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# DIGITAL TRANSFORMATION AND ESG PERFORMANCE – LITERATURE REVIEW

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**Purpose:** The purpose of this study is to investigate the relationship between digital transformation (DT) and environmental, social, and governance (ESG) performance with main focus on how DT influences the ESG.
**Design/methodology/approach:** The study utilises a rapid literature review (RLR) to identify important current research papers on DT and ESG performance relation. RLR offers a transparent yet time-efficient approach similar to systematic literature reviews. Two major databases, Scopus and Web of Science, were used to select publications, supplemented by Google Scholar for additional relevant works.
**Findings:** Current research highlights the positive and significant relationship between DT and ESG performance and also pointing out factors that support it. Among others there are factors like information transparency, reduction of managerial myopia and mediator roles of dynamic capabilities, innovation capabilities, and servitization level.
**Research limitations/implications:** The source of research limitations is mainly the dependence on RLR methodology. This approach simplifies the literature review process, allows for analysis of current topics, but limits the final number of articles in the review. However, the results enable the purposes of the study to be realized. They identify the current investigated factors that influenced the relationship between DT and ESG performance and present future research directions.
**Originality/value:** The study presents the latest research findings on DT and ESG performance relation. Taking into account the ESG reporting obligation, which will be extended to SMEs in the coming years, DT appears to be a catalyst for a controlled and smooth transition to the increased disclosure obligation.
**Keywords:** digital transformation, ESG, ESG performance
**Category of the paper:** literature review.

## 1. Introduction

One of the main business goals is to create value. Value has traditionally been viewed through the prism of financial performance. It leads to its measurement through indicators such as ROA, ROE, focussing interest on the shareholder of the company (Tombolesi, 2023).

In recent years this has begun to move its focus from shareholder towards stakeholders and for meeting their expectations as well. Environmental, social, and governance (ESG) factors are becoming increasingly important in assessing the value of companies. This is not only due to increased environmental awareness (Cicirko, 2022), but also due to ESG reporting obligations under the Corporate Sustainability Reporting Directive (CSRD). Companies, especially SMEs, could find it as an another "burden" of new disclosures to report. However, research indicates that there is a positive correlation between ESG results and financial performance that is not exclusive only for large entities (Danila, 2023). It is highlighted that this connection does attract the interest of investors and lenders. Therefore, the integration of ESG in operations can become an important factor in creating a competitive advantage in obtaining external financing (Tombolesi, 2023). Furthermore, reporting of ESG-related activities is sought not only by investors but also by customers. According to the data presented by PwC, more than 60% of customers are guided by sustainability criteria when making purchases, and consumers and regulators are increasingly sensitive to false ESG claims (PwC, 2023). This is just a short list of possible reasons why ESG issues have attracted the researchers around the globe (Arvidsson, Dumay, 2022) with particular interest in assessing its impact on corporate results (Alareeni, Hamdan, 2020; Kim, Li, 2021; Velte, 2017). Current research has also focused on looking for factors that can improve ESG performance, which will subsequently translate into corporate performance. A factor gaining popularity in research is a digital transformation (DT) (D. Chen, Wang, 2024; Kwilinski et al., 2023; Peng et al., 2023; Zhong et al., 2023). Companies in almost all industries explore ways to take advantage of the benefits of the new IT technology. Both global and European enterprises are set for substantial increases in IT spending. Worldwide IT spending is projected to increase by 9,3% in 2025 reaching about \$5.74 trillion. In Europe specifically, IT spending is expected to reach total \$1.28 trillion in 2025, marking an 8.7% increase from an anticipated \$1.18 trillion in 2024 (Carter, 2024; Graham, 2024). The size of the expenditures is not only something that can impress, but so is a suggestion from past studies that only about 20% initiatives in that field succeed, so a great part of the expenditures are left without an impact or benefits (X. Zhang et al., 2023). The increase in IT spending, both for global and European enterprises, is visible mainly because of investment in a new generation of technology represented by artificial intelligence, block chain, cloud computing, big data and the Internet of Things (X. Zhang et al., 2023). This innovation presents challenges to the organisational structure of business processes and models, as well as comparative advantage. Palfreyman, Morton (2022) points out that digitalisation is a process that profoundly changes the operational characteristics of the enterprise through the integration of information and communication technologies. A significant aspect of the DT process is the development of a company's dynamic capabilities to respond effectively to unpredictable events, such as the Covid-19 pandemic (Guo et al., 2020). Several studies, particularly those focused on Chinese firms, have demonstrated that DT has a positive impact on ESG performance (X. Chen et al., 2024; Peng et al., 2023; Yang et al., 2024). A brief review of the literature shows that some of the results are mixed, emphasising that the correlation of DT and ESG performance does not imply causation (Y.Chen et al., 2024; Kwilinski et al., 2023).

As companies increasingly invest its resources into DT, with AI technology leading the change, understanding its broader implication has become a critical issue. Taking into account the focus of the European Union on sustainable development, DT appears to be an important facilitator for businesses to realise sustainable value while enhancing ESG performance (Kwilinski et al., 2023). Consequently, this study seeks to examine the present research topics regarding DT and ESG performance and asks the following research question How does digital transformation (DT) influence the environmental, social, and governance (ESG) performance of companies? The answer to this question may provide a unique insight and contribute to understanding of DT both from the managers and policymakers' perspective and lead to the decisions about the scale of support for DT initiatives.

## 2. Methods

Taking into account that the relationship between digital transformation and ESG performance gains importance, there is a need for timely and contextually relevant evidence to understand how it impacts ESG performance. To address this need and for the purpose of this study, a decision was made to utilise a Rapid Literature Review (RLR) focused on identification of current research areas. The RLR is designed to complete reviews in shorter timeframes while maintaining a level of transparency similar to that of systematic literature reviews (Smela et al., 2023; Tsang et al., 2023).

The data source was decided to be two popular scientific databases i.e. Scopus and Web of Science, enabling the retrieval of research published by major journals. The search terms used consisted of a combination of 'digital transformation' and 'ESG performance' as two key words to understand the given topic. Giving into consideration the fact that most of the works are published in recent years, the eligibility criteria was limited to English language papers, topics related to business and management, and open access possibility. At the stage before the removal of duplicates, the articles in the database were published between 2021 and 2024. Given the small number of results obtained in the review, it was decided to include six more articles using other methods. The addition was based on authors review of quality and cited publication using Google Scholar. The set of works that qualify for inclusion in this review consists of 19 papers. The publications selected for analysis were published over the last four years, with a significant predominance of publications in 2024, highlighting the popularity of the topic (2021: 1; 2022: 2; 2023: 5; 2024: 11). The publications appeared in 11 journals, with recurring ones being Humanities and Social Sciences Communications (5), International

Journal of Technology (4), and Sustainability (2). The summary and subsequent steps are presented in the figure below.

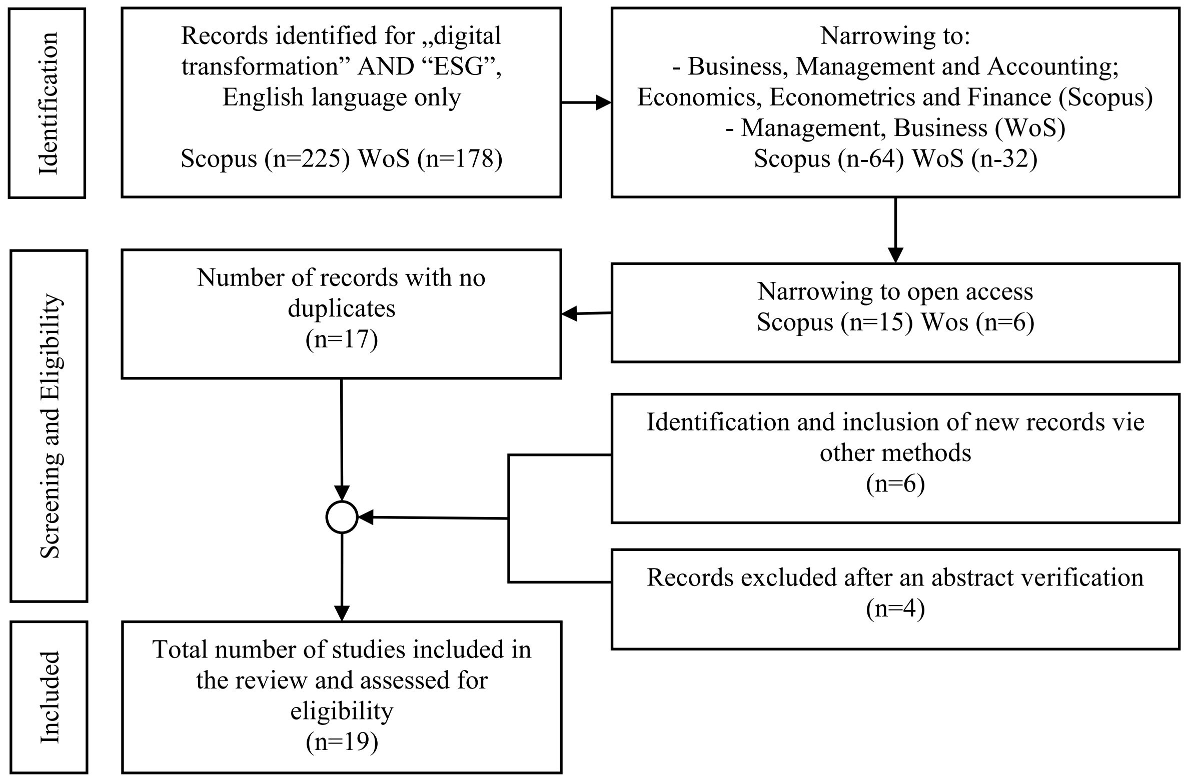


**Figure 1.** PRISMA-like flow chart of the subsequent steps of article selection.

Source: own work.

## 3. Results of the literature review

### 3.1. Causal relationship factors between DT and ESG performance

Most of the studies seem to make it clear that it is not only DT that makes ESG performance improve, but that there is also something "inbetween", some elements that play a mediating role in improving performance (Kwilinski et al., 2023; Zhong et al., 2023a). This perspective on the correlation between DT and ESG performance is clearly illustrated in the work of Kwiliniski et al. (2023). Their study examines the issue from a broad perspective at the country level, offering insight into this complex relationship. The evidence indicates a significant, positive and direct impact within individual countries. Moreover, it underlines spillover effects that positively influence neighbouring countries as well. It highlights the interconnections and possible effects for the realization of the Sustainable Development Goals on a global scale. The authors also emphasise that "correlation does not imply causation," suggesting that other factors may contribute to these outcomes. This observation encourages further research to expand the list of variables that could influence this relationship.

The first examined study in this group tests the analysed relationship from the perspective of resource allocation, while showing that DT can significantly improve ESG performance (Zhong et al., 2023). It enhances it by, among other factors, restraining management myopia. Managers, as planners and active participants in the implementation of new concepts, benefit from the clarity of information provided by DT. It promotes also employee’s autonomy, delegation of decision-making responsibilities to lower levels in the organizational structure while reducing managerial overload. Additionally, DT increases investments in factors related to information transparency as well drives investments in innovation, especially in green initiatives, enabling better practices for environmental responsibility. The authors also noticed that the application of DT enhances information which enriches management ability to make proper decisions.

The second analysed study refers mainly to a mediating role of green innovation from the perspective of large manufacturing companies (Zhao et al., 2023). DT, as a part of the company strategy, can help to reduce the carbon emission footprint. It extends the prior result that DT drives investment with particular emphasis on green innovation (Zhong et al., 2023). Zhao et al. (2023) highlight the critical role of business digitalisation in promoting both green process innovation and green product innovation. Additionally, digital platforms, which are becoming a dominant organisational model in the industry, align closely with the theory of dynamic capabilities. These platforms enable enterprises to quickly adjust to changing needs while successfully reaching their ESG objectives.

The work of Xie et al. (2024) shows that DT improves the search for innovative and green technology. The findings reveal that DT enhances ESG performance through three mediating mechanisms: improving information transparency, fostering green innovation, and strengthening internal control processes. Additionally, common institutional ownership (CIO) amplifies the positive effects of DT on ESG performance. CIO is also known as a horizontal shareholding ad it refers to individual investors that hold shares in multiple companies from the same industry. They serve as sources of external finance, work as external monitors that ensure enterprises meet the requirements of stakeholders. The study of Xie et al. (2024) also shows that subjective perceptions of economic policy uncertainty diminish its impact. This negative impact results from the example of liquidity preference theory, while ESG costs do not yield instant outcomes, and the company engages in other projects.

L. Zhang et al. (2024) provides empirical evidence for the improvement of ESG performance through DT. It highlights the mediating role of dynamic capabilities (DC) in this process, showing that DT impacts ESG performance both directly and indirectly by bolstering DC. DT has also impact on ESG performance by, among others, leveraging digital technologies, optimisation of resource utilisation, which can be considered as a key to sustainable management.

The study of W. Chen et al. (2024) slightly reverses the dependency and focusses on the positive influence of ESG performance on innovation novelty. This relation is significantly heightened in DT enterprises. The key factors driving this improvement include reduced communication costs, fostering collaboration, better utilisation of innovative resources, and expanding the scope of innovation. It strengthens firms' capacity to seek, obtain, and combine various types of knowledge.

The last study examined in this group, D. Chen, Wang (2024), investigates this relationship in the context of SMEs. Using Resource Orchestration Theory, the authors examine not only the direct impact of digital transformation on ESG performance, but also the mediating role of innovation capabilities and the level of servitization in the process, with particular focus on their importance as key factors in the SME context.

### 3.2. Balancing DT for optimal ESG performance

Among selected studies some of them highlight that excessive DT can affect the relationship between DT and ESG performance. For instance, Y. Chen et al. (2024) identifies a nonlinear relationship between DT and environmental information disclosure (EID), revealing an inverted U-shaped dynamic. At moderate levels of DT introduced into company, it experienced an enhanced performance of EID due to improved data processing, analysis, and dissemination capabilities, supporting stakeholders in evaluating environmental performance. Nonetheless, past a certain point, the advantages of DT decline. Excess digitalization can overwhelm organisational systems reducing efficiency. As DT progresses, managerial adaptability becomes essential for aligning organizational processes with increasingly complex digital systems, ensuring EID effectiveness. This additionally underscores the importance of DCs in the DT process. A similar U-shaped effect of DT on ESG performance is acknowledged in another study, that is, Kwilinski et al. (2023). Nguyen (2024) provides another example via research on ASEAN-6 commercial banks, where DT acts as a driver for ESG integration, improving the ability to implement sustainable practices efficiently. However, excessive investment in DT may weaken the profitability advantages of ESG. These findings reinforce the dual-pathway model: DT improves the execution and influences financial results, but controlling DT intensity is essential to optimise its value.

An analysis of this negative corelation can be found in a study of Wang, Hou (2024) as they observe that DT can significantly reduce ESG performance. This applies to companies that are currently investing in DT. The entry level has a negative impact on traditionally run operations, while the uncertainty of the results of introducing DT remains high and represents a kind of hidden cost for the company.

### 3.3. ESG decoupling

ESG decoupling is a term that describes the inconsistencies between the actual ESG performance and the more optimistic style of ESG report disclosures (X. Chen et al., 2024). The term has gained importance in the context of a growing number of ESG reports that do not always reflect the actual actions of companies. DT is shown to be a factor that reduces the risk of ESG decoupling. It plays a role within a governance as an ability enhancer to monitor what is happening within a company (X. Chen et al., 2024). A similar effect has been obtained in research on digital finance (DF), which reduces the presence of ESG decoupling. DF is seen to increase the quality of disclosures and to reduce managers' myopia. The effect is more noticeable in high-tech and heavy polluting companies (Liu et al., 2024). Of course, the impact depends on firm characteristics such as ownership structure, technological capabilities, and pollution levels, while investors attentiveness reinforces the effectiveness of digital finance in reducing ESG decoupling. Notwithstanding, given the prevalence of mandatory ESG performance disclosures, the topic needs further investigation and may be the subject of further research.

### 3.4. Other studies

Amongst the papers analysed in this review, there is also a group of papers whose findings are difficult to precisely categorise; their link to DT is not so direct, although they are still relevant to the objective of the paper. One of the studies investigates the relation of ESG performance and earnings quality in Asia's digital industry. It experiences a very rapid transformation and unpredictable growth, which also forces ESG performance on them (Tohang et al., 2024). The study of Hasan et al. (2024) explores and shows that ESG positively influence customer behaviour toward brands, with DT amplifying the effects of the environmental dimension by enhancing trust and loyalty. The study highlights the importance of incorporating DT into ESG strategies, particularly in environmental initiatives, to improve communication, participation, and alignment with consumer values. Similarly, Sarpong et al. (2023) reveal how rural banks can leverage digitalisation to adopt ESG practices. When it becomes part of strategy, it can improve brand equity and financial performance through enhanced stakeholder engagement and customer loyalty.

Further analysed studies such as Babkin et al. (2021) research extend this view by integrating ESG into digital maturity assessments of industrial ecosystems, showing that higher maturity correlates with better global competitiveness and sustainability. DT can also act as a catalyst for achieving higher ESG standards, fostering long-term industrial resilience and sustainable development. In the telecommunications industry, Grishunin et al. (2022) find that ESG disclosures positively influence market value, with governance playing a pivotal role, and highlight the synergistic role of DT in enhancing ESG transparency. Another study by the authors (Grishunin et al., 2023) shows the impact of environmental innovations, enhancements in the workforce. Moreover, product development practices have a positive impact on total shareholder return. The impact was evaluated on the example of companies that follow the DT strategy.

Finally, Pishchalkina et al. (2022) underscore the importance of standardized ESG rating methodologies in the mining sector, facilitating comparative analyses and identifying sustainability leaders. Together, these findings underline the critical role of DT in maximizing ESG initiatives across industries.

### 3.5. Summary

On the basis of the above studies a positive relationship between DT and ESG performance can be observed both on country economy level and passing through all the levels down to the SMEs. The studies revealed some key factors enabling the positive influence of DT of ESG performance which start from the reduction of managerial myopia as a enabler of long-term strategic planning and sustainable decision-making (Liu et al., 2024; Zhong et al., 2023). This is closely linked to increased investments in information transparency (Xie et al., 2024; Zhong et al., 2023) which enhances accountability and trust, as well as drives innovation, particularly in green technologies (Xie et al., 2024; Zhao et al., 2023). Strengthened internal control processes, amplified by CIO that foster collaborative oversight, enhance ESG performance by improving governance structures and aligning with ESG objectives (Xie et al., 2024). Beyond external factors, the mediating roles of DCs, innovation capabilities, and servitization levels are pivotal in maximising DT's impact (Zhang et al., 2024; Chen, Wang, 2024).

However, these benefits require careful management of the intensity of DT. Excessive investment can overwhelm organisational systems, reduce efficiency and the financial and sustainable benefits of ESG integration. (Chen et al., 2024; Kwilinski et al., 2023; Nguyen, 2024) Lastly, while improved ESG performance is a desirable outcome, it may paradoxically lead to opportunistic behaviours, such as higher discretionary accruals, underscoring the importance of balancing ESG advancements with strong governance measures (Tohang et al., 2024).

## 4. Future research areas on DT and ESG performance relation

An analysis of the highlighted texts shows that quite numerous papers are optimistic about the results of the DT and ESG performance relationship. Future research on the relationship offers a rich and diverse array of possibilities. One promising area is the exploration of the U-shaped relationship between DT and ESG performance (Kwilinski et al., 2023). Also, there is a need, addressed in almost every study done on the Eastern market, to expand research so that it includes enterprises from various countries and cultural contexts. It could provide deeper insights into how regional dynamics shape the outcomes (Xie et al., 2024; Zhao et al., 2023). It also corresponds to a set of other cultural dimensions and stakeholder engagement. For example, customer behaviours and loyalty towards ESG issues are influenced by more factors, which, in turn, can impact the final results (Hasan et al., 2024; Sarpong et al., 2023).

This highlights the necessity for customized strategies and a broader range of external adjustment variables, including marketization degrees and preferential tax policies (Zhong et al., 2023). Another significant research avenue involves leveraging AI-driven ESG ratings, which could refine performance assessments and improve comparability across industries and regions (Zhong et al., 2023). Furthermore, the determinants of ESG decoupling, including impression management strategies and industry-specific variations, could provide valuable insights into aligning corporate practices with sustainability goals (Chen et al., 2024; Liu et al., 2024; Papa et al., 2024).

Finally, the development of company-specific dictionaries to measure digital operations and national comparative studies could help refine the methodology and discover the unique effects of DT on ESG performance (Chen et al., 2024). Collectively, the research directions underscore the importance of nuanced, interdisciplinary approaches in advancing the knowledge on DT-ESG performance interface.

## 5. Discussion and summary

The review revealed numerous relationships between digital transformation (DT) and ESG performance, a topic of growing interest in recent years. Most studies indicate a positive relationship (Chen, Wang, 2024; Xie et al., 2024; Zhang et al., 2024), with several highlighting its significance (Kwilinski et al., 2023; Zhao et al., 2023; Zhong et al., 2023). This consistent evidence underscores the importance of DT as a driver of ESG improvements across various contexts.

The analysis employed a RLR approach, which is designed to rush the systematic literature review process. While the RLR method allows for quick insights into especially new topics, it comes with limitations, including, of course, the lack of consensus on its formal definition and best practices (Smela et al., 2023). This review aimed to include key contributions in the field, but the constraints of RLR suggest that broader and more comprehensive analyses could uncover additional relevant aspects. Consequently, the findings should be interpreted with caution, as they are based on a carefully selected selection of studies. Notwithstanding, it allows to identify a number of linkages and mediators of DT's impact on ESG that allow a broad view of this field of knowledge. Several research directions attractive to the researchers have been identified. It currently appears to be important to validate research conducted in Asia in the context of the Western world. Furthermore, a significant portion of the reviewed studies relies on data collected in periods preceding Covid-19, with some post-pandemic analyses beginning to emerge. The pandemic seems to be a pivotal point in IT expenditures, which may have transformed the dynamics between DT and ESG performance. For instance, studies in this review cover periods such as for example 2008–2020 in the EU (Smela et al., 2023)., 2010–

2020 in Shanghai and Shenzhen (Zhong et al., 2023), and only a few recent analyses from 2023 in China (Zhao et al., 2023). This combination of the need for research in other contexts and with the use of more recent data additionally highlights the evolving nature of DT's impact on ESG performance, particularly at a time of significant growth in IT spending.

DT poses challenges for traditional management paradigms while simultaneously reducing the cost of ESG implementation. It improves the accessibility and transparency of information (Zhong et al., 2023). This dual role of DT, both disrupting and enabling, requires adaptive management strategies to maximise its benefits. For policymakers, the findings highlight the need to increase support for DT initiatives while ensuring that ESG performance discrepancies are effectively addressed.

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