The Current Situation, Hot Spots, and Prospects of ESG in the Transformation and Upgrading of Chinese Enterprises under the Background of Dual Carbon

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Abstract. With the promotion of China's dual carbon goals, high-quality development and green low-carbon transformation have become new development goals for enterprises. In this context, ESG, which focuses on environment, society, and governance, has increasingly become the core concept for evaluating the long-term value and sustainable development ability of enterprises. At present, Chinese enterprises have gradually become interested in the concept of ESG development and has brought new opportunities and challenges to enterprise management decision-making and strategic transformation. If enterprises can make good use of ESG concepts and create differentiated competitive advantages, it will be beneficial to enhance market competitiveness and encourage the development of enterprises at a high level. In this essay, the literature on ESG research in China is reviewed and analyzed. The article explores the current research status, hotspots, and stages of ESG in China, and analyzes the paths and methods for Chinese enterprises to transform and upgrade under the guidance of ESG concepts, which can encourage the sustainable growth of Chinese enterprises.

Keywords: ESG, Double carbon, green innovation, Digital Transformation.

1. Introduction

High-quality development and green, low-carbon transformation have emerged as new development goals for businesses with the advent of China's "dual carbon" aims. Green finance is a new trend and direction in the financial industry. In 2021, China clearly proposed the "dual carbon" goal, emphasizing the urgency of green and sustainable economic development. On October 16, 2022, at the CPC's 20th National Congress' opening session, Xi Jinping made the proposal that achieving high-quality development is the key to fully constructing a socialist modernized nation. It is imperative that this new development paradigm of "innovation, coordination, green, openness, and sharing" be precisely and thoroughly carried out. Enterprises must take on the significant responsibilities of safeguarding the environment, upholding social obligations, and strengthening governance capabilities because they are the core component of the micro economy and are the main implementers of attaining high-quality economic development. In this context, ESG, which emphasizes the environment, society, and governance, has grown to become the central idea for assessing an organization's long-term worth and capacity for sustainable development.

At present, the ESG performance of Chinese enterprises has received widespread attention from various market participants. Therefore, the practical demand for sustainable development of enterprises has driven research on ESG, and whether and how ESG can help various enterprises improve their sustainable development capabilities has become a focus of academic attention [1]. Chinese enterprises should carry out capacity building under the ESG system, continuously deepen and improve in international cooperation, and thus build their own sustainable soft power, bringing new opportunities and challenges to enterprise management decision-making and strategic transformation.

From the current literature, current research mainly focuses on green finance, digital transformation, information disclosure, and responsible investment. Therefore, this article conducts research on two hot topics: green finance and digital transformation. Firstly, a large amount of literature has conducted multidimensional explorations on how ESG theory affects digital

transformation in enterprises, and many valuable research results have been formed. The impact of digital transformation in enterprises has been examined from aspects such as professional division of labor, operational performance, capital market performance, total factor productivity, and it has been found that digital transformation can bring positive effects to enterprises. Among them, representative research achievements include: Acemoglu's research found that digital technology and traditional production models are intertwined, and production resources are reorganized and optimized through technological innovation, breaking beyond the boundary limits of traditional elements and displaying new value functions [2]; Nambisan et al. believe that by reducing financial friction between financial institutions and businesses, enhancing enterprise information transparency, and lowering the cost of "search-match" between credit demand and supply, digital transformation can encourage the development of innovative businesses by removing financial constraints [3]; Boland et al. conducted an examination of how digital technology affects innovation [4], and Chen Chunhua et al. found that enterprise distributed technology evolution can fit complex business ecological scenarios with greater "technological penetration" [5, 6].

Secondly, there are currently many scholars talking about green innovation in businesses, concentrating on how green finance can increase business value, examining the influence and effectiveness of ESG performance on business market value, and integrating green technology innovation into the framework of analysis to investigate the function of green technology innovation in the link between the two. Among them, representative research findings include: According to ZUMENTE et al., strong ESG performance can increase stakeholder trust, win government support, increase resource tilt, lessen uncertainties and risks faced by businesses, and foster sustainable business development, all of which can increase long-term corporate value [7]; Agustia et al. believed that green technology innovation can help enterprises effectively integrate and utilize internal and external resources, optimize processes, improve production efficiency, and thereby improve economic efficiency and gain competitive advantages [8-10]; Yu et al. discovered that the advantages of engaging in ESG activities surpass the costs paid for the majority of listed companies, and that ESG performance can provide financial support for businesses as well as significant financial assistance for the development of green technologies [11, 12].

In this context, bibliometric research in the field of ESG in China can help to sort out important academic achievements in the field, and help scholars clearly grasp the research direction of ESG. China's market is still developing at a young age compared to Western developed nations, and ESG is also just getting started [1]. Due to the limited quantitative analysis and sorting of ESG research trends, this article analyzes the core journal literature related to ESG research in China, explores the current research status, hotspots, and stages of ESG in China, and draws research conclusions and future prospects. This provides useful reference and experience for the expansion of ESG research in the academic field and the practice of ESG in the business community in China.

2. The Development Process and Current Situation of ESG Concept

In 1972, the United Nations Conference on the Human Environment helped establish a standardized approach to environmental protection. The UN Framework Convention on Climate Change's first legally binding accord and the first agreement in human history to regulate greenhouse gas emissions were both established with the adoption of the Kyoto Protocol in 1997. A long-term objective for greenhouse gas emissions was established in the 2015 Paris Agreement, which included limiting global temperature increases to between 0 and 2 °C, aiming for a 1.5 °C target, and achieving net zero emissions by the middle of this century. With the goal of incorporating environmental, social, and corporate governance issues into investment decisions, focusing on the performance of businesses in the aforementioned three dimensions, and lowering non-financial risks in investments, Goldman Sachs first formally presented the ESG concept in 2007.

26 stock exchanges worldwide now require the disclosure of ESG information, according to statistics provided by the United Nations Sustainable Stock Exchange [13]. In recent years, the

Shanghai Stock Exchange and the Shenzhen Stock Exchange in China have both released guidance documents on the disclosure of ESG information for listed companies [14]. In 2008, with the outbreak of the global financial crisis, the "Guiding Opinions on Strengthening the Social Responsibility of Listed Companies" were published by the China Securities Regulatory Commission, proposing the social responsibilities that enterprises should bear, and encouraging listed companies to voluntarily prepare and publish social responsibility reports. The China Securities Regulatory Commission mandated that all publicly traded businesses include environmental disclosures in their annual reports in 2016. The release of this regulation not only prompted more companies to pay attention to environmental issues, but also enabled investors to better understand and evaluate their environmental behavior. It is a milestone event that truly drives the development of ESG in China. China first put forth the objective of reaching the carbon peak by 2030 and becoming carbon neutral by 2060 in 2020. In addition to showing China's desire to combat climate change, the "dual carbon" aim gives the effort to do so on a global scale more momentum. The ESG idea has become a potent tool for attaining these goals and development as a result of the high degree of compatibility between it and the "dual carbon" goals, high-quality development, and novel development concepts. Therefore, since 2020, the themes related to ESG research have become increasingly diverse, with green finance, digital transformation, information disclosure, and responsible investment becoming the main hotspots.

3. Analysis of the Implementation Path of ESG Concept and Transformation Innovation of Various Enterprises

According to existing literature and data analysis on the transformation and innovation paths of various enterprises based on the ESG concept, the current research direction mainly focuses on how Chinese enterprises achieve green innovation and digital transformation based on the ESG concept. Therefore, this article will discuss the above two aspects.

3.1. Chinese Enterprises Implement Green Innovation Based on ESG Concept

Green innovation is a key driver for accomplishing its criteria based on the ESG concept in light of the current requirements for low-carbon transformation and sustainable development of Chinese firms. Increasing the adoption of green technologies by businesses can help the environment while simultaneously fostering economic growth. At present, research has been conducted on how Chinese enterprises can achieve green innovation in external environment, internal governance, and other aspects based on the ESG concept.

Corporate ESG is a comprehensive evaluation of a company's corporate governance, social responsibility, and environmental management from the perspective of corporate governance. It may alter how an organization interacts with its external stakeholders, which could have an impact on its choices for green innovation [15]. ESG performance helps businesses build a positive brand image, and a positive brand image enables businesses to further explore the consumer market, advance sustainable development, and, as a result, be able to implement green innovation. First of all, a management style that is more upbeat can help businesses increase their degree of green innovation [16]. A second factor that might strengthen the beneficial impact of ESG performance on green innovation is the institutional setting [17]. Green technology innovation can also efficiently integrate and use an organization's internal and external resources, streamline processes, boost production efficiency, and raise an organization's value [18-19].

From the perspective of financing constraints, ESG performance of enterprises can alleviate their financing constraints, thereby promoting green innovation. Firstly, under the dual carbon target, businesses that have outstanding ESG performance have an excellent track record [20], and positive ESG performance helps to improve organizational legitimacy, which helps organizations gain the trust and support of government regulatory authorities, relieve resource constraints, and obtain essential resources like government subsidies [21]. Secondly, a good ESG performance of a company indicates a high level of information transparency, which helps to increase the participation of

stakeholders such as creditors and investors, significantly reducing investment risks and enabling the company to obtain financing at a lower cost [22-23].

3.2. Chinese Enterprises Realize Digital Transformation Based on ESG Concept

According to the report of the 20th National Congress of the Communist Party of China, China should "accelerate the advancement of the digital economy, promote the complete incorporation of the real economy, and create a digital industry cluster with international competitiveness." [24]. Chinese enterprises are actively supporting the emergence of digital innovations like big data, blockchain technology, and artificial intelligence as a result of the continual advancements in modern science and technology, which is accelerating the development of China's digital economy. According to the "Study on the Digital Revolution Index of Chinese Enterprises," approximately 16% of Chinese businesses are expected to have successfully embraced digital transformation by 2021.This demonstrates that enterprise digital transformation is a key enabler of high-quality enterprise development and a catalyst for prosperous economic growth.

Research on ESG performance and the effects of digital transformation on company value has increasingly become more in-depth in the past few years. In existing literature, most studies believe that enterprises implementing digital transformation based on ESG concepts can help achieve synchronous growth of social and economic value. Enterprises with a high level of digital transformation will have a bigger role in boosting corporate value through ESG performance. This is because digital transformation has a positive moderating effect in the impact of corporate value.

Firstly, the spread of knowledge and information has been facilitated by the application of the Internet and the Internet of Things, which has also optimized the channels for businesses to acquire information [24]. In order to support their own manufacturing decisions, market orientation monitoring, and production optimization of procedures, firms have been able to completely exploit this type of information as a result [25]. For instance, when businesses steadily deepen their digital transformation, they may significantly increase operational effectiveness, accomplish information analysis, direction management, and process optimization of innovation activities at a cheaper cost, allowing enterprises to achieve greater output performance within their existing resource boundaries, thereby attracting more external investors [26, 27]. In addition, the upgrading of equipment and technology brought about by digital lightweight can help enterprises establish resource barriers and form sustainable competitive advantages [28, 29]. Secondly, the effects of "technology substitution" and "scale expansion" on businesses can help to boost total factor productivity, which can create the necessary conditions for the growth of new ideas [30]. It can help enterprises achieve innovative development through channels such as improving capital availability, capital utilization efficiency, and reducing capital mismatch [31]. Finally, powerful digital technology brings enterprises and consumers together, allowing consumer demand to freely and widely integrate into the production and manufacturing process of products, which is conducive to innovative production and flexible customization of products, thereby improving production scale efficiency [32].

4. Conclusion

This study focuses on exploring the current status, hotspots, and progress of research on the opportunities, challenges, and paths of ESG in the transformation and upgrading of Chinese enterprises under the dual carbon background in China. The research conclusions are as follows:

First of all, due to the suggestion of China's "dual carbon" targets for 2020 and the specific instructions in the document of the 20th National Congress of the Communist Party of China, the concept of ESG has increasingly gained relevance in China's academic research community. Secondly, compared to developed countries, due to the late start of research on ESG in China, the number of research literature is relatively small, and the scope of research is narrow. Currently, most research focuses on discussing hot topics such as information disclosure, corporate governance,

financing constraints, green finance, etc. Therefore, there is still room for expansion in the diversity of research topics.

The following recommendations are put forth by this study in light of the aforementioned findings:

Future research might focus on the varied effects of the ESG concept on business growth while also continuously examining the macro- and micro-level influences on enterprise ESG. For instance, many theoretical models can be integrated with ESG ideas to investigate the effects of various factors on the growth and transformation of businesses.

Secondly, further combining the actual national conditions and policies of China, such as the report of the 20th National Congress of the Communist Party of China, pertinent documents on enterprise ESG disclosure practices issued by various regions, and the Chinese State Owned Assets Supervision and Administration Commission's "Work Plan for Increasing the Quality of Listed Companies Controlled by Central Enterprises" were all created and published in 2022, ESG will be combined with more realistic topics to expand the breadth and depth of ESG research field. Research on the path and suggestions for improving the development and transformation of ESG theory for local enterprises in China.

Finally, the government should actively take action by issuing relevant documents to support enterprises in carrying out ESG upgrading and transformation, scientifically formulating national and regional digital development strategies, effectively playing the government's guiding role, fostering the growth of the digital economy and green finance transformation for businesses, and providing a favorable external market environment for enterprises based on ESG digital transformation.

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