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CORPORATE GOVERNANCE FROM A DIGITAL TRANSFORMATION PERSPECTIVE

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Purpose: The objectives of this study are: (1) to identify digital technologies applicable to corporate governance; (2) to map ESG requirements related to corporate governance onto the principles outlined in the Best Practices of WSE-listed companies, considering their digitalization; and (3) to characterize the role of digitalization in implementing corporate governance principles and ESG requirements under ESRS 2 and ESRS G1 within the analyzed case study.
Design/methodology/approach: To achieve these objectives, the following research questions were formulated: how can digital technologies be used in corporate governance within companies? How are ESG requirements for corporate governance (ESRS) implemented in relation to the corporate governance principles contained in the Best Practices for WSE-Listed Companies? How is digitalization used to implement the corporate governance principles contained in the Best Practices for WSE-Listed Companies and the corporate governance requirements under ESRS 2 and ESRS G1 in the analyzed case study? The research employed a critical literature review using the Science Direct, Emerald, Springer (2021-2025), and Research Gate databases, as well as inductive reasoning. The study utilized the case study of TAURON Polska Energia S.A. The analysis was based on information from 2024.
Findings: An analysis of the digital transformation of enterprises was presented, pointing to the use of digitalization within the framework of corporate governance principles contained in the Good Practices of WSE-listed companies and corporate governance requirements within the ESRS as part of a case study.
Research limitations/implications A single case study was analyzed based on a fiscal year. Comparisons with international practices outside the Polish capital market and an analysis of the economic effectiveness of digitizing corporate governance were not included.
Practical implications: The need to develop a corporate governance digitalization strategy that takes into account industry specifics, along with the need to invest in digital competences of management board and supervisory board members, and to develop a regulatory framework that takes into account the possibilities of digital technologies.
Originality/value: Characteristics of the application of digital corporate governance.
Keywords: Digital transformation, Digital governance, Digital corporate governance, Warsaw Stock Exchange S.A., Tauron Polska Energia S.A.
Category of the paper: Viewpoint, Case Study.

1. Introdution

Modern businesses operate in a dynamic environment, interwoven with changing environmental conditions, uncertainty, complexity, and ambiguity in the VUCA paradigm, as well as organizational fragility, emotional anxiety, nonlinearity, and incomprehensibility that characterize the BANI environment (Cascio, 2020; Bennett, Lemoine, 2014).

In this business environment, digital transformation is no longer an optional development strategy, but rather an imperative for competitiveness and survival in the global market. Global spending on information technology amounted to approximately $5.11 trillion in 2024. In 2025, it is estimated to reach $5.6 trillion (a 9.8% year-on-year increase) (Gartner, 2025). Investments in AI development alone in 2024 amounted to $124.3 billion, while cloud solutions and distributed computing models (cloud and edge computing) accounted for $80.8 billion, digital trust and cybersecurity accounted for $77.8 billion, and advanced connectivity accounted for $44.2 billion (McKinsey, 2025).

Therefore, companies are adopting various forms of digital transformation to drive growth and improve customer experience (Deloitte, 2025). Various dimensions of digital transformation are highlighted in the value chain of enterprises, for example, digital platforms (Kawalec, 2021).

This fundamental shift in the business paradigm is impacting traditional corporate governance models. Traditional management models are unable to effectively cope with disruptions and changing stakeholder demands. Therefore, the need has arisen to adapt corporate governance structures to the new digital realities (Aguilera, Castillo, 2025). Digital transformation can significantly improve management effectiveness, for example, for minority shareholders by increasing their participation in shareholder meetings and strengthening oversight mechanisms (Hou, Wei, Yang, K., Luo, 2024). This is causing management boards and supervisory boards (boards of directors) to redefine their roles, responsibilities, and oversight mechanisms. Corporate governance, understood as a system of rules, practices, and processes by which enterprises are directed and controlled, must evolve to meet the challenges of the digital era. This also influences the construction of digital governance in organizations (Hanisch, Goldsby, Fabian, Oehmichen, 2023).

Ultimately, it aims to build digital corporate governance, which integrates digital technologies with traditional structures and principles of good corporate governance, enabling effective oversight of an organization's digital transformation. Its success will depend on the synergy between technological innovation and corporate responsibility. It will also require a proactive approach from all stakeholders, with particular attention paid to cybersecurity practices by both management and supervisory bodies.

2. Methodology

In relation to the digital transformation of enterprises, the research issues concern the use of digitalization in corporate governance.

The subject of the research is the use of digitalization within the framework of corporate governance principles included in the Good Practices of companies listed on the WSE (Warsaw Stock Exchange) and corporate governance requirements within the framework of the ESRS (Sustainability Reporting Standards - European Sustainability Reporting Standards).

The goals that have been set are:

1. Identification of digital technologies for use in corporate governance in companies.
2. Mapping ESG (Environmental, Social, Governance) requirements related to corporate governance (ESRS) to the corporate governance principles contained in the Best Practices for WSE-Listed Companies, taking into account their digitalization.
3. Characterization of the use of digitalization in implementing the corporate governance principles contained in the Best Practices for WSE-Listed Companies in the analyzed case study.
4. Characterization of the use of digitalization in implementing the corporate governance requirements under ESRS 2 and ESRS G1 in the analyzed case study.

In order to achieve the objectives, the following research questions were formulated:

1. How can digital technologies be used in corporate governance in companies?
2. How are ESG requirements for corporate governance (ESRS) implemented in relation to the corporate governance principles contained in the Best Practices for WSE-Listed Companies?
3. How is digitalization used to implement the corporate governance principles contained in the Best Practices for WSE-Listed Companies in the analyzed case study?
4. How is digitalization used to implement the corporate governance requirements under ESRS 2 and ESRS G1 in the analyzed case study?

The research utilized critical literature analysis using the Science Direct, Emerald, Springer (2021-2025) and Research Gate databases, as well as inductive reasoning that situates itself within the narrative of management and quality sciences. The study utilized a case study of Tauron Polska Energia S.A., a company listed on the Warsaw Stock Exchange (WSE) within the WIG 30 index. The analysis was based on information for the 2024 fiscal year.

3. Digital transformation

Digital transformation, through the strategic use of digital technologies, is associated with creating new value for customers, employees, and shareholders (Prayoga et al., 2025). This is a fundamental change that goes beyond the digitization of processes but also encompasses the reorganization of business models, organizational cultures, and ways of creating value within enterprises (Han et al., 2024). In research, digital transformation is defined as the use of digital technologies to create new or modify existing business processes, organizational culture, and customer experiences in response to changing business and market requirements (Sebastian et al., 2017; Vial, 2019).

The digital transformation of enterprises is characterized by three key dimensions: digitization, i.e., the conversion of analog to digital, digitalization related to the use of ICT to optimize processes, and the actual digital transformation, which involves a fundamental change in the business model (Stamoulis, Kopanaki, 2024). Digital transformation is a long-term process that requires a holistic approach.

Among the key factors for the success of digital transformation at the organizational level are organizational readiness, top management support, a culture of innovation, and adequate financial resources (Stamoulis, Kopanaki, 2024). From an individual perspective, the perceived usefulness of technology, ease of use, and personal innovation of employees are important (Khanfar et al., 2024). Digital technologies have a varied impact on the efficiency of processes in enterprises. The strongest positive effect is demonstrated by smart factories, big data analytics, and the Internet of Things (Bindeeba et al., 2025). Success is also associated with the development of new capabilities for co-creation with external partners and the establishment of a space for inter-organizational collaboration (Eikebrokk et al., 2024). Research conducted by Deloitte in 2024 on a sample of 391 technology leaders identified strong data foundations, an agile approach and teams, a culture ready for change, modern technological infrastructure, and a flexible approach to financing as critical factors for the success of digital transformation (Deloitte, 2024).

There are many barriers to implementing digital transformation in enterprises. Key obstacles include resistance to change, a lack of appropriate digital skills, and insufficient financial resources (Khanfar et al., 2024). Research highlights significant technical challenges in enterprises, such as the complexity of integrating new systems with existing infrastructure and insufficient security infrastructure (Zbořil, Svatá, 2022). A key problem is the lack of coordinated digital transformation implementation strategies. For example, in the public sector, barriers are even more complex, encompassing stringent legal regulations, rigid organizational structures, and conflicting stakeholder interests (Lamprousis, Jonathan, 2025). Data management, including issues with data availability, quality, and standardization, pose significant challenges (Zuiderwijk et al., 2021). Barriers include a lack of a transformation

strategy, reliance on legacy systems (considered as a dependence on outdated systems and technical debt), cybersecurity concerns, insufficient funding, and misaligned incentives among key stakeholders (Deloitte, 2024). These barriers and the resulting challenges contribute to digital transformation failure rates, which are estimated at over 80%. Four main categories of problems are identified: technological, innovation, management, and information systems (Oludapo et al., 2024).

The level of digital transformation maturity in organizations demonstrates significant differences between sectors and regions. Enterprises go through various stages of maturity, ranging from basic digitization through the expansion of digital capabilities to full transformation of business models (Paul et al., 2023). The private sector is characterized by dynamic development, particularly in the areas of artificial intelligence and digital platforms (Urˇsiˇc, Cˇater, 2025). The public sector, on the other hand, is characterized by a lower level of digital maturity, primarily due to regulatory and structural constraints (Lamprousis, Jonathan, 2025). However, as the experience of the European railway sector shows, regulatory compliance can serve as a catalyst for digital transformation (Stamoulis, Kopanaki, 2024). For example, the financial industry has a relatively high level of digital maturity, particularly in the use of AI for risk analysis and improving the information environment of capital markets (Lia, Zhang, 2025). At the same time, attention is drawn to the development of Industry 5.0, characterized by a shift from shareholder value to value for a wider group of stakeholders, particularly taking into account Cognitive cyber-physical (Hofer et al., 2025).

Research indicates that lower middle-income countries show a stronger digital transformation effect compared to high-income countries (Bindeeba et al., 2025). In this context, digital transformation may have greater potential in developing economies. Research in industrial sectors indicates that a higher level of digital maturity translates into increased EBIT and sales revenues (Deloitte, 2023). On the other hand, it is determined that despite the growing importance of digital transformation, only about 25% of enterprises achieve the desired results in their digitalization efforts. The main challenge is the lack of appropriate tools to assess the current level of digital maturity of enterprises, which makes it difficult to plan an effective transformation strategy. There is a tendency to create sectoral models, particularly oriented towards production (Kalendera, Žilkaa, 2024).

Implementing digital transformation in enterprises poses risks and has drawbacks. One of the main threats is the phenomenon of "digital washing", or selective disclosure and exaggeration in determining progress in digital transformation. This can, for example, lead to reduced accounting conservatism and a deterioration in the quality of financial reporting (Wei et al., 2025). New digital systems pose threats that include increased vulnerability to cyberattacks and vendor dependence, where vendor lock-in can limit flexibility and increase long-term costs (Bharadwaj et al., 2013). Digital transformation can lead to new forms of inequality, particularly in the context of employee access to technology and their digital competencies. Critical thinking and employee competencies can also be undermined by the

automation of epistemic processes (Shin, 2025). Human resources management can be an area of conflict between operational efficiency and ethical standards, particularly in digital recruitment and employee assessment. Ethical issues related to artificial intelligence also pose a significant threat, including the risk of algorithm bias, privacy violations and the lack of transparency in decision-making processes (Madanchian, Taherdoost, 2025).

One way to address digital transformation in enterprises is to create a Chief Digital Officer (CDO) position, which is key to shaping digital strategies. However, this organizational solution is subject to criticism. (Kessel, Graf-Vlachy, 2022).

A consequence of digital transformation in enterprises is the creation of digital governance. Digital transformation also influences corporate governance (Yang, Tai, Liu, 2024). Organizing digitalization-related activities in enterprises is related to digital governance. Digital governance can be both a consequence of digital transformation and a catalyst for it. Digital governance can be defined as a set of shared values, norms, and mechanisms guiding enterprise activities with respect to digital technology and data (Lobschat et al., 2021). It goes beyond traditional approaches to IT governance. It encompasses an organizational framework enabling management in digital networks. Three main modes of digital governance can be identified: analog (centralized) governance, enhanced (distributed) governance, and automated (decentralized) governance. Centralized governance is based on hierarchy and bilateral agreements, enhanced governance is associated with distributed digital tools and the multilateral use of digital channels, while automated governance is decentralized through autonomous algorithms and omnilateral coordination (Hanisch et al., 2023). Digital governance considers the benefits and risks of using ICT (Lin, Yaakop, 2024). It is the responsible use of ICT and the use of consumer data (Merbecks, 2024). In the context of so-called extended enterprises, it can be understood as the decentralized management of distributed ledger infrastructure (DLT) (Anthony, 2023). Elements of digital governance include management of data and the data lifecycle, data ownership and provenance, metadata, compliance and risk, data architecture, stakeholders, identity and access, and trust (Acev et al., 2025). In the context of digital governance, digital corporate responsibility is important, understood as a set of shared values and norms guiding an organization's activities. It can be related to four main processes related to digital technology and data. These processes include technology creation and data collection, operation and decision-making, inspection and impact assessment, and technology and data improvement (Lobschat et al., 2021). With regard to data, there are risks related to conflict with the GDPR, involving problems with data minimization and the right to be forgotten, as well as the problem of identifying data controllers in decentralized systems (Karisma, Tehrani, 2023).

Digital governance in enterprises is undergoing a phase of rapid development, characterized by a shift from simple analog mechanisms to complex automated systems. As digital maturity increases, companies are developing more advanced governance mechanisms to address the new challenges posed by Big Data, AI, IoT, and digital platforms. The remaining key challenge

is to find a balance between the effectiveness of digital solutions and maintaining control over business processes and compliance with regulatory requirements. Successful digital governance implementation requires a holistic approach that considers technological, organizational, and cultural factors, with particular attention to industry and regional specifics.

4. Digital corporate governance

Digital corporate governance is an evolutionary development of traditional corporate governance mechanisms, which involves integrating digital technologies into supervision, control, and decision-making processes (Steiner et al., 2025). It is a consequence of digital governance, which also contributes to its maturity. Digital corporate governance, through the use of digital technologies, enables better alignment of corporate governance with stakeholder requirements and increases the competitiveness of enterprises (Ziniuk et al., 2022). Effective implementation of digital corporate governance requires a structured process encompassing: defining the vision, engaging leaders, building organizational culture, ensuring resources and experience, and selecting appropriate technology (Ziniuk et al., 2022). The positive impact of digitalization on corporate management includes the technological capabilities of companies, intense industry competition, developed digital infrastructure of the region and higher environmental awareness of society (Cheng, Li, 2025). The digitalization of corporate governance also creates secure and improved remote collaboration, better information flow, increased participation in decision-making, greater transparency of processes and more effective management of conflicts of interest (Ziniuk et al., 2022).

In practice, digital corporate governance is intended to improve the functioning of management bodies through the use of artificial intelligence, big data, blockchain technology, IoT systems, and cloud platforms (Sun, Guo, 2024). One area of application of digitization within corporate governance is modeling the digital recruitment and selection process for future board members of public enterprises. This is intended to decentralize the process and make it more transparent, using DM Software (decision-making software) or the RACI matrix method (offering diversity elements and strategic requirements for board members) (Moșneanu, 2020).

Among the digital technologies used in digital corporate governance, artificial intelligence can be mentioned. Artificial intelligence can be used in various areas of corporate governance, such as board diversity analysis, real-time monitoring, decision-making support, ensuring regulatory compliance, streamlining audit processes, and strengthening shareholder engagement (Bhatia, 2025). Implementing artificial intelligence can reduce agency costs, leading to lower management costs (Xue, 2025).

Another example is the use of big data technology, which is characterized by large amounts of data, high processing efficiency, and a variety of information sources. Research indicates that big data has a positive impact on board oversight, social responsibility, and fraud detection (Sun, Guo, 2024).

Blockchain is also revolutionizing the transparency and security of corporate processes through data immutability, decentralization, and automated verification (Singh et al., 2020). For example, in the banking sector, blockchain has demonstrated a positive impact on both the quality of financial reporting and the effectiveness of corporate governance (Al-Shahamani et al., 2025). In the case of ESG reporting, blockchain solves three key challenges in ESG disclosure. Information is collected by creating a private ESG chain within the company; data integration uses cross-chain technology to interact with external systems; and verification leverages the blockchain's integrity and traceability (Zhu, Liu, 2024).

Growing regulatory requirements for sustainability reporting (CSRD and ESRS) therefore motivate the implementation of digital technologies that would facilitate reporting. They indicate that ESG influences the digital transformation of enterprises (Cheng, Li, 2025). Some studies present the use of digital technologies in the industrial, service, and trade sectors, including ERP systems, Big Data and Analytics, Cloud Computing, AI and ML, Blockchain, and IoT (Dudek, Kulej-Dudek, 2024).

For example, among software platforms for digital corporate governance, we can point to ProofHub - project and collaboration management; StudioCloud - cloud solutions; Timely - time and resource management; Scoro - comprehensive business management; iBE.net - corporate solutions; NetSuite - integrated business systems; Bitrix24 - collaboration platform; e-BDS - business decision support systems (Ziniuk et al., 2022). Companies must decide whether to purchase a digital solution or create their own, dedicated to their needs.

The main challenges of implementing digital corporate governance in the context of ESG include high costs for companies (65-75%), technological complexity (59-64%), lack of specialist knowledge (42-59%), internal resistance to change (51-62%) and difficulties in integration with existing systems (55-58%) (Dudek, Kulej-Dudek, 2024).

Another barrier highlighted is the insufficient knowledge of supervisory boards about AI technologies. Only 20-28% of boards possess the appropriate technological expertise (Russell Reynolds Associates, 2025). This problem is compounded by the fact that only 10% of companies plan to add AI/GenAI experts to their boards, while as many as 35% plan to add financial experts (PWCs, 2024).

The main threats to corporate governance digitalization include cybercrime, the rapidly changing world of digital technologies, regulatory challenges, as well as corporate blackmail and market manipulation (Ziniuk et al., 2022). A particular challenge is the opacity of AI decision-making processes, or the blind acceptance or rejection of AI suggestions. Digitalization can lead to a loss of human judgment in decision-making, excessive reliance on technology, and privacy and information security issues (Agnese et al., 2025). One of the threats

to corporate governance bodies, both management boards and supervisory boards, is regulatory uncertainty in implementing digital solutions within corporate governance. Furthermore, concerns arise about legal liability for decisions made using AI and the difficulty of maintaining compliance with various jurisdictions using global digital platforms. Research in Poland indicates that 81% of companies (the sample consisted of 68 large enterprises) are not technologically ready for the new ESG reporting requirements, and 47% of the largest companies still use only Excel spreadsheets (Dudek, Kulej-Dudek, 2024).

The future of digital corporate governance will likely be characterized by higher standards for boards and directors, a differentiated approach to ESG and risk management, and a greater emphasis on executive succession planning (Russell Reynolds Associates, 2025). Corporate governance will evolve from models focused solely on shareholders to an approach that takes into account a broader range of stakeholders (Aguilera, Castillo, 2025). Integrating digital solutions with ESG practices will become increasingly important, with technologies such as AI, IoT systems, and digital twins being key to achieving sustainable development goals (Celary, Piwowarczyk, 2025).

5. Digitalization within the framework of corporate governance principles and requirements

Digital corporate governance can take many forms. The study analyzed the forms of digitalization used based on the corporate governance principles contained in the Best Practices for WSE-Listed Companies (Resolution No. 13/1834, 2021). The degree to which listed companies implement individual principles is monitored on an ongoing basis (GPW, 2025).

The corporate governance principles have been thematically assigned to the individual requirements of ESRS 2 – "General Information" and ESRS G1 – "Business Conduct" (ESRS 2 GOV – 1 and G1-1 to G1-6), also related to corporate governance within the ESG framework. These requirements, together with information on environmental and social matters, are part of the framework for preparing the "Sustainability Statement", previously called the "Non-financial Sustainability Report" (EU Directive, 2022; EU Commission, 2023). Ensuring their appropriate reporting is part of the obligations for companies that report ESG. The very fact of reporting them is evidence of the functioning of corporate governance in this area.

Table 1.
The use of digitalization within the framework of the Corporate Governance Principles included in the Best Practices of WSE Listed Companies and the corporate governance requirements within the ESRS

Principles of Corporate Governance – Good Practices		**ESRS 2**	**ESRS G1**
Chapters, Rules	**Principles – a directly indicated way of digitization**		
1. Information policy and communication with investors	1.1. The company maintains efficient communication with capital market participants, providing reliable information on matters affecting it. To this end, it utilizes a variety of communication tools and forms, including, above all, its corporate website, where it publishes all information relevant to investors.		
	1.4. In order to ensure proper communication with stakeholders regarding the adopted business strategy, the company publishes on its website information on the assumptions of its strategy, measurable goals, including in particular long-term goals, planned activities and progress in its implementation, determined by means of financial and non-financial metrics.		
2. Management Board and Supervisory Board		**GOV – 1 – The role of administrative, management and supervisory bodies**	**G1-1 – Business Conduct Policies and Corporate Culture**
		GOV-2 – Information provided to the administrative, management and supervisory bodies of the entity and the issues they undertake related to sustainable development	**G1-5 – Political Influence and Lobbying Activities**
		GOV - 4 – Due Diligence Statement	

Cont. table 1.

3. Internal systems and functions		**GOV-5 – Risk management and internal controls over sustainability reporting**	**G1-2 – Supplier Relationship Management**
			G1-3 – Prevention and Detection of Corruption and Bribery (Appendix A – p. 248 Disclosure Requirement G1-3 – Prevention and Detection of Corruption and Bribery). To inform groups (employees, contractors and suppliers) about anti-corruption and anti-bribery strategies, the entity may disclose communication tools and channels (e.g., leaflets, newsletters, dedicated websites, social media, direct interactions, unions or employee representatives).
			G1-4 – Incidents of corruption or bribery
			G1-6 – Payment Practices
4. General Meeting and shareholder relations	4.1. A company should enable shareholders to participate in a general meeting using electronic means of communication (e-general meeting), if this is justified by the shareholders' expectations notified to the company, provided that it is able to provide the technical infrastructure necessary to conduct such a general meeting.		
	4.2. The Company provides publicly available real-time broadcasts of the general meeting.		

Cont. table 1.

	4.9.1. Candidates for members of the supervisory board should be submitted in time to enable shareholders present at the general meeting to make informed decisions, but no later than 3 days before the general meeting; the candidates, together with all relevant materials, should be published immediately on the company's website.		
	4.11. Members of the management board and supervisory board participate in the general meeting, either on-site or via real-time two-way electronic communication, in a composition that allows them to comment on the matters on the agenda of the general meeting and to provide substantive answers to questions posed during the general meeting. The management board presents the company's financial results and other important information, including non-financial information, contained in the financial statements subject to approval by the general meeting to the participants of the annual general meeting. The management board discusses significant events related to the previous financial year, compares the presented data with previous years, and indicates the degree of implementation of the previous year's plans.		
5. Conflict of interest and related party transactions			
6. Salaries		**GOV-3 – Incorporating sustainability outcomes into incentive systems**	

Source: Own study based on Resolution No. 13/1834/2021 of the Supervisory Board of the Warsaw Stock Exchange S.A. of 29 March 2021 on the adoption of the "Best Practice for GPW Listed Companies 2021", 2024/9043 Corrigendum to Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council with regard to sustainability reporting standards (Official Journal of the European Union L, 2023/2772, 22 December *2023),* http://data.europa.eu/eli/reg_del/2023/2772/corrigendum/2024-07-29/oj

The principles contain direct references to digitalisation, while the requirements only make such a reference in Disclosure of Information G1-3 – Prevention and Detection of Corruption and Bribery in Appendix A. In fact, in the case of all ESRS 2 and ESRS G1 requirements, ICT can be used in the practice of disclosure and preparation of information, e.g. websites, management report published on the Internet.

6. Application of digital corporate governance on the example of Tauron Polska Energia S.A.

Digitalization at TAURON Polska Energia S.A. serves the implementation of both the WSE Best Practices and the ESRS Requirements. It encompasses all key areas of corporate governance, with a particular emphasis on cybersecurity and data protection. Digital technologies are used to increase the availability of information for stakeholders and enhance the efficiency of business processes through automation. Digitalization introduces modern technologies such as AI and data analytics. Among the key areas of digitalization in corporate governance are stakeholder communication and transparency. These include digital communication channels such as a website as the primary tool for publishing information on the application of the Best Practices, dedicated online sections for investor relations, publicly available real-time online broadcasts of General Meetings, and electronic forms for contacting investors. Another area is supplier and business process management, which includes digital financial and accounting systems, a dedicated digital application for managing supplier relationships, electronic invoices, and electronic purchasing systems supporting the Corporate Procurement Policy. Training and building corporate culture are achieved through e-learning and digital educational tools, such as those related to compliance and business ethics training, digital platforms for disseminating corporate codes and policies, and the Intranet as an internal communication tool. Tauron Polska Energia S.A. has an advanced cybersecurity system. This is reflected in a comprehensive approach to digital security based on the TAURON Group Cybersecurity Policy; IT/OT (Operational Technology) Systems Management; Security Incident Management Principles; Security Standards for the IT/OT Area; and the Business Continuity Plan (CRP) for terrorist threats to ICT systems. Innovations in data management include the development of AI (Artificial Intelligence) guidelines and the implementation of Data Governance.

Table 2.
The use of digitalization within the framework of the Corporate Governance Principles included in the Good Practices of WSE-listed companies and corporate governance requirements within the ESRS, as exemplified by Tauron Polska Energia S.A.

Principles of Corporate Governance – Good Practices	ESRS 2	ESRS G1
Chapters, rules		
Applied set of corporate governance principles In 2024, the Company was subject to the corporate governance principles contained in the Best Practices for GPW Listed Companies 2021 (Best	**Management Structure (GOV-1)** Information presented in the Management Board's Report	**ESRS 2 GOV-1 The Role of Administrative, Management, and Supervisory Bodies** Management Report (pp. 318 and pp. 159-164) **(G1.IRO-1) Description of processes for identifying and assessing significant impacts, risks, and opportunities**

Practices), adopted by the GPW Supervisory Board by Resolution No. 13/1834/2021 of March 29, 2021, which entered into force on July 1, 2021. Current information on the Company's compliance with the principles contained in the Best Practices is available on the Company's website at: https://www.gpw.pl/komunikat?geru_id=457865&title=TAURON+Polska+Energia+Sp%C3%B3%C5%82ka+Akcyjna+-+informacja+o+stanie+stosowania+Dobrych+Praktyk+2021 In an effort to apply the broadest possible scope of Best Practices, in 2024, in connection with the announcement of a new dividend policy together with the TAURON Group Strategy for 2025-2035, the adoption of new Internal Audit Regulations in the TAURON Group, and amendments to the Organizational Regulations, the Company began applying principles 3.6. (concerning the organizational and functional subordination of the person heading the internal audit function) and 4.14. (concerning the dividend payment rules). Updated information on the Company's application of the principles contained in the 2021 Best Practices was posted on the Company's website at the above-mentioned address on December 17, 2024. The set of corporate governance principles from which application was waived is presented in the Management Board's Report on Operations (pp. 102-104) along with explanations. **1. Information Policy and Investor Communication** Information presented in the Management Board's Report on Operations (pp. 97-98) and in: https://www.tauron.pl/tauron/relacje-inwestorskie https://www.tauron.pl/tauron/o-tauronie/raportowanie-esg https://nowaenergia.tauron.pl/ https://www.tauron.pl/tauron/relacje-inwestorskie/kontakt-dla-inwestorow/formularz	on Activities (pp. 113-138) **(GOV-1, GOV-2) ESG governance structure at the TAURON Group** Information presented in the Management Board's Report on Operations (pp. 159-163) **(GOV-3) Incorporating ESG-related performance into the incentive system** Management Board Report on Activities (pp. 163 and 140-147) **(GOV-4) Due Diligence Statement** Management Report on Activities (pp. 163-164) **Risk management and internal controls over sustainability reporting (GOV-5)** Management Board's activity report (pp. 164-165)	Management's Report on Activities (pp. 318-319 and pp. 177-180) **(G1-1) Business Conduct Policies and Corporate Culture** Management Board's report on activities (pp. 319-321) and on the website, intranet, electronic forms, e-mail addresses, e-learning training 1. TAURON Group's Code of Responsible Business, 2. TAURON Group's Compliance Policy, 3. TAURON Group's Anti-Corruption Policy, 4. TAURON Group's Human Rights Policy, 5. TAURON Group's Procedure for Reporting Irregularities and Taking Follow-Up Actions, 6. TAURON Group's Procedure for Counteracting Money Laundering and Terrorism Financing, 7. TAURON Group's Procedure for Assessing the Credibility of Contractors. **(G1-2) Supplier Relationship Management** Management Board's report on operations (pp. 321-322) and digital financial and accounting systems, dedicated digital application, electronic invoices. 1. TAURON Group Corporate Procurement Policy 2. Code of Conduct for Business Partners of TAURON Group Companies **(G1-3) Prevention and detection of corruption and bribery** Management Board's report on activities (pp. 322-323) and website, intranet, e-learning training 1. Rules for accepting and giving gifts at the TAURON Group 2. Rules for preventing conflicts of interest at the TAURON Group **(G1-4) Incidents involving corruption or bribery** Management Board's Report on Activities (pp. 323-324) **(G1-5) Political influence and lobbying activities** No information in the Management Board's Report on Activities **(G1-6) Payment Practices** Management Board's Report on Activities (p. 324) **Safety Management System** Management Report on Activities (pp. 324-326) Security management is divided into substantive areas, including: 1. Security Management System, 2. Information Security, 3. IT/OT Systems Security, 4. Physical Security, 5. Security Incidents. Corporate regulations specifically regulate specific aspects of security in a given area of operation:

2. Management Board and Supervisory Board Information presented in the Management Board's Report on Operations (pp. 98-99) **3. Operation of Internal Systems and Functions** Information presented in the Management Board's Report on Operations (p. 99) **4. General Meeting and Shareholder Relations** Information presented in the Management Board's Report on Operations (pp. 100-101) The Company has provided publicly available Real-time broadcast of each General Meeting in 2024 and at: https://www.tauron.pl/tauron/relacje-inwestorskie/walne-zgromadzenie **5. Conflict of interest and related party transactions** Information presented in the Management Board's Report on Activities (pp. 101-102) and at: https://www.tauron.pl/tauron/relacje-inwestorskie/wykaz-istotnych-transakcji **6. Remuneration** Information presented in the Management Board's Report on Activities (pp. 102 and pp. 140-147)		1. TAURON Group Security Management System Policy – general document, 2. TAURON Group Information Classification and Handling Policy, 3. TAURON Group Physical Security Policy, along with a set of detailed requirements for physical security, 4. TAURON Group Cybersecurity Policy, 5. TAURON Group OT Policy, 6. TAURON Group OT System Management Principles, 7. TAURON Group IT System Management Principles, 8. Comprehensive set of security standards for the IT/OT area, 9. TAURON Group Security Incident Management Principles, 10. TAURON Group Task Force Cooperation Principles in the Event of CRP Alert Levels Announced in the Event of a Terrorist Threat to ICT Systems, 11. Requirements for Designers and Contractors of Technical Security Systems and Fire Alarm Systems in TAURON Group, 12. Guidelines for the use of Unmanned Aerial Vehicles in the TAURON Group, 13. Principles for the reuse and secure destruction of information media in the TAURON Group. In 2024, guidelines were developed for AI and Data Governance.

Source: Own study based on the Management Board's report on the operations of Tauron Polska Energia S.A. and Tauron Capital Group for the financial year 2024 and the websites of Tauron Polska Energia S.A. and Tauron Capital Group

Tauron Polska Energia S.A. Tauron demonstrates a mature approach to the digitization of corporate governance. It combines compliance requirements with modern technological solutions, enabling effective management and transparent reporting.

7. Discussion

This article presents the range of digital technologies used in corporate governance. Artificial intelligence (AI) is among them, and is used for board diversity analysis, real-time monitoring, decision-making support, regulatory compliance, audit process improvement, and shareholder engagement. Blockchain is another technology, which ensures transparency and security of corporate processes, data immutability and decentralization, verification

automation, and addressing ESG reporting challenges. Big Data, which positively impacts board oversight, social responsibility, and fraud detection, is another key technology. The analysis also highlights other technologies, such as IoT systems and digital twins, cloud platforms, ERP systems, and distributed ledger technology (DLT) solutions.

The article also maps the ESRS requirements to corporate governance principles. It indicates that most of the ESRS requirements can be supported by ICT, particularly in the area of information disclosure via websites and digital reports. In the case of TAURON Polska Energia S.A., digitalization in the implementation of the WSE Best Practices includes, among others, communication with stakeholders via corporate websites, dedicated investor relations sections, real-time online broadcasts of General Meetings and electronic forms for contact with investors.

TAURON Polska Energia S.A. implements digital solutions as part of the implementation of ESRS requirements within digital financial and accounting systems, electronic purchasing systems, websites and intranet, electronic forms, e-learning training, Cybersecurity Policy, IT/OT systems management, Security incident management principles, Business Continuity Plan for terrorist threats to ICT systems, AI guidelines, Data Governance.

Based on the analysis, it can be concluded that corporate governance is evolving towards digitalization. It involves the integration of digital technologies with traditional management structures. This evolution is not optional, but is becoming an imperative for competitiveness. Digitalization in corporate governance goes beyond simple process digitization and encompasses, among others, artificial intelligence, blockchain, big data, and IoT.

The main barriers to implementing digital corporate governance include high costs, technological complexity, lack of specialist knowledge and internal resistance to change.

8. Summary

The analysis indicates that the digitalization of corporate governance is an inevitable transformational process. It is fundamentally changing the way modern enterprises are managed. The analysis of the TAURON Polska Energia S.A. case study confirms the practical application of integrating digital technologies with corporate governance requirements in accordance with the WSE Best Practices and ESRS standards. Digital technologies can significantly improve the functioning of management and supervisory bodies by, among other things, increasing transparency, efficiency, and compliance with regulatory requirements.

As part of the practical implications for businesses, the analysis highlights the need to develop a corporate governance digitalization strategy that takes into account industry specifics. There is also a need to invest in the digital competencies of management and supervisory board members, as well as implement integrated digital platforms supporting all aspects of corporate

governance. Another aspect is the need to update the regulatory framework to incorporate the capabilities of digital technologies, develop guidelines for the secure use of AI and blockchain in management processes, and create cybersecurity standards for digital corporate governance. Furthermore, assessing digital maturity as a criterion for assessing the quality of corporate governance is becoming crucial.

The research has limitations. Among them, the analysis of only a single case study based on a single financial year limits the generalizability of the results and prevents the assessment of long-term trends. Comparisons with international practices outside the Polish capital market were also not made. The focus was on compliance aspects without a thorough analysis of the economic effectiveness of digitalization.

Further research could focus on various areas. This could include analyzing corporate governance digitalization practices across various economic sectors, as well as international comparisons of digital solutions in corporate governance. Interesting issues could include assessing the impact of corporate governance digitalization on corporate financial performance or developing digital maturity models for corporate governance.

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