Financial Statistical Journal 2024, 7(2), 8081.
https://doi.org/10.24294/fsj.v7i2.8081

Review

How does digital transformation affect corporate governance paradigms? A synthesis of the literature

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CITATION

Sun Y, Guo J. How does digital transformation affect corporate governance paradigms? A synthesis of the literature. Financial Statistical Journal. 2024; 7(2): 8081. https://doi.org/10.24294/fsj.v7i2.8081

ARTICLE INFO

Received: 19 July 2024
Accepted: 26 August 2024
Available online: 5 September 2024

Abstract: At present, digital transformation has become a vital way for companies to achieve sustainable growth. This paper reviews the literature on the correlation between digital transformation and corporate governance paradigm, analyzes the specific impact mechanism of AI technology and big data technology in the field of corporate governance, and explores the influence effect of the most popular ChatGPT technology on corporate governance from the perspective of business practice. It is found that digital transformation has an important impact on stakeholder management, information disclosure, green governance and other aspects of corporate governance. The purpose of the study is to provide a new reference for the construction of corporate governance paradigm and help companies achieve long-term development in the digital wave.

Keywords: digital transformation; digital technology; corporate governance

1. Introduction

With the rapid development of the digital economy, advanced digital technologies have emerged, and important strategic decisions of digital transformation (DT) have been implemented by companies, thus completing the deep integration of digital technologies and companies, and ultimately achieving sustainable development [1]. At the same time, corporate governance is an important factor affecting the sustainable development of a company because of involving a set of institutional arrangements such as supervision, incentive and coordination [2]. Therefore, it is of great significance to explore the influence mechanism of DT on corporate governance.

Advanced digital technologies could be used by DT to collect, store and analyze data, such as Chat GPT technology, big data technology and machine learning technology, which could enhance the corporate governance effect from multiple dimensions, provide sustainable technical support for the development of the company, and achieve large-scale changes in the production and governance system [3]. On the one hand, the implementation of digital transformation strategy can promote the flow of information across fields and departments, improve the sharing of resources between internal and external enterprises, help meet the needs of multi-stakeholders, and affect stakeholder governance. On the other hand, in the area of corporate governance, the use of digital technology monitoring at the management stage has greatly improved the scientific nature of strategic decisions, including high-quality information disclosure. In addition, digital technologies can be used as an important means of energy saving initiatives, enhancing systematic lifecycle management of the

company and enhancing the green governance effect of the company. However, the long-term investment of large resources is required by digital transformation, and the initial investment cannot generate a rapid return, which may lead to resource scale effects and increase financial risk [4].

The research on the impact of digital transformation in the field of corporate governance is mainly divided into two aspects: one is the internal strategy and operation of the company, such as production efficiency [5] and corporate environmental performance [6,7], corporate innovation [8]. The second is the external factors of the company, such as business risk [9] and social responsibility [10]. In terms of the selection of research samples, Chinese companies are more likely to be selected as research objects [11,12] to analyze the influence mechanism of DT.

In general, this paper uses the method of literature review to study the correlation between DT and corporate governance. On the one hand, it summarizes the existing theoretical basis, builds the theoretical framework of this paper, and uses VOSviewer software to carry out literature measurement and generate a visual map. On the other hand, taking digital technology as the entry point, the influence effect and influence path of DT in the field of corporate governance are explored. Finally, the purpose of this paper is to assist company executives to further deepen their understanding of the influence mechanism of DT and adjust the management structure, so as to help the company obtain the development dividend of The Times and provide an important reference for the construction of a new corporate governance paradigm in the digital era.

The contribution of this study is as follows: on the one hand, it enriches the perspective of DT-related research and provides relevant reference for enterprises to implement digital transformation. At the macro level, this paper discusses the impact of enterprise DT from the perspective of corporate governance, including corporate stakeholder management, information disclosure and green governance, which helps to further clarify the importance of DT in the business process and provide theoretical support for enterprises to promote DT reasonably. At the micro level, this study takes digital technology as the entry point and explores the impact of digital transformation in the field of corporate governance through literature review. On the other hand, it deepens the relevant research on the influencing factors of corporate governance and provides new thinking for the digital intelligence of corporate governance. DT is an important way for enterprises to adapt to the development of the digital age and master key resources, and provides new ideas for enterprises to achieve sustainable development. At the same time, it enriches the research methods of literature review. Based on a large number of sample data in the WOS database, VOSviewer was used to summarize large-scale data [13] and perform bibliometric visualization, providing a new perspective for research in this field. In addition, this study has important practical significance, which provides an important reference for companies to build a new governance paradigm in the digital age, and helps companies to obtain dividends in the digital age and achieve sustainable development.

2. Methodology

In order to realize the purpose of this study, the relevant database is extended to

improve the universality and relevance of this paper. WOS database is utilized in this paper, the keywords of which are set as "Digital transformation and corporate governance", and the publication time of relevant literatures is defined as 2014–2023. The research area is business economics, environmental sciences ecology and science technology other topics. A total of 167 papers are found to be highly relevant to this study. Among the 167 papers, China, Russia, France and Italy are the most frequently studied countries or regions.

Through bibliometric analysis, this paper can better evaluate the relevant literature and draw common conclusions. This approach is not only beneficial for data processing, but also has a positive impact on academic output [14]. In terms of research methods, this paper uses VOSviewer to dig the internal relations between literatures related to this topic in recent ten years, generate bibliometric maps, and conduct bibliometric analysis for the propose of highlighting the research trends on the topic of "Digital transformation and corporate governance" from 2014 to 2023 (on 167 papers from the WOS database).

As an important database for global access to academic information, WOS database involves information in the fields of natural sciences, social sciences, arts and humanities, and includes nearly 9000 of the most prestigious high-impact research journals from around the world. It is of great significance to take the relevant literature collected by WOS as samples for research and analysis.

3. Theoretical framework

In the existing literature, a large number of theories are used to analyze and study the relationship between DT and corporate governance, among which resource-based theory, stakeholder theory and dynamic capability theory are the most frequently used theories. The above theories also provide a theoretical basis for DT to exert its unique advantages in the field of green governance. Details are shown in **Figure 1**.

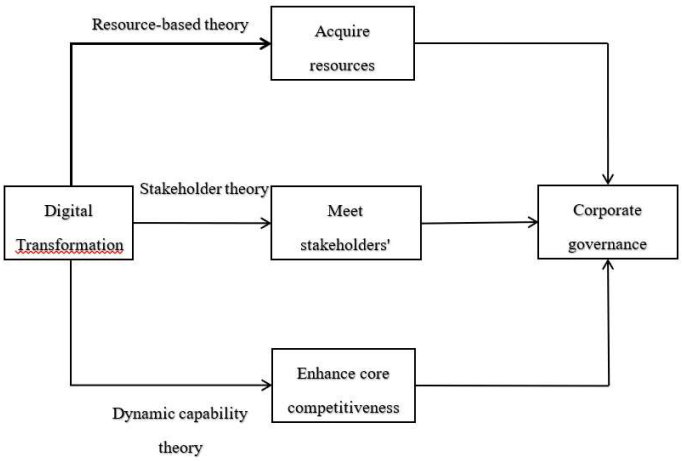


Figure 1. The theoretical framework of DT effect.

3.1. Resource-based theory

According to the resource-based theory, the core competence of an enterprise is determined by the heterogeneous resources possessed by the enterprise. DT is a key means for companies to make full use of the heterogeneous resources of data elements

to create competitive advantages for the sustainable development of the company [15,16]. On the one hand, more favorable information resources are provided to enterprises with the support of DT [17]. With the help of digital technology, companies can accelerate the speed of information transmission and promote internal information exchange and sharing [18], which is conducive to breaking the "digital gap" in internal management of enterprises and strengthening communication and cooperation between departments. Ultimately, the efficiency of resource circulation and allocation can be improved, and the stability of financial resources of enterprises can be enhanced [19]. In addition, DT can also provide sufficient information support for the operation, management and strategic decision-making of enterprises. In addition, digital transformation can help promote the positive impact of enterprises on the environment, improve resource utilization, and build a more environmentally friendly circular economy development model [20,21].

On the other hand, under the current situation that national policies constantly emphasize innovation-driven and sustainable development, the cost of collecting and analyzing environmental information for enterprises could be reduced by digital transformation, so that the change direction of the latest policies and market dynamics could be quickly grasped by enterprises, and more preferential government policies could be obtained by enterprises [22], such as sufficient financial support, financing loans, which is beneficial to reduce the financing difficulty of R&D activities in the field of corporate governance. Moreover, company executives can accurately understand customer needs through the implementation of DT [23] and timely adjust business strategies, which will reduce production costs and improve productivity of enterprises. In summary, according to the resource-based theory, DT can create competitive advantages for companies, and improve the level of corporate risk taking and the effect of corporate governance [24].

3.2. Dynamic capability theory

Dynamic capability refers to the ability of an organization to create, adjust and expand competitive advantages for specific purposes [25]. Dynamic capabilities can help companies quickly adapt to complex and changing environmental situations of distance column changes and make dynamic adjustments. When it comes to scaling up operations, dynamic capabilities can create and maintain significant advantages over other competitors [25]. Therefore, dynamic capability plays a positive role in the business development of enterprises in the rapidly changing environment [26].

Research shows that dynamic capabilities play a crucial role in the DT of enterprises [27]. DT is not simply digitization based on existing capabilities [28]. Enterprises need to make full use of existing capabilities, while constantly exploring new capabilities in the process of business development, such as using perception capabilities to uncover opportunities and challenges in the internal management and external competitive environment of the company [29], so as to maintain dynamic innovation capabilities and competitiveness, which is conducive to the DT of the company. As for the solution of maintaining dynamic capability, company executives need to maintain keen judgment and innovation awareness in a complex and changing competitive environment, and promote green governance effect [30] by increasing

R&D investment, so as to gain competitive advantages in green products and services, and ultimately further enhance the effect of green governance.

Relevant researches on dynamic capability theory are mainly divided into three aspects, namely basic theory, process theory and hierarchy theory, among which the basic theory is the most widely used [31]. The influence of DT on corporate green governance can be explored based on the internal relationship between dynamic capability theory and corporate sustainable development strategy. Dynamic capability can be divided into green innovation capability and social responsibility capability, thus enriching the basic components of dynamic capability theory [32]. Energy conservation and emission reduction are advocated by green innovation, which provides environmental and social benefits [33]. Social responsibility refers to a company's ability to continuously improve and optimize its digital infrastructure based on customer feedback to meet the interests of all parties. Actively fulfilling social responsibility is conducive to improving the reputation and image of the company, thus enhancing the value of the brand [34].

3.3. Stakeholder theory

According to stakeholder theory, enterprises should take into account the interests of internal and external stakeholders and be responsible to all stakeholders, including shareholders. Stakeholder theory has been used by more and more existing literature to explore the effect of corporate governance. On the one side, there is a correlation between information disclosure and corporate financial performance. Constantinescu et al. [35] found that the information disclosure is positively correlated with the value of the company. A higher degree of information disclosure contributes to the enhancement and improvement of corporate transparency and financial performance [36,37], which is conducive to improving the degree of trust of shareholders and stakeholders. [38] found that positive signals about future financial performance can be released by corporate social responsibility reporting.

On the other side, Stakeholder theory can better promote DT to exert its influence in the field of corporate governance. In order to meet the interests of shareholders, investors and other people, companies can implement DT to reduce internal control costs and information costs, promote organizational efficiency [39] and decentralization reform [40], improve corporate supervision efficiency and optimize organizational authorization decisions [41].

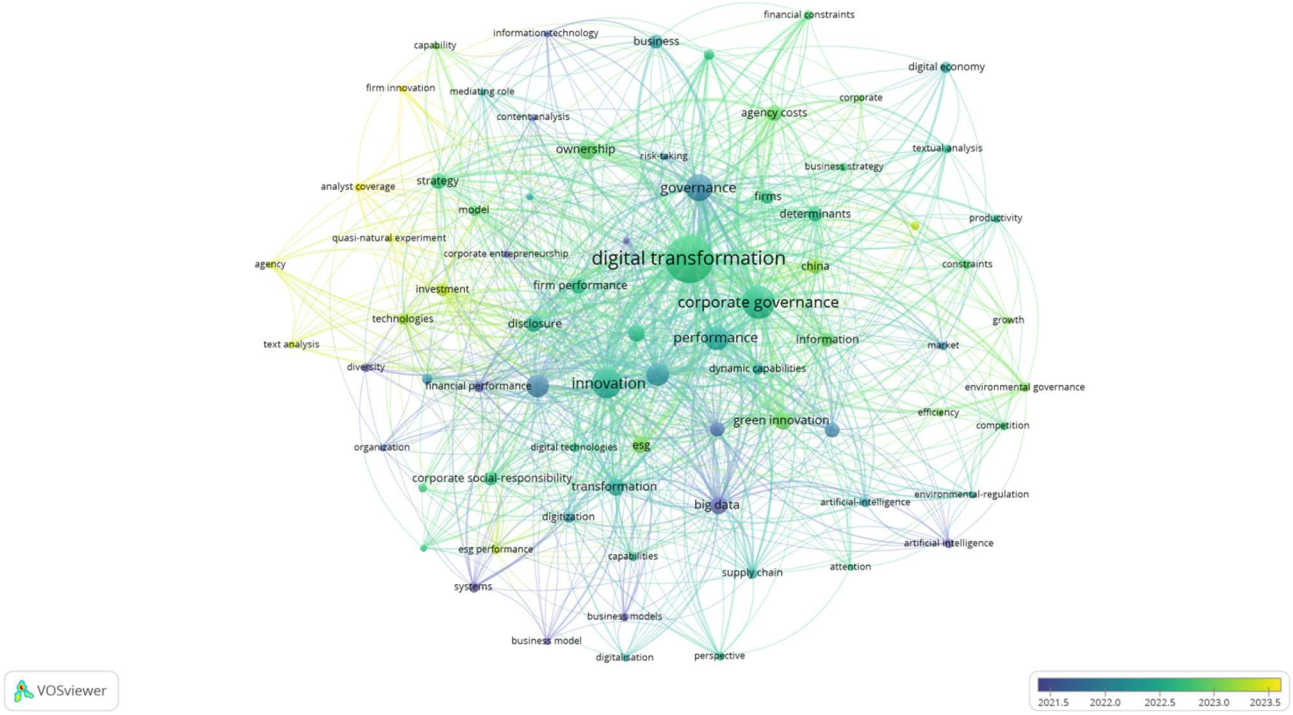
In addition, stakeholder satisfaction can be improved by the high-quality information disclosure [42]. And puts more emphasis on the impact of information disclosure on consumers [43]. Empirical research finds that high-quality information disclosure has a positive effect on corporate development, which helps to enhance brand value and give consumers sufficient confidence.

4. Results

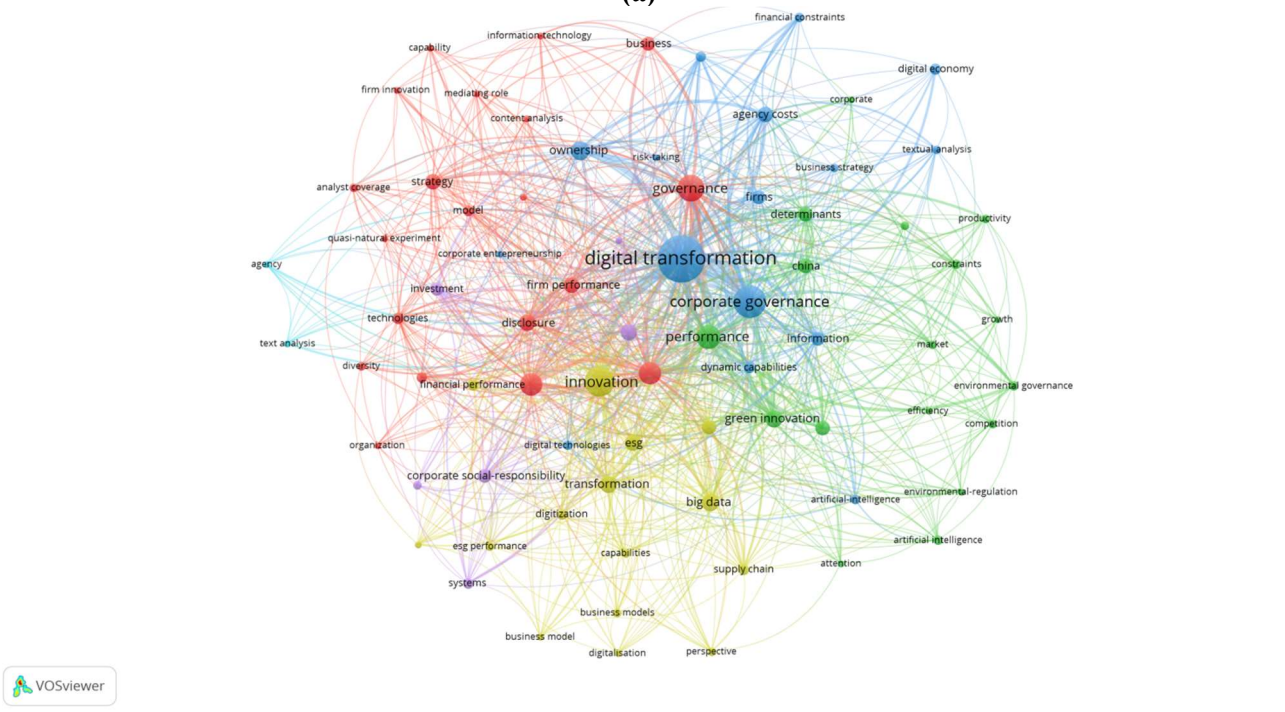
4.1. More and more scholars participate in exploring corporate governance

The connections between DT and corporate governance have been found in the

literature since 2014 until 2023.



(a)



(b)

Figure 2. A bibliometric analysis of research themes on 'digital transformation and corporate governance'. **(a)** visualization of the paper network confirming the main themes of research; **(b)** evolutions of research trends between 2014 and 2023 based on WOS database.

Figure 2 gives a holistic overview of the past research based on keywords' cooccurrences with 'digital transformation and corporate governance'. The analysis reveals a discernible prominence reflecting four principal domains of investigation,

namely three significant clusters that can be identified based on visualization in **Figure 2a,** such as a) digital transformation, b) disclosure, c) firm performance, d) environmental performance. We can see that studies on financial performance, green innovation, artificial intelligence, big data and information disclosure are hot. (**Figure 2b**). Thus, it can be seen that the existing literature on DT and corporate governance field research is more comprehensive, and its view of research is also different.

The colours in the top panel indicate the themes of research that the papers are discussing, while the colours in the bottom panel indicate the year of publication. N = 167 papers.

4.2. Digital technology and corporate governance

Based on the literature review from 2014 to 2023, combined with the relationship between digital technology and corporate governance, this paper subdivides digital technology into widely used big data technology and artificial intelligence technology, and explores its impact on the field of corporate governance in combination with the latest hot ChatGPT technology. Big data technology is an important part of digital technology, it can mine a large number of data samples, analyze the operating rules and characteristics of a specific field, and draw conclusions that are universal. The application of big data technology can better explore the universality of DT effect in the field of corporate governance. On the other hand, artificial intelligence technology plays an important role in digital technology. It is based on big data and uses unique algorithms to analyze data and build models. The application of artificial intelligence technology helps company executives improve decision-making through data models. Finally, at the practical level, ChatGPT is a vivid embodiment of AI technology, which is also the hottest digital technology at this stage. By summarizing the influence mechanism of ChatGPT in the field of corporate governance, we can enrich the influence forms of DT and strengthen the practicability of ChatGPT in business activities.

4.2.1. Big data technology and corporate governance

Human production and lifestyle have been profoundly reformed and influenced by the fourth Industrial Revolution in the digital age [44]. The economic and social activities of many actors, including companies, are recorded in digital form, forming various forms of big data, which contains a large number of interrelated dynamic information of microeconomic actors.

Compared with traditional data, big data has three characteristics of influence in the field of corporate governance: First, the scale is large, which means the sample size and the number of variables are large [45]. A lot of big data is the dynamic behavioral big data of a large number of interrelated microeconomic subjects (such as consumers, producers, investors, etc.). The larger the data scale, the greater the universality of research conclusions, and the richer the information resources provided for corporate decision-making. The second is high efficiency, which means that high-frequency data and even real-time data are available [46]. The third is the diversification of data resources. Through big data technology, the acquisition of corresponding data information provides information advantages for improving the effect of corporate governance, including structured data and various forms of

unstructured data, such as text, graphics, audio, video, etc.

Big data technology can provide a new perspective for corporate governance research. Ahmed et al. [47] believe that big data technology can better improve the governance of the board of directors and monitor the lag of audit reports. Besides, Choi and Park [48] pay more attention to the application of big data in the field of corporate green governance. It is found that big data analysis can positively affect the company's social responsibility performance. Sadasivam et al. [49] can use big data analysis to identify corporate governance fraud and avoid business risks.

4.2.2. AI technology and corporate governance

As one of the core development directions of the new generation of technological revolution, artificial intelligence technology has an impact on enterprises mainly in promoting enterprise technology upgrading and product iteration as well as enterprise management reform [50]. Overall, AI technology will have a significant impact on corporate governance. On the one hand, due to the professionalism of artificial intelligence technology, enterprises increase their investment in the application and research and development of artificial intelligence technology, which encourages enterprises to include core technical personnel in the corporate governance team and encourage them to participate in corporate governance activities, including the allocation and incentive in equity, the determination of salary levels, and the internal composition of "directors, supervisors, senior managers" positions, etc. [51,52].

On the other hand, AI provides an important technical means for improving the level of corporate governance [53]. Relying on powerful learning technology, accurate algorithms, neural network technology and other advanced technologies, AI can assist in analyzing the company's management and decision-making [54], greatly reducing the subjectivity of management decisions, improving the rationality of decisions, and effectively ensuring that the company's long-term and global development of major governance decisions more scientific and reasonable [55].

In recent years, domestic and foreign scholars have conducted research on artificial intelligence and corporate governance. The research focus can be summarized in two aspects: on the one hand, the influence mechanism of artificial intelligence on corporate governance. The powerful computing power of artificial intelligence can not only effectively reduce the problem of information asymmetry in corporate governance and reduce agency costs [56], but also provide technical support for scientific decision-making of company executives. Gao and Liu [57] believe that the application of artificial intelligence in enterprise management makes the behavior of managers tend to be "transparent", the transparency and efficiency of corporate operation and management are improving, and new governance methods are gradually emerging [58]. This also indicates that the development of artificial intelligence technology makes the intelligence of corporate governance feasible [59]. The "wisdom + data" decision model built based on artificial intelligence technology can support enterprises to make more accurate management decisions [60]. On the other hand, some scholars believe that artificial intelligence will negatively affect corporate governance. The application of artificial intelligence technology will increase the complexity of corporate governance, exacerbate institutional conflicts [61] and agency conflicts [62], and weaken the efficiency of corporate governance.

4.2.3. Business practice level: The impact of Chat GPT technology

In order to explore the impact of models such as ChatGPT on corporate governance paradigms, the main features of ChatGPT need to be understood.

ChatGPT has remarkable properties as a deep learning algorithm that mimics human cognition [63]. One is intelligence [64]. Since ChatGPT is now utilized all over the world and provided with free training and updates, the speed of improvement and iteration of ChatGPT will be further accelerated [65]. ChatGPT will gradually approach the level of human intelligence and surpass humans in some aspects, especially in the case of long repetitive work, humans may get tired, but this situation should not be considered when the machine is working [66]. Second is the wide range of applications. With access to public information on the Internet, ChatGPT can perform a variety of tasks, including generating structured knowledge, providing solutions to problems, etc., thereby helping to improve the decision-making ability and level of company executives [67]. The third is the ability of inductive speculation. As a generative artificial intelligence technology [68], the text content generated by ChatGPT comes from the large model to predict the probability of word and phrase occurrence in the Internet big data [69]. The inductive reasoning function of ChatGPT is realized, which provides significant reference for the strategic decision of the company.

At present, ChatGPT technology has been gradually applied to the business practice of companies [70]. For instance, ChatGPT has been appointed by CS India as the CEO of the organisation [71]. At the same time, ChatGPT has taken on supervisory and management functions within the company, assisting in the day-to-day operation and scaling of the company. João Ferrão dos Santos appointed ChatGPT as CEO of the company and set KPIs for ChatGPT by allocating a budget of $1000 per day. In response, ChatGPT suggested building corresponding e-commerce platforms and utilizing AI imagery and visual graphics tools to design clothing, thereby obtaining venture capital for businesses [72].

The selection of research methods, that is, qualitative analysis or quantitative analysis, has been debated in academic circles. Due to the vigorous development of big data technology, the valuable information contained in various unstructured data, especially text data, has attracted wide attention of scholars. Shiller [73] points out that, in contrast to structured economic data, text data contains a lot of information about company development and performance improvement. Therefore, it has become an effective way to extract psychological factors information of various economic entities including companies from text data. The main tool to extract psychological factors from text data is natural language processing technology, and the commonly used methods include word frequency method, topic method, etc. [74].

4.3. The impact of digital transformation on corporate governance

Digital transformation can alleviate the problem of information asymmetry and has a significant impact on improving the corporate governance effect. On the one hand, the digital transformation of enterprises alleviates the problem of information asymmetry and reduces the derived principal-agent cost [75]. The technological change brought about by digital transformation not only improves the corporate eco-

environmental governance effect [76,77], also has a positive impact on the scale and business performance of enterprises [78]. For example, in the field of green governance, industrial data modeling and artificial intelligence technology are used to implement carbon emission detection and carbon footprint tracking, and systematic management of the entire life cycle of the company is strengthened, so as to improve the effect of green governance and the company's business performance [79]. Therefore, the impact of digital transformation in the field of green governance deserves attention. On the other hand, DT helps to improve the quality of information disclosure. High-quality information disclosure is conducive to improving regulatory efficiency [80] and the business value of enterprises [81]. The implementation of digital transformation can not only help reduce the operating costs of enterprises, including the costs of information search, negotiation and transaction monitoring [82], but also form a more centralized management model [83] and improve the quality of information supervision and audit [84], so as to improve the quality of information disclosure through various ways and effects, and thus have a significant impact on corporate governance.

Moreover, digital transformation can enhance external oversight. The company has accelerated the exchange of information with the external environment through DT [85]. The new business model has become more complex and specialized, and the traditional financial statement information can no longer meet the needs of internal and external stakeholders, including investors. There is also a large gap in the efficiency of information resource utilization among stakeholder groups [86]. Therefore, attention should be paid to the impact of DT on enterprise stakeholder management. Based on a review of a large number of relevant literatures, this paper divides the specific impact paths of DT on corporate governance into three aspects: stakeholder management, information disclosure and green governance.

4.3.1. Digital transformation affects stakeholder management

Stakeholder rights and interests have always been a hot topic in academic circles. Brooks et al. [87] divide the stakeholders of an enterprise into internal and external categories. Internal stakeholders include shareholders, boards, management and employees, while external stakeholders include consumers, creditors, governments and other businesses. The protection of stakeholders' rights and interests includes economic responsibilities to shareholders, as well as responsibilities to creditors, governments, customers, employees and other stakeholders. Internal stakeholders are different from external stakeholders. Internal stakeholders are the makers and implementers of corporate strategies, so they have more immediate and adequate access to information than external stakeholders. Bridoux and Vishwanathan [88] divide stakeholders into strong stakeholders and weak stakeholders. The strong stakeholders have stronger bargaining power, thus constrains managers' behaviors and strategic decisions.

This study analyzes the influence mechanism of DT from the perspectives of internal stakeholders (managers and employees) and external stakeholders (consumers and government).

From the perspective of internal stakeholders, on the one hand, digital transformation can help enterprises and employees achieve value co-creation. Digital

transformation can clearly communicate business goals to employees. Enterprise digital transformation industrializes enterprise data elements, including a series of data elements that are closely related to enterprise objectives such as employee performance, responsibility and risk accumulated during enterprise operation. Digital transformation applies these data indicators to employee management to realize the close combination of internal performance evaluation and enterprise objectives. At the employee level, digital transformation clarifies the direction of the enterprise's efforts and the path of performance improvement. At the enterprise level, digital transformation activates the data elements of the enterprise, enables employees to create value through the digital performance appraisal mechanism, reduces employee management costs, and improves the incentive and constraint mechanism of the enterprise. At the same time, the digital elements provided by the enterprise will not only bring long-term development opportunities for the enterprise, but also greatly enhance the individual innovation and entrepreneurship ability and data analysis and processing ability of employees. Intrapreneurial employees use the market and customer data obtained from the enterprise's front-line operation to explore entrepreneurial opportunities that can improve their own economic benefits. In addition, employees' intrapreneurship can share and exchange information through a digital cloud platform to exercise operation and management capabilities in practice. It also provides a digital assessment path for companies to find outstanding employees with leadership potential and innovative thinking. On the other hand, the digital transformation of enterprises has a profound impact on the working patterns of managers. Managers use digital technology to make more intelligent decisions, so that the decision-making process can be tracked and justified. Digital transformation reduces the vertical and horizontal communication costs within the enterprise. The efficient information processing ability of digital technology helps managers to save time and effort to supervise the operation status of the organization, pay precise attention to the work of employees, and ensure that managers can effectively manage more subsidiary departments and employees. While the scale of enterprises is gradually expanding, the management range of managers can also be improved. Ensure a reasonable level of enterprise management and fast information transmission, so that enterprises are more democratic and dynamic.

From the perspective of external stakeholders, on the one hand, digital transformation can effectively eliminate the information asymmetry between consumers and production enterprises. The digital transformation of enterprises has shifted the traditional "manufacturing-inventory-sales" model to the "sales-based production" manufacturing model. Through big data technology, enterprises can standardize the number of orders and quickly respond to consumers' personalized and fragmented needs, improve production accuracy, enhance enterprises' personalized manufacturing capabilities and customization efficiency, and reduce information asymmetry and resource waste. It also increases consumer satisfaction. Finally, the company realizes the win-win situation of enterprises and consumers through DT. On the other hand, digital transformation helps enterprises to find quality suppliers more efficiently. Based on the characteristics of digital technology breaking through time and space constraints, enterprises establish their own digital supply market through digital transformation. At the same time, enterprises can choose and process a large

number of order data, and select high-quality suppliers that meet market demand and consumer expectations in a wider range and a wider region. Then through the digital market online bidding, bidding and other forms to select high quality, low price, good credit suppliers, and complete the contract signing online. Digital supply market allows enterprises to significantly reduce the purchase cost, can better adapt to the rapidly changing market environment and customer needs, but also allows suppliers to save sales time and product storage costs, to achieve more intelligent inventory management.

In order to explore the influence mechanism of DT on stakeholder management, scholars have adopted various research methods to carry out empirical analysis. Due to differences in the selection of variables, the general model is constructed as follows:

$$right_{i,t} = \gamma_0 + \gamma_1 digital_{i,t} + \gamma_2 X_{i,t} + \mu_t + \nu_i + \eta_j + \varepsilon_{i,t}$$

Among them, right is a set of stakeholder equity variables, including internal stakeholder equity (inright) and external stakeholder equity (exright). digital is the degree of digitization; *X* is the set of control variables; *i* stands for individual enterprise, *t* stands for time, *j* stands for industry; μ_t is the time fixed effect; ν_i is the fixed effect of enterprise; η_j is the fixed effect of the industry; $\varepsilon_{i,t}$ is a random interference term.

4.3.2. Digital transformation affects corporate information disclosure

High-quality information disclosure plays an important role in reducing information asymmetry, alleviating agency problems, optimizing resource allocation, and protecting small and medium investors [89,90]. However, in a semi-strong efficiency capital market, the strategic preference and insider manipulation of information disclosure [91] seriously affect the stability of the capital market. How to improve the quality of information disclosure has become an important and urgent practical problem. In the digital time, the implementation of digital transformation can solve this problem well.

The digital transformation of enterprises affects the quality of information disclosure in multiple aspects. On the one hand, Digital transformation reduces the company's operating costs. Digitization has created information, knowledge management and decision support systems that reduce the risk of information distortion [92]. As digital management concepts and internal control methods are embedded in daily operations, the transparency of financial management and internal control has increased significantly. This can reduce supervision costs for external stakeholders, as well as agency costs for internal stakeholders and managers [93] to improve capital allocation efficiency of enterprises [94] and the quality of information disclosure.

On the other hand, digital transformation can improve the efficiency of information supervision, thus improving the quality of corporate information disclosure. Using digital technology to supervise the information generation process can also reduce the space for human manipulation and the executives' behavior of opportunistic information disclosure [95]. Besides, DT enables companies to aggregate and process massive amounts of data at a lower cost and with a faster speed. This can reduce the cost of information processing and transmission, organizational

coordination and control management, which can inhibit the concentration of power of executives [96], and ultimately improving the quality of information disclosure.

The existing literature discusses the factors affecting the quality of information disclosure from various aspects. From the perspective of internal factors, regulatory characteristics, internal governance [97], corporate characteristics [98,99], institutional investors [100,101], etc., have a significant impact on information disclosure. From the perspective of external factors, regulations of regulatory agencies will affect the content and characteristics of corporate information disclosure texts [102], and texts are more readable under non-mandatory disclosure requirements [103].

In order to explore the influence mechanism of DT on corporate information disclosure, scholars have adopted various research methods to carry out empirical analysis. The most common way to measure the quality of information disclosure is to measure the number of shares by stock production and regression slope fungibility. The higher the rate of change, the worse the quality of information disclosure; On the contrary, the better the quality of the disclosure [104]. The details are as follows:

$$ln|\Delta P_t/\mathrm{P}_{t-1}| = \alpha + \beta(Vol_t - Vol_0) + \mu_i$$

ΔP_t is the difference between ΔP_t and P_{t-1}; P_t is the closing price on day *t*; Volt is the trading volume on day *t*; Vol_0 is the annual daily trading volume; Delete values with annual trading days less than 100 days, β of negative value and ΔP_t value of 0, obtaining KimV = β × 1,000,000. The smaller the KimV value is, the higher the information disclosure quality is.

4.3.3. Digital transformation affects corporate green governance

As an important tool for the digital transformation of the enterprise, digital technology plays an auxiliary role in the business management and strategic decision-making. [105] adopt dual theory and fuzzy set qualitative comparative analysis (fsQCA) to combine digital tools and corporate responsibility to improve the green governance effect of enterprises. Guo et al. [106] believe that the updated iteration of digital technology and the improvement of digital infrastructure contribute to the online "paperless" work, reduce resource consumption and promote the green transformation of the company.

With the advancement of digital transformation, the connection strength within the company and between upstream and downstream partners has been further enhanced, and key resources such as information and technology have gradually accumulated, which is conducive to improving technological innovation, strengthening the correlation and collaboration in the supply chain, and making the company's green activities more transparent and efficient. Corporate green governance is positively influenced by digital transformation [107].

On the one hand, digital transformation can promote product development and innovation of enterprises and improve corporate green governance. Based on cutting-edge digital technology, enterprises can shorten the research and development cycle, reduce the research and development cost of green products, accelerate the development progress of green differentiated products [108], and improve the efficiency of green innovation. In addition, the company is promoted by digitalization to carry out cooperative research and development activities with universities and

research institutes, so as to integrate a large amount of resources needed in the field of green innovation, master core technologies and future development trends, and provide technical support for the green governance. On the other hand, digital transformation enhances the closeness between the company and its partners, thereby strengthening corporate green governance. By establishing intelligent integrated systems, Internet of Things and other digital intelligent platforms, companies can realize the full exchange and sharing of information, technology and other resources in the supply chain, so as to improve the allocation efficiency and ultimately promote digital transformation [109]. Additionally, digital transformation has advantages in information exchange and resource sharing, which stimulates downstream greening demand and further promotes upstream green governance. Furthermore, upstream enterprises carry out green governance by transforming and upgrading equipment and reducing pollutant emissions [110], which also improves the standards of downstream enterprises' production processes, thus enhancing the green governance effect of the entire supply chain.

Based on the above analysis, the model construction of the impact of digital transformation on corporate green governance is as follows:

$$Greengov_{i,t} = \beta_0 + \beta_1 Digital_{i,t} + \beta_2 Control_{i,t} + \sum Year + \sum Firm + \varepsilon_{i,t}$$

Greengov is considered as a proxy variable to measure a company's green governance, *Digital* is utilized to measure the degree of a company's digital transformation, *Control* is a selected series of control variables, *Year* and *Firm* are year fixed effects and individual fixed effects, while ε represents random interference terms.

5. Conclusion

The impact of digital transformation in the field of corporate governance has become a hot research topic, which is paid more and more attention by more and more scholars. The rapid development of digital economy has given birth to cutting-edge digital technology. Many studies focus more on specific digital technology as a typical representative of the digital transformation of the company and explore the impact mechanism on the corporate governance paradigm, such as big data technology and AI technology, and explore the impact of ChatGPT technology, which is the most popular at present. This paper reviews and summarizes relevant literature, points out the specific characteristics of digital technology and corresponding research methods from the micro level, and finds that digital technology has a positive effect on corporate governance, which provides reference and suggestions for building a new corporate governance paradigm and improving the effect of corporate governance.

Further research points out the specific impact path of digital transformation on corporate governance paradigm at the macro level, more attention is paid to the impact of digital transformation on corporate stakeholder management, information disclosure and green governance, and the corresponding variable design is adopted to build a basic model for empirical research. Through model construction, the influence mechanism of DT on these three levels is proposed in this paper, which provides a basis for further research by subsequent scholars and business practices of company executives in the digital era, and helps the company achieve sustainable long-term

development.

Conflict of interest: The authors declare no conflict of interest.

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