenda must not be overwhelmed by technical details. First of all, the board of directors should determine the extent of its influence on the company's strategic development and oversee its implementation.

Given that there is no one-size-fits-all approach to managing digital transformation, Nikolaus Obwegeser, Tomoko Yokoi, Michael Wade, and Tom Voskes highlight 7 key principles for successful digital transformation that businesses can rely on:

1. Inventory and centralization of information on digital initiatives instead of control over them.

2. Decentralization of digital initiatives governance as digital maturity grows.

3. Centralized idea evaluation and prioritization.

4. Making sure that KPIs measure the real impact of digital initiatives on organizational performance.

5. Ensuring data compatibility, technical consistency, and continuous integration of new digital initiatives with existing systems.

6. Categorizing digital initiatives according to the degree of potential value to the company and their feasibility.

7. Evaluation of various scenarios for implementing digital initiatives to achieve a full-scale impact on the company's activities [6].

Harvard Business Review (hereinafter — HBR) differentiates between board participation in ICT discussion and decision-making. The first set of board activities demonstrates how the company relies on the use of ICT to ensure the reliability of its performance. In this case, maintenance and operation of ICT systems become more important than winning the market competition. The board's ICT-related decision-making defines how the company uses ICT to produce new goods and services while quickly responding to customer requests, thus securing its competitive advantage. Both types of board activities usually involve changing the company's business strategy and deepening understanding of various ICT topics at all managerial levels.

Depending on the chosen approach, it is proposed to use the four modes outlining the company's stance on the ICT role in its strategic development: support mode, factory mode, turnaround mode, and strategic mode [8].

Enterprises operating in **support** mode are the least dependent on ICT, as their core function is to support the staff activities, while customers and suppliers do not have access to internal systems. Notably, the 2005 HBR study on the dynamics of the company's development cites Zara, presently one of the world leaders in digital retailing, as an example of shifting from support to strategic mode [16].

In the **factory** mode, businesses are considerably dependent on ICT, and most business systems are connected to the network; however, the company management is still reluctant to advance currently used ICT any further. Therefore, the board of directors and the company's management need to keep abreast of the brand-new technology practices and monitor the market in order to be ready to revitalize their ICT business.

In a **turnaround** mode, companies aim to improve business processes, quality of service delivery, reduce costs and increase their competitiveness in the market by extensive use of ICT [16] As a rule, turnaround mode is transitional for companies implementing comprehensive ICT projects, a junction between factory and strategic modes. The participation of the board of directors in this process is essential and desirable.

[13] Deloitte. 2017. Bringing the boardroom's technology gap. URL: https://www2.deloitte.com/insights/us/en/focus/cio-insider-business-insights/bridging-boardroom-technology-gap.html (accessed on 13.05.2021).

Under the **strategic** mode, businesses need reliable ICT systems and new technologies to maintain and advance their market position and increase the speed and quality of their operations. This endeavor requires much investment in ICT and at least a capable and professional board committee to oversee these activities [8].

Thus, depending on the chosen mode, companies have to independently determine their need for a depth of expertise in ICT and digital transformation in general.

ICT GOVERNANCE FRAMEWORK: A PRACTICAL OVERVIEW

To facilitate effective work of ICT decision-makers in the organization, PwC experts have developed the IT Oversight Framework, which consists of six steps:

1. Assessing the ICT role in the company's activities (state of ICT infrastructure, ICT budget, expected changes from ICT implementation, etc.);
2. Appointing a specialist or managerial body responsible for ICT oversight (board of directors, committee of the board of directors, digital director, etc.);
3. Setting company's ICT priorities;
4. Determining the role of ICT priorities in the company's business strategy;
5. Integrating ICT risks in the company's risk management oversight;
6. Implementing constant monitoring of the company's ICT development [15].

Once a company has identified and agreed on a vision for the steps outlined above, the board of directors can move on to formulating an ICT strategy [18, p. 5–7] and prioritize areas of ICT governance. The IT Governance Institute identifies five main areas of ICT governance within the framework of the activities of the board of directors:

1. ICT strategic alignment — the connection between the company's business and ICT strategy to achieve its strategic goals and objectives;
2. ICT value delivery — optimization of costs and benefits generated by ICT;
3. ICT risk management — solution of protection issues associated with ICT assets, understanding of emerging risks and their management;
4. ICT resource management — optimal investment, use, and distribution of ICT resources (employees, applications, technologies, data, etc.) while serving the company's needs;
5. Performance management — development and monitoring of the implementation of the ICT strategy implementation and provision of ICT services [19].

ICT strategic alignment, ICT resource management, and performance measurement are seen as drivers of these activities, while ICT value delivery and ICT risk management are deemed as their outcomes.[14] The main tasks of the board of directors in each of the aforementioned areas of governance concerning its activities and overall organizational changes are presented in *Table 1*.

A. Parisa, R. Lazar, and V. Dragos note that most organizational models for ICT governance address the areas examined above [21, p. 4]. Therefore, using this approach can help develop, approve, and implement the board of directors' work plan.

CHANGES IN THE ORGANIZATIONAL STRUCTURE OF ORGANIZATIONS: A NECESSITY OR A NEW FASHION?

It should be noted that in the period of digital transformation, all companies exercise ICT governance to a certain extent. The only difference between them is that the companies implementing it more effectively have developed a set of mechanisms (board committees, departments responsible for digital transformation, digital transformation councils, etc.) and created the necessary work conditions relevant to the company's changing business strategy, values, and culture [22, p. 3].

The digital transformation is driving changes in the organizational structure of corporations. As a result, digitally mature companies at the operational level tend to recruit digital transformation (Chief Digital Transformation Officer (CDTO) [23, p. 79] and ICT roles (Chief Information Officer, CIO)[15]) at the operational level (*Table 2*), while at the strategic level, they create specialized committees of the board of directors or entrust this topic to a committee operating under the board of directors.

In addition, advisory boards covering a wide range of digital transformation issues are being increasingly created by many companies [25]. This trend can be ex-

[14] ITGI. 2003. Board Briefing on IT Governance. Rolling Meadows, IL: IT Governance Institute. URL: https://eventosfehosp.com.br/2017/material/sao_paulo/ti/jose/ITGI–Instrucoes-de-Governanca-de-TI-para-a-Alta-Administracao.pdf (accessed on 18.05.2021).

[15] PWC, Strategy& 2017. The 2016 Chief Digital Officer (CDO) Study. Global findings. URL: https://preview.thenewsmarket.com/Previews/PWC/DocumentAssets/476557.pdf (accessed on 08.09.2021).

Table 1

The main tasks of the board of directors in the framework of the ICT governance

Areas of ICT governance	Area of responsibility of the board of directors	
	Task	Structure
ICT strategic alignment	1. Ensuring compliance of the ICT strategy with the company's business strategy. 2. Ensuring that ICT solutions are aligned with the company's business goals. 3. Creation of the company's competitive advantages, ensuring compliance with legal and internal requirements. 4. Monitoring the strategic importance of ICT in the company	6. Creation of the ICT strategy committee of the board of directors (hereinafter — the ICT strategy committee) to oversee ICT (if necessary). 7. Appointment of independent directors to the ICT strategy committee including at least one ICT specialist. The committee chair does not need to be an ICT expert but must demonstrate experience in using ICT in another organization. 8. Observing the interaction of the ICT strategy committee with the audit committee (ensuring that both committees have at least one common member). 9. Ensuring cooperation between the ICT strategy committee and the strategy committee
ICT value delivery	1. Ensuring that the company management implements processes and practices that bring real benefits from introducing ICT for business. 2. Ensuring investment in ICT at the appropriate level. 3. Monitoring investments in ICT to generate profits at the appropriate level. 4. Control over the implementation of ICT plans in accordance with the approved schedule. 5. Ensuring the quality and safety of investments in ICT	6. Establish an ICT Strategy Committee to validate that ICT/Business Architecture delivers maximum benefits from ICT for Business. 7. Ensuring cooperation between the ICT strategy committee and the strategy committee
ICT risk management	1. Making a list of ICT risks. 2. Monitoring the effectiveness of internal control. 3. Control over ICT risk management. 4. Ensuring cooperation between the ICT strategy committee and the audit committee on the main ICT risks	
ICT resource management	1. Understanding the overall software architecture of the company, as well as its ICT asset management strategy. 2. Prioritization of activities and control over resource allocation to ensure effective ICT productivity. 3. A guide to finding resources. 4. Control over the use of the necessary management methods to prevent obsolescence of ICT equipment, software, and systems in operation	5. Establish an ICT Strategy Committee to track ICT investments, prioritize and allocate limited resources. 6. Ensuring cooperation of the ICT strategy committee with the audit committees on investment in core resources
Performance measurement	1. Observing the development of ICT key performance indicators and their monitoring	2. Ensuring cooperation between the ICT strategy committee and the remuneration committee on measuring the company's performance indicators

Source: compiled based on [20].

emplified by the Advisory Council of Shareholders of VTB Bank (PJSC),[16] and the Advanced Technology External Advisory Council of Google [26]. Interestingly, partially for tax incentives for the IT industry in the Russian Federation, some individual Russian companies have begun to reorganize their IT departments as independent subsidiary business entities (Post Digital LLC, MTS Artificial Intelligence Center LLC, Sberbank-Service LLC, Rusatom — digital solutions LLC, etc.) [27].

[16] VTB Bank. Shareholders Consultative Council of VTB Bank PJSC. URL: https://www.vtb.ru/akcionery-i-investory/informaciya-dlya-akcionerov/konsultacionnyj-sovet-akcionerov/ (accessed on 07.08.2021).

Table 2

The selected Russian practice of appointing leaders for digital transformation

Organization	Digital Transformation Leader
PJSC "Aeroflot"	Deputy Director General for Information Technology*
PJSC "Gazprom Neft"	Head of Directorate for Digital Transformation [24]
JSC "Russian Post"	Deputy Director General for Information Technology and Development of Digital Services**
JSC "Russian Railways"	Deputy Director General (issues of digital transformation and information technology)***

Note: * Aeroflot. Organisational structure of Aeroflot PJSC. URL: https://www.aeroflot.ru/media/aflfiles/media/about/structure/structure-ru.jpg (accessed on 07.08.2021).
** Russian Post. The board of JSC Russian Post. URL: https://www.pochta.ru/pravlenie (accessed on 07.08.2021).
*** Russian Railways. Russian Railways Management Board. URL: https://company.rzd.ru/ru/9349/page/105554?id=98&accessible=true (accessed on 07.08.2021).

The expertise in the field of digital transformation of the organization and ICT becomes a priority criterion when appointing candidates to these positions. Corporate and digital competencies and knowledge allow companies better understand and control technology initiatives and emerging opportunities. These factors also contribute to a change in the company's corporate culture and the way it thinks.[17] In this context, it is essential to note the widespread use of the competence-based approach in selecting candidates for filling positions in the field of digital transformation. It is strategically vital that in Russia the same approach is actively employed in public administration.[18] So, at the state level, the need for the formation of civil servants' competencies has been recognized that would allow them to effectively carry out the digital transformation of public administration and effectively resolve issues that arise on the ground. According to the instruction of Russia's Prime Minister,[19] the federal executive bodies have introduced the position of the deputy head of the federal executive authority responsible for digital transformation (or the indicated powers have been entrusted to the current deputy head of the federal executive authority), and professional requirements were established for the candidates applying for these positions.[20]

The role of committees under boards of directors is also changing. According to general practice, they are created to tackle topics that require special expertise and go beyond the scope of the board's usual activities. ICT issues are usually dealt with by an audit committee (less often by a risk committee), whose operations in the Russian Federation under the requirements of the MICEX Stock Exchange[21] for corporate governance of listed organizations[22]

[17] Deloitte. 2017. Bringing the boardroom's technology gap. URL: https://www2.deloitte.com/insights/us/en/focus/cio-insider-business-insights/bridging-boardroom-technology-gap.html (accessed on 13.05.2021).

[18] RANEPA. Competency model for a digital transformation team in public administration. 2020. 84 p. URL: https://digital.ac.gov.ru/upload/iblock/af2/Competency_Model_CDTO_RANEPA.pdf (accessed on 15.08.2021).

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[20] Ministry of Digital Development, Communications and Mass Media of the Russian Federation (2020). Requirements for candidates for the position of deputy head of the federal executive body responsible for digital transformation and methodological guidelines for testing their managerial skills. URL: https://d-russia.ru/wp-content/uploads/2020/02/Trebovanya.pdf RANEPA. Competency model for a digital transformation team in public administration. 2020. 84 p. URL: https://digital.ac.gov.ru/upload/iblock/af2/Competency_Model_CDTO_RANEPA.pdf (accessed on 15.08.2021).

[21] Moscow Exchange. Corporate governance requirements for the issuer, Compliance with which is a condition for inclusion of shares in Tier 1 and Tier 2. URL: https://www.moex.com/a2585 (accessed on 16.08.2021).

[22] Center for Audit Quality (2018), An Oversight Tool for Audit Committees. The Center for Audit Quality (CAQ) has developed this tool to help audit committees execute their governance responsibilities for financial reporting impacted by emerging technologies. URL: https://www.thecaq.org/wp-content/uploads/2019/03/caq_emerging_technologies_oversight_tool_2018–12.pdf (accessed on 20.08.2021).

are mandatory. Considering the specifics of the audit committee's activities, some of the ICT issues, for example, cyber security, logically fit into its agenda. However, since digital solutions do not always allow to assess and minimize potential risks, the main focus of the audit committee's work may be extended to a broader range of emerging technology topics, including issues of innovation and the competitiveness of the organization. In the digital era, risks cannot always be predicted, which can impede the use of financial controls. In addition, the audit committee tends to view ICT as an operating expense rather than as a strategic opportunity-building tool. It can also lead to over-focusing on technology risks (e.g., cyber risks) and compliance issues [28].

The Bank of Russia recommends that the boards of directors consider the feasibility of creating an information technology committee. If such a decision is made, the chairman is recommended to appoint those members of the board of directors who possess relevant competencies and expertise. The main tasks of the committee shall include the development of recommendations for the board of directors regarding the approval of the ICT strategy and policy, control over the information technology management processes, monitoring and response to changes in the development of information technology.[23]

In practice, individual organizations (FedEx,[24] Proctor and Gamble,[25] Russian Post JSC,[26] Freight One PJSC,[27] M. Video PJSC,[28] etc.) have begun to form special information technology committees along with committees for audit, HR, remuneration, and risks (e.g., digital development, digital transformation, ICT governance, ICT strategies committees). For instance, Russian Post JSC has created a committee on digitalization and technologies under the board of directors,[29] whereas Russian Railways JSC created a committee for digital transformation and innovative development.[30]

Traditionally, when such committees are established, special attention is paid to their composition. The role of the committee chairman is of paramount importance. It is also strategically important to include independent directors in such a committee[31] [29]. At the same time, understanding not only the company's current business needs in the field of technological solutions but also a general understanding of the company's tasks and the dynamics of change in the relevant industry becomes a key factor in the committee's work effectiveness. To form and implement a consolidated development strategy for the company, it seems rational and logical to bolster the interaction between the information technology committee and other committees under the board of directors. Moreover, the admission of at least one member of the information technology committee into other committees sounds reasonable for the company's interests [8].

It seems appropriate to ensure that the company's corporate structure is consistent with the changing agenda of the board of directors' meetings [30, p. 59]. However, the creation of a committee at the level of the board of directors is not always the best solution and can be a waste of time and resources, yet it depends on the company's specifics (industry, degree of digital transformation, level of the company's ICT development, etc.) [8]. In practice, ad hoc committees that help the board of directors delve into the subject matters are seldom created [30, p. 65]. According to the US 2019 Technology Spencer Stuart Board Index, the science and technology committees under the board of directors are created by only 8% of 200 surveyed leading US

[23] Information letter of the Bank of Russia No. IN-06–28/45, dated 24 May 2019. On Recommendations for a Board of Directors (Supervisory Board) to Participate in Information Technology Development and Management, and in the Management of Information Security Risk at a Public Joint-stock Company. URL: http://www.consultant.ru/document/cons_doc_LAW_325684/8376e92eaf725b692ce9bfac52a83e1640d346c4/

[24] FedEx. Board of directors. URL: https://investors.fedex.com/esg/board-of-directors/default.aspx (accessed on 20.08.2021).

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[26] Russian Post. Digitalization and Technology Committee. URL: https://www.pochta.ru/komitet-po-cifrovizacii-i-tehnologiam (accessed on 20.08.2021).

[27] Freight One. Committees. URL: https://pgkweb.ru/investors/corporate-governance/committees/ (accessed on 20.08.2021).

[28] M. Video-Eldorado Group. Board of Directors, Digital Transformation Committee. URL: https://www.mvideoeldorado.ru/ru/corporate-governance/sovet-direktorov#cid2 (accessed on 20.08.2021).

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[30] Russian Railways. Board of directors. URL: https://company.rzd.ru/ru/9349/page/105554?id=998#6059 (accessed on 20.08.2021).

[31] Some research shows that a greater number of independent directors reduces information asymmetry in shareholder-management relations.

technology companies.[32] Thus, the issue of creating a separate committee on information technology requires further careful study.

DIGITAL TRANSFORMATION AS A FACTOR OF THE STRATEGIC DEVELOPMENT OF ORGANIZATIONS IN THE RUSSIAN FEDERATION

According to current scholarship, the Russian Federation's development resources are depleted; therefore, searching for new ICT-related growth sources is crucial [31]. The priority of developing the digital economy in the Russian Federation is designated at the highest state level.[33] Its impact on implementing a companies' business strategies nationwide contributes to forming a new technological market agenda. The strategy of the information society development in 2017–2030, in particular, fixes the following ICT priorities for the Russian Federation:

- formation of the information space, taking into account the needs of citizens and society in obtaining high-quality and reliable information;
- development of the information and communication infrastructure in the Russian Federation;
- creation and application of Russian ICT, ensuring their competitiveness at the international level;
- formation of a new technological basis for the development of the economy and social sphere;
- safeguarding Russian national interests in the sphere of the digital economy.[34]

As part of the implementation of the national program "Digital Economy of the Russian Federation" in order to provide methodological support for the development and updating strategies for the digital transformation of Russian businesses, Methodological Recommendations for the digital transformation of state corporations and enterprises with state participation have been developed (hereinafter — Methodological Recommendations).[35] This document is primarily aimed at ensuring the synchronization of the efforts of the state and business for the digital transformation of the economy and assessing the level of businesses' digital maturity. Sending regular reports on digital transformation progress to the Ministry of Digital Development, Communications, and Mass Media of the Russian Federation will allow accumulating the experience in this area to exchange best practices and promptly adjust ICT strategies. In addition, the achievement of these goals will be facilitated by the directives on the digital transformation of state-owned companies approved by the Government of the Russian Federation, according to which representatives of the Russian Federation on the boards of directors of state corporations and enterprises with state participation are obliged to initiate boards of directors' meetings to discuss the progress of digital transformation strategies until 2024.[36]

In this context, it is strategically essential to synchronize the efforts of state corporations and enterprises with state participation and state authorities in terms of the overall task of digital transformation of the Russian economy. According to ABBYY and

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[32] SpencerStuart (2019). U. S. Technology. SpencerStuart Board Index. p. 12. URL: https://www.spencerstuart.com/-/media/2019/techbi-2019/us-tech-board-index-2019.pdf (accessed on 30.08.2021).

[33] Decree of the President of the Russian Federation No. 474, dated 21 July 2020 "On the national development goals of the Russian Federation until 2030. Collection of the Legislative Acts of the Russian Federation". No. 30. Art. 4884. URL: http://www.kremlin.ru/acts/bank/45726. Decree of the President of the Russian Federation No. 203, dated 9 May 2017 "Strategy of the Information Society Development in the Russian Federation for 2017–2030". Collection of the Legislative Acts of the Russian Federation. 2017. No. 20. Art. 2901. URL: http://government.ru/docs/all/111459/ Passport of the national project National Programme 'Digital Economy of the Russian Federation'. Approved by the minutes of the meeting of the Presidium of the Presidential Council for Strategic Development and National Projects of 4 June 2019, No. 7. URL: http://www.consultant.ru/document/cons_doc_LAW_328854/. Decree of the Government of the Russian Federation No. 313, dated 15 April 2014 On Approval of the State Programme of the Russian Federation "Information Society". Collection of the Legislative Acts of the Russian Federation. 2014. No. 18. Art. 2159. URL: http://government.ru/docs/all/91296/

[34] Decree of the President of the Russian Federation No. 203, dated 9 May 2017 "Strategy of the Information Society Development in the Russian Federation for 2017–2030". Collection of the Legislative Acts of the Russian Federation. No. 20. Art. 2901. URL: http://government.ru/docs/all/111459/

[35] Methodological recommendations on the digital transformation of state corporations and state-owned companies. Approved at the meeting of the bureau of the government commission on digital development, use of information technologies to improve the quality of life and environment of business on 6 November 2020. URL: https://digital.gov.ru/ru/documents/7342/ (accessed on 04.09.2021).

[36] ConsultantPlus. 2021. Ministry of digital development, communications and mass communications of the Russian Federation (19.04.2021). The government approved the directives on the digital transformation of state companies. URL: http://www.consultant.ru/law/hotdocs/68694.html/ (accessed on 04.09.2021).

PwC's Digital IQ 2020 study, which was attended by more than 100 executives and specialists from large businesses, Russian organizations rate their level of digital maturity at 2.8 points out of 5. Such an assessment can be explained by Russian companies' relatively recent start of implementing digital transformation strategies. 77% of respondents indicated that digital technology is a hallmark of companies with high digital maturity to make decisions and improve business processes. Among the critical areas in the digitalization of companies' business strategies, the respondents named the increase in investments in solutions for automation and robotization of processes, transition to cloud services, and modernization of infrastructure to ensure cybersecurity. More than half of them see digital transformation as a continuous process of improving business efficiency, which, among other things, led to the absence of budget cuts for innovative projects and digital initiatives for 94% of respondents during the pandemic in 2020.[37]

Presently, the strategic goal of digital transformation has been set and approved by the boards of directors of leading Russian corporations (JSC "Russian Post",[38] PJSC "Gazprom Neft",[39] PJSC "Rosseti",[40] etc.). JSC "Russian Railways" has become one of the first companies to introduce Methodological Recommendations into its activities. In order to implement a long-term development program until 2025[41] and fulfill the Decree of the President of the Russian Federation dated May 7, 2018 No. 204,[42] the strategy for the company's digital transformation until 2025, approved by the board of directors, provides for the formation of 8 digital platforms (multimodal passenger transportation, multimodal freight transportation, transport and logistics hubs, linear infrastructure operator, e-commerce logistics operator, transportation process management, traction rolling stock, non-production processes). The platforms will become the basic elements of the company's ICT infrastructure and allow creating new services and integrating end-to-end information technologies into its work. In addition, it will increase the efficiency of business processes, increase the number of services offered to the market and begin the process of changing the corporate culture.[43] The projected economic effect of digital transformation for Russian Railways will be approximately 153 billion rubles and for the national economy approximately 400 billion rubles.[44]

Thus, the emerging practice in Russia is aimed at creating a technological ecosystem and conditions in which the board of directors acts as the enterprise's key body to discuss digital transformation and the feasibility of introducing ICT into its activities while also overseeing emerging ICT risks within the overall company's risk management system.

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The ongoing digital transformation of organizations poses new challenges for businesses. Previously boards of directors and company management could delegate or neglect decision-making regarding digital transformation and ICT governance. However,

[37] ABBYY. 2021. PwC and ABBYY measured the Digital IQ of Russian businesses for the first time. URL: https://www.abbyy.com/ru/news/2021/02/pwc-i-abbyy-vpervye-izmerili-digital-iq-rossijskogo-biznesa/ (accessed on 04.09.2021).

[38] Russian Post. Mission and development strategy. URL: https://www.pochta.ru/mission-and-strategy (accessed on 04.09.2021).

[39] Gazprom Neft. 2019. The Gazprom Neft Board of Directors confirms the company's digital transformation strategy to 2030. URL: https://www.gazprom-neft.ru/press-center/news/sovet-direktorov-gazprom-nefti-utverdil-strategiyu-tsifrovoy-transformatsii-kompanii-do-2030-goda/ (accessed on 10.09.2021).

[40] Rosseti. 2018. Rosseti's Board of Directors Approved the Concept of Digital Transformation of the Power Grid Complex until 2030. URL: http://www.rosseti.ru/press/news/?ELEMENT_ID=34455 (accessed on 10.09.2021).

[41] Order of the Government of the Russian Federation No. 466-r, dated 19 March 2019 On the Long-Term Development Programme of JSC Russian Railways until 2025. Collection of the Legislative Acts of the Russian Federation. 2019. No. 12. Art. 1354. (with The Long-Term Development Programme of JSC Russian Railways until 2025). URL: https://rulaws.ru/goverment/Rasporyazhenie-Pravitelstva-RF-ot-19.03.2019-N-466-r/

[42] Decree of the President of the Russian Federation No. 204, dated 7 May 2018 On the national goals and strategic objectives for the development of the Russian Federation until 2024. Collection of the Legislative Acts of the Russian Federation. 2018. No. 20. Art. 2817. URL: http://publication.pravo.gov.ru/Document/View/0001201805070038

[43] Gudok (2019), online edition. Russian Railways board of directors approves digital transformation strategy until 2025. URL: https://gudok.ru/news/? ID=1482450 (accessed on 20.09.2021).

[44] Tadviser. 2020. Russian Railways' digital transformation strategy. URL: https://www.tadviser.ru/index.php/%D0%A1%D1%82%D0%B0%D1%82%D1%8C%D1%8F:%D0%A1%D1%82%D1%80%D0%B0%D1%82%D0%B5%D0%B3%D0%B8%D1%8F_%D1%86%D0%B8%D1%84%D1%80%D0%BE%D0%B2%D0%BE%D0%B9_%D1%82%D1%80%D0%B0%D0%BD%D1%81%D1%84%D0%BE%D1%80%D0%BC%D0%B0%D1%86%D0%B8%D0%B8_%D0%A0%D0%96%D0%94 (accessed on 20.09.2021).

nowadays, such behavior seems counterproductive for the strategic development of companies in multiple industries since ICT has already become a major means for development and economic growth. At the same time, governance of ICT-related activities in corporations is becoming an increasingly important tool for ensuring strategic goals achievement. In the context of the development of ICT governance, the boards of directors are recommended to:

- define the role of ICT in the organization's activities;
- approve the priorities of the organization in the field of ICT governance;
- transform the work of the board of directors in accordance with the chosen vector of strategic development;
- update a board meetings agenda due to technological changes and challenges;
- ensure that the organizational structure of the organization is in line with the changing board meetings agenda and the corporate objectives to be solved.

Nevertheless, ICT governance methods' effectiveness in one case does not guarantee similar outcomes in another, as it depends on numerous factors that need to be taken into account while choosing and implementing a suitable development strategy. Thus, digital transformation and ICT governance, being one of the main tasks of the board of directors, require undertaking a systematic and holistic approach, considering the specifics of a particular business and its development strategy.

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