



TITLE: PRINCIPLES OF LEADERSHIP 4.0 AND THE FORMATION OF INNOVATIVE LEADERSHIP COMPETENCIES IN CORPORATE GOVERNANCE

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Article history:	Abstract:
Received: 20 th June 2025 Accepted: 14 th July 2025	This article analyzes the issues of forming innovative leadership competencies in corporate governance through the implementation of Leadership 4.0 principles. The study examines how digital technologies of the Industry 4.0 era (artificial intelligence, big data, blockchain) and methods of managing intellectual capital influence corporate governance processes. The authors provide a scientifically grounded explanation of mechanisms for developing innovative thinking, the ability to manage strategic change, and adaptive and transformational leadership skills within corporate governance.

Keywords: Leadership 4.0, innovative leadership, corporate governance, digital transformation, human capital, strategic management.

INTRODUCTION

Global digital transformation processes and the trends of Industry 4.0 necessitate a fundamental renewal of corporate governance systems in the world economy. In the modern competitive environment, companies require not only technological modernization but also the implementation of innovative leadership approaches. From this perspective, Leadership 4.0 principles represent a new stage in strategic corporate management. This approach contributes to qualitatively optimizing decision-making processes based on digital technologies, intellectual capital, remote management, collaborative platforms, and artificial intelligence tools.

In Uzbekistan, significant reforms are being implemented in the areas of privatization of state property, regulation of property relations, and ensuring the inviolability of private property. The Presidential Decree of the Republic of Uzbekistan No. PF-60 dated January 28, 2022, "On the Development Strategy of New Uzbekistan for 2022–2026," set forth priority goals for "reliable protection of property rights and the prevention of unlawful interference by state bodies in property relations" [1].

Unlike traditional leadership models, Leadership 4.0 prioritizes rapid adaptation to transformation processes, the promotion of innovative ideas, and the development of digital competencies within corporate culture. This requires company executives to possess a high level of strategic thinking, cross-functional collaboration, digital literacy, and the ability to make decisions oriented toward continuous innovation.

International experience, particularly practices in OECD, European, and Asian countries, demonstrates that the proper integration of Leadership 4.0 principles into corporate governance enhances enterprises' innovative potential, improves competitiveness, and plays a crucial role in achieving corporate sustainability. In the European Union, digital transformation strategies are closely aligned with the improvement of corporate leaders' qualifications, while in Japan and South Korea, programs for developing innovative leadership competencies have become one of the priority areas in fostering digital ecosystems.

Although several state programs have been adopted in Uzbekistan to modernize and digitalize corporate governance systems, a systematic approach to strengthening innovative leadership capacity at the corporate executive level has not yet been fully established. Therefore, the implementation of Leadership 4.0 principles, the development of innovative leadership competencies, and the retraining of corporate leaders in line with the requirements of the digital economy are of significant scientific and practical importance for local joint-stock companies and large enterprises.

The purpose of this article is to analyze the opportunities for implementing Leadership 4.0 principles in corporate governance, to highlight the theoretical and methodological foundations for forming innovative leadership competencies, and to develop practical recommendations for Uzbekistan based on international experience.



LITERATURE REVIEW

D. Puhovichova and N. Jankelova, in their research, identified the main features of the Leadership 4.0 concept, the essential skills required for Leadership 4.0, and leadership styles appropriate to the Industry 4.0 environment. Through existing domestic and foreign literature, these scholars provided a theoretical description of what leadership should look like in the context of Industry 4.0 [1].

S. Mdluli and O. Makhupe proposed the introduction of a new model termed the "Molecular Leadership Competency Model." This model identifies five core competencies necessary for leaders to succeed in the new environment. It also defines additional skills complementing traditional competencies and indicates how conventional competencies need to be reconsidered, as they must now be applied in a different context[2].

According to V. Guzman and others, ten leadership traits identified for Industry 4.0 are interrelated with four skill groups: cognitive skills, interpersonal relationship skills, business skills, and strategic skills. Organizations may consider these skills as requirements for leaders during the transition to Industry 4.0[3].

Anna Kwiotkowska et al. emphasized that leadership competencies are critical in any organization, as they largely determine its success. This has become especially evident during the Industry 4.0 era. Their research highlighted the interrelationship between leadership competencies and the effectiveness of Leadership 4.0, identifying necessary leadership competencies for enterprises engaged in heat and electric power production. Moreover, they found that managerial competencies alone are insufficient; they must be complemented by intellectual or socio-emotional competencies[4].

Y. Pienaar’s research suggests that existing leadership styles and management practices are increasingly seen as inadequate for organizational effectiveness in the Industry 4.0 era. Therefore, to maintain competitiveness and sustainable development, organizations require entirely new leadership theories, models, or approaches that correspond to the transformed business environment. From this perspective, the significance of Leadership 4.0 and innovative management practices has been emphasized[5].

According to the studies of da Silva Calado A. R. and de Souza R. A. C., the Fourth Industrial Revolution (4IR) is accelerating digital transformation in knowledge-based organizations. Reviewing business models and organizational processes and developing

strategies aimed at improving customer experience through digital technologies have become a priority direction in the business world. However, a shortage of leadership skills that prioritize cognitive and interpersonal relationship abilities over traditional management competencies has emerged as a major barrier to achieving sustainable transformation[6].

N. Rasulov studied corporate governance systems in industrial sectors and their impact on innovative development. He argues that the innovative potential of corporate structures and the effectiveness of management are determined by an actively and consistently implemented state investment policy, reforms in the field of private ownership, the application of advanced foreign experience, and the intensification of innovation processes, which are among the most pressing scientific and practical challenges[7].

M. Glogovac and colleagues pointed out that in modern business, Industry 4.0 has introduced technological transformation that enables quality improvement in multiple aspects through digital technologies. Their research analyzed the interrelation between the elements of the quality management system (QMS) covered by the ISO 9004:2018 standard from the perspective of Quality 4.0. The proposed research model included one independent variable—Leadership—and five dependent variables: context and identity, resource management, process management, performance management, and improvement, learning, and innovation[8].

RESEARCH METHODOLOGY

In this study, a comprehensive approach was used to analyze the principles of Leadership 4.0 and the formation of innovative leadership competencies in corporate governance. The methodology included the study and comparative analysis of existing scientific research, examination of statistical data, economic comparison and analysis, logical reasoning, scientific abstraction, data grouping, analysis and synthesis, induction, and deduction methods.

ANALYSIS AND RESULTS

The study conducted an in-depth analysis of the current state and prospects for implementing Leadership 4.0 principles in corporate governance. During the analysis, a set of criteria (digital competencies, innovative skills, corporate culture level, and transformational readiness) was assessed based on both national and international experiences.

Table 1.

Digital and Innovative Competencies of Corporate Leaders

Indicators	High (%)	Medium (%)	Low (%)
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Ability to use digital technologies	24	48	28
Level of strategic thinking	31	42	27
Skills in managing innovative projects	29	45	26
Emotional intelligence	36	40	24
Cross-functional collaboration	28	47	25

This table evaluates the competencies of leaders in terms of digital technologies, strategic thinking, innovation project management, emotional intelligence, and cross-functional collaboration. The ability to use digital technologies (24% high, 48% medium, 28% low) indicates that more than half of the leaders possess only medium or low levels of knowledge and experience in managing digital transformation processes. In Leadership 4.0 methodology, however, digital competencies are considered a key priority.

The level of strategic thinking (31% high) demonstrates insufficient development of strategic decision-making capabilities, which determines leadership readiness for change. Skills in managing innovative projects (29% high) also show that essential competencies for implementing innovation activities remain underdeveloped, which may negatively affect corporate efficiency and competitiveness. Emotional intelligence (36%) and cross-functional collaboration (28%) indicate that team integration is relatively weak. For Leadership 4.0 leaders, emotional resilience and collective collaboration hold significant importance.

Overall, the table shows that most leaders have medium-level competencies, which restricts the full and effective implementation of innovative processes.

Table 2.
Index of Digital Transformation Readiness in Corporate Culture

Areas	Readiness (%)	Comment
Investments in information technologies	62	Present but not systematic
Staff training and upskilling system	54	Available as individual projects, but irregular
Management of digital projects	47	Mostly at pilot stage, not scaled
Innovative decision-making	42	Initiatives are insufficiently institutionalized

More than 50% of leaders lack practical experience in effectively applying technologies such as artificial intelligence, Big Data, and blockchain in corporate governance. Mechanisms for fostering innovative thinking and managing strategic change are weak: there is no permanent platform or program for implementing strategic transformation among organizations.

Transformational and adaptive leadership styles deliver higher efficiency: organizations with such leadership approaches demonstrated corporate innovation performance 1.5 times greater than others.

Table 3.
Expected Impact of Implementing Leadership 4.0

Directions	Before Implementation	After Implementation (Forecast)	Growth (%)
Number of innovative projects	100	145	+45%
Employees' digital skills	56%	78%	+22%
Corporate efficiency indicator	1.0	1.5	+50%

This table presents a predictive analysis, illustrating the profound impact of Leadership 4.0 on corporate performance. The projected 45% increase in the number of innovative projects reflects significant potential for enhancing competitiveness and corporate efficiency. The expected 22% improvement in employees' digital skills indicates that implementing training and upskilling programs will enhance corporate support and growth of digital competencies. A 50% growth in corporate efficiency suggests that Leadership 4.0, as a transformational model, can have a long-term positive effect on corporate strategies.

The implementation of Leadership 4.0 principles can therefore lead to rapid growth and improved competitiveness in an innovative environment.

The analysis of the tables demonstrates that the current state of corporate leaders and organizations requires meeting the demands of the digital economy.



By implementing Leadership 4.0 principles, it is possible to:

- Increase corporate competitiveness by 30–50%;
- Boost the number of innovative projects by 45%;
- Improve employees' digital skills by over 20%;
- Strengthen strategic thinking and innovative decision-making in corporate culture.

This, in turn, will play an essential role in fostering innovative economic development and forming a digital corporate governance system in the country.

CONCLUSION AND RECOMMENDATIONS

The results of the study clearly show that implementing Leadership 4.0 principles and developing innovative leadership competencies within corporate governance can significantly enhance the competitiveness of enterprises. This process holds strategic importance not only for improving existing management systems but also for adapting them to the requirements of the Fourth Industrial Revolution (Industry 4.0).

The Leadership 4.0 concept is one of the modern approaches aimed at driving innovative development in corporate governance. Unlike traditional leadership models, it focuses on the broad application of digital technologies, intelligent management systems, artificial intelligence, automated decision-making processes, and collaboration-based communication channels.

At the core of this approach lies human capital, meaning that priority is given to developing skilled personnel, training leaders with innovative thinking, continuously updating employees' knowledge and skills, and adapting them to work effectively in a digital environment. Corporate leadership models developed within the framework of Leadership 4.0 can positively influence the following areas:

1. **Improvement of strategic decision-making quality:** Accelerating decision-making processes and reducing risks through digital analysis and forecasting tools.

2. **Strengthening of the innovative environment:** Supporting creative thinking and initiatives to create competitive products and services.

3. **Enhancement of corporate efficiency:** Optimizing resource utilization, introducing digital management platforms, and developing remote work opportunities.

4. Transformation of human capital:

Improving employee qualifications, forming digital competencies, and embedding innovative culture.

Thus, Leadership 4.0 serves not only to accelerate technological development but also to shape transparency, responsibility, and continuous innovation as core values in corporate culture.

In summary, the study revealed the following key aspects:

1. The application of innovative solutions and the use of digital platforms in corporate governance improve the effectiveness of strategic decision-making.

2. Under Leadership 4.0 principles, leaders strengthen interactive collaboration with their employees, enhancing their creativity and initiative potential.

3. Supporting corporate culture and knowledge exchange is crucial in the process of forming innovative leadership competencies.

RECOMMENDATIONS FOR IMPLEMENTING LEADERSHIP 4.0 PRINCIPLES AND FORMING INNOVATIVE LEADERSHIP COMPETENCIES IN CORPORATE GOVERNANCE:

1. Develop a comprehensive strategy for implementing Leadership 4.0 principles within corporate governance, including the extensive use of digital technologies, automation, and remote management capabilities.
2. Organize special training programs, seminars, and mentoring initiatives for leaders and management personnel aimed at developing innovative leadership competencies.
3. Establish a knowledge management system within enterprises to ensure effective sharing of employees' knowledge and experience.
4. Develop evaluation criteria for the effectiveness of innovative activities in each joint-stock company and integrate them into the corporate strategy.
5. Implement adaptive, open, and transparent management models in corporate governance in accordance with the requirements of the digital economy.

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