ESG Performance and Corporate Digital Transformation

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Abstract. At present, ESG is a major development trend under the background of dual carbon, and this paper takes Sun Hung Kai Properties and MTR Corporation as cases, this article compares and analyzes the digital transformation measures taken by the two companies in the three aspects of environmental, social and corporate governance, summarizes the results obtained by the two companies, and discusses the relationship between ESG performance and corporate digital transformation and upgrading. In addition, this paper extends from these two cases to other enterprises and finally concludes that digital transformation can help enterprises achieve results in three aspects: improving the environment, strengthening the connection between enterprises and the public, and modernizing the Corporate Governance system, so as to expand the visibility of enterprises, help enterprises better assume social responsibility, and put forward suggestions for improvement from three aspects: environmental, social, and government: enterprises can use cloud computing and other technologies to improve digital operation capabilities, use digital platforms to strengthen employee welfare, improve customer service, strengthen enterprise personnel management through network management platforms, and improve governance systems.

Keywords: Green Finance; Digitalization; ESG performance.

1. Introduction

1.1. Background and Significance of the Study

Under the goal of "carbon neutrality" nowadays, the environmental, social, and governance (ESG) performance of enterprises has become a hotspot of enterprise management practice. Meanwhile, with the development of the digital economy, enterprises have begun to digitally transform, applying and upgrading digital technologies in business processes and management applications to facilitate low-carbon transformation and sustainable development.

This paper aims to compare and analyze the measures and outcomes of ESG and digital transformation based on two different corporate cases. It seeks to explore the influencing mechanisms and provide insights for green innovation management and sustainable development in enterprises. The study compares the impact of digitalization on ESG performance across different companies, offering new ideas for ESG governance from the perspectives of the environment, society, and governance. These ideas align with the objectives of the "Dual Carbon Plan" and the long-term development direction of enterprises. In terms of environmental governance, this paper proposes that enterprises can use digital technology to achieve more efficient resource utilization and energy management through data analysis and monitoring systems. In society, enterprises can leverage digital technology to enhance employee participation, welfare, communication, decision-making, knowledge sharing, and a sense of belonging. In the end, enterprises can use digital platforms to improve the quality of corporate governance and provide new methods for business management.

1.2. Research Methods

This article uses the case study approach by analyzing two cases to answer the relationship between digital transformation and ESG performance. The case study adopts the method of comparative study of two cases, which not only analyzes the specific situation of the two cases separately but also finds

the connection between the two cases, sorts out the measures and results of the two cases in ESG performance and digital transformation, and finally summarizes and analyzes the impact of digital transformation. In terms of case data, this article combines the official data and reports on the official websites of relevant enterprises to study the measures and effectiveness of ESG and digital transformation of enterprises in the case study. Summarizing and analyzing the research results, this paper finds journal papers on ESG and enterprise digital transformation from the Web of Science, Google Scholar, and other literature websites and classifies and stores these materials.

2. ESG Analysis

2.1. Sun Hung Kai

Firstly, from the degree of completeness of ESG measures, as one of the largest property development companies in Hong Kong, Sun Hung Kai Properties has made outstanding contributions to sustainability and ESG governance. In terms of corporate sustainability, SHKP has formulated sound ESG development policies based on five core areas: environment, employees, customers, supply chain and community, in line with the United Nations development goals. In addition, Sun Hung Kai Properties publishes its annual sustainability report on its official website every year from 2010 until 2021, which provides a good basis for the case study, so this article chooses Sun Hung Kai Properties as one of the case studies to make the conclusions of this analysis more convincing.

For the other hand, Sun Hung Kai has won the 2022 and 2023 Asia Excellence Awards, Best CSR in Asia, Best Environmental Responsibility in Asia, Best Company in Asia 2022 and 2023, Best Corporate ESG Strategy in Hong Kong, and Caring Company 2023. In addition, it ranked fourth in the 7th Hong Kong Corporate Sustainability Index, fourth in the 3rd Guangdong-Hong Kong-Macao Greater Bay Area Corporate Sustainability Index and fourth in the 2nd Greater China Enterprise Sustainability Index. Therefore, in terms of real estate companies, Sun Hung Kai is selected as one of the cases analyzed.

2.1.1. Environment Aspect

SHKP has installed solar-powered systems in a wide range across managed properties. At the same time, it also implemented one of the most extensive solar-energy generation networks, with around 14,600 solar panels covering more than 400,00 ft. Nearing the end of 2023, SHKP has generated 5.6 million kWh of electricity every year and reduced carbon dioxide by 2,600 tonnes, equivalent to the CO absorption of around 112,700 trees in one year. In June 2022, more than 8,000 solar panels have been installed in our 33 buildings and construction sites.

The company supported the Water Supplies Department's Let's Save 10L Water 2.0 campaign and implemented water conservation initiatives across more than 36 properties under its management. We will keep closely monitoring the data and propose more cutting-edge water-saving strategies, such as subsidiary Superpower, which leverages intelligent technology to optimize water management. Engineers conduct pump inspections and maintenance while keeping track of tablet data, enabling efficient monitoring and analysis. There was a reduction of approximately 3.8% in water usage intensity in the reporting period compared to the 2019/20 period. This decrease in water consumption was mainly attributed to the implementation of water conservation measures and decreased occupancy levels during the COVID-19 pandemic.

SHKP has also embraced energy-saving initiatives. ESG and digitalization are evident through the utilization of advanced technology and intelligent systems to optimize energy. At Sun Hung Kai Centre and other BEAM Plus-certified buildings, Internet of Things (loT) technology monitors and analyzes energy consumption. Automated innovative systems effectively manage the operation of chillers and pumps, while a power systems control automation protocol enhances data communication for improved energy efficiency. V City showcases the implementation of cloud-based technology, optimizing chillers and providing valuable insights and visualized data on energy savings. The

shopping center has consistently lowered electricity use for six years consecutively, and we anticipate a further reduction of 300,000 kWh per year through these optimization efforts.

2.1.2. Social Aspect

The Point by SHKP, the Group's largest integrated membership program for shopping mall shoppers, has launched a new payment feature called Point Dollar in 2021, which allows members to not only earn points by registering their e-payment records, but also convert their points into PointDo11ar and use them to make purchases at a total of 25 shopping malls and more than 2,000 merchants in the malls. In total, Sun Hung Kai has 25 shopping malls and over 2,000 merchants accepting Point Dollar payment, providing our members with more choices, convenience and fun in our shopping malls. Sun Hung Kai is also installing 5G smart facilities - such as smart restrooms, smart baby care and nursing rooms, and smart customer service centers in stores - to further enhance the customer experience, and have upgraded The Point by SHKP to provide real-time usage of these facilities and services using 5G technology.

Meanwhile, on the community front, an interactive online platform, Points of Praise, which promotes reading and sharing among young people, was launched in 2019. The platform contains multimedia content on STEM, technology, Chinese culture and literature, and has attracted a cumulative total of over 835,000 users and 3 million page views. With the epidemic, it has produced a wide range of exciting content for the general public, promoting the maintenance of a healthy and enjoyable lifestyle.

2.1.3. Governance Aspect

In terms of back-office management applications, Sun Hung Kai has introduced the Smart Pump Maintenance System, which allows engineers to quickly carry out efficient inspections and repairs using tablets, generate the profile and analyse the data, and provide helpful suggestions to clients. At the same time, the intelligent management system allows employees to manage inventory through QR codes, which helps companies to strengthen internal management by digital means.

At the same time, in terms of corporate anti-corruption management, Sun Hung Kai conducts anti-corruption training for employees through an e-learning platform and conducts seminars on business ethics to train new employees. In terms of shareholder communication, the Board of Directors has formulated relevant policies to provide shareholders with company information through the company's website, such as the company's main business and corporate sustainability control policies, etc., so as to promote effective communication among shareholders, create good communication links and improve work efficiency through electronic websites.

In addition, it is worth mentioning the artificial intelligence (AI) glass inspection machinery introduced by Sun Hung Kai, which has built-in functions that enable accurate defect inspection on multi-layer glass surfaces to detect linear defects with a greater than 0.1 mm wide and point defects with a size greater than 0.5 mm, greatly improving the level of building quality monitoring. Ensure building quality and efficiency, and optimize resource management. SHKP is committed to reduceing low-risk ways by keeping searching new manual procedures with innovative technologies to prevent harm caused by artificial errors, thereby enhancing integral security on construction sites.

In summary, Sun Hung Kai Properties has improved personnel safety protection and personnel safety management through electronic websites and electronic systems in terms of corporate governance. It greatly improves the efficiency of corporate governance and is conducive to the development of corporate ESG.

2.2. HKMTR

The other typical case is Hong Kong MTR Corporation. MTR Corporation, one of the world’s leading railway operators for safety, reliability, customer service, and cost efficiency, enables cities and residents move forward and make progress through low-carbon transportation network and property developments. MTR is committed to creating long-term value for all stakeholders by considering ESG in business operations. This paper will analyze the digitalization of MTR

Corporation based on three different parts of ESG to see how the corporate manages the business sustainably to help electricity usage decline, carbon emission reducing, and environment saving.

2.2.1. Environment Aspect

By embracing digitalization and replacing traditional energy consumption methods with sustainable energy sources, carbon emissions can be significantly reduced. HKMTR has been consistently advancing its support for sustainable energy. In 2021, with ongoing progress, solar panel systems were installed at Pat Heung Depot, Chai Wan Depot, and so forth. These solar power systems primarily serve buildings. At Pat Heung Depot, the most extensive flexible system in a single building in Hong Kong, over 2,100 panels are installed as of 2022. Apart from stations and warehouses, solar panels are also deployed at Luk Yeung Galleria and Paradise Mall to support the respective building facilities.

Additionally, MTR in Shenzhen has collaborated with CLPe Solutions, a subsidiary of CLP Holdings. This partnership focuses on digitalization and involves a distributed solar demonstration project in Longhua District. The initiative entails the installation of more than 2,000 solar panels, with a total capacity of 1.24 GW. The project is projected to generate 1.3 MWh of renewable energy annually, leading to a significant reduction of 16,000 tons of carbon emissions over the contract's duration.

HKMTR also keeps identifying and exploring edged technologies to help decarbonize the operations of corporations. The company has recently conducted a pilot initiative to utilize a fully automated artificial intelligence (AI) system for managing a chiller plant at a station. The goal is to optimize energy performance in real-time while ensuring passenger comfort that aligns with the specific environment of each station. It is anticipated that the AI system will significantly enhance energy efficiency, resulting in annual energy savings of approximately 8.7%.

Similarly, in 2021, MTR Corporation of Hong Kong partnered with over 28 sustainable development companies and environmental groups to launch a one-stop carbon reduction reward application called "Carbon Wallet."This application features a carbon reduction map, where users can exchange environmentally friendly products and services for implementing low-carbon actions and earn points based on their carbon reduction efforts. According to all environmental actions recorded in the program, the community has reduced a total of 470000 kilograms of carbon dioxide equivalent, which is approximately equivalent to the monthly carbon dioxide emissions of approximately 1728 households in Hong Kong.

2.2.2. Social Aspect

Both companies place importance on digitization and utilize big data and information technology to achieve their sustainable development goals. New World Development conducts extensive data analysis through a cloud-based software platform, yielding significant results. HKMTR also implements cloud-based technology to optimize chiller plants and provide valuable insights and visualized data. The company has successfully implemented a cloud-based big data analytics software platform at two ifc, one of our properties. This implementation has led to noteworthy outcomes, including a reduction of 12% in annual energy consumption of the central chiller plant during the year 2022. The development of information technology such as artificial intelligence and big data helps to accelerate the realization of sustainable development goals and is also an important driving factor for accelerating ESG information disclosure.

2.2.3. Governance Aspect

Similarly, as an important railway transport group in Hong Kong, HKMTR has made great contributions to corporate governance and promoted the sustainable development of enterprises.

Firstly, in terms of enterprise architecture, MTR Group uses digital data analysis and decision support tools to monitor and analyze operational, financial, market and other data in real time to guide the company's strategic and operational decisions.

Secondly, the MTR Corporation has not only promulgated a series of policies such as corporate responsibility, business ethics, corporate safety, environment and human rights, but also incorporated sustainable development into the company's Enterprise Risk Management Framework and published risk management procedures in its annual report. It is worth mentioning the risk management procedures of the MTR Corporation.

In addition, MTR has also improved customer service and train operation and maintenance through digitalization, increased the convenience of customers by developing mobile apps, and improved trains and equipment by using Internet of Things (IoT) technology and sensors.

3. Comparison Analysis: HKMTR VS Sun Hung Kai Properties

3.1. Environment

Zero-energy buildings have been integrating renewable energy systems, like solar power systems, as crucial components [1]. By utilizing sources of renewable energy, such as solar power, these buildings can effectively reduce energy usage and compensate for a substantial portion of their energy requirements [2]. Nevertheless, it is essential to note that solar panel systems are often constructed using harmful substances that can have negative impacts on the environment and human health. As a result, companies operating in this sector are obligated to ensure the effective implementation of measures to control hazardous substances [3].

Rather than using corporate servers, cloud computing seems to be an excellent environmental alternative for organizations since it uses far fewer machines, which enables an 84% decrease in the required power[4]. With the blessing of Internet technology, the production and operation of such enterprises are more transparent, and the enterprises convey environmental protection and social responsibility practices to the outside world [5]. The ESG information disclosure of such enterprises has also received the attention of government departments, investors, and other stakeholders [5].

From the view of egoism motivation, corporations engaging in CSR, such as installing solar panel systems, AI systems, and cloud computing, could reestablish corporate reputation and compensate for the loss of benefits caused be notorious environmental pollution, especially for those high energy consumption companies [6]. Besides, corporations could stand by using CSR strategies from other companies to gain external resources quickly and improve their market competitiveness. For example, corporations engaging in CSR behaviors will achieve more government orders, especially in the Chinese context, where air pollution is the authority’s top priority list [7]. Firms that perform better would attract more elite employees. All these external resources brought by the fulfillment of CSR would eventually be transformed into the profits needed to achieve the egoist purpose. As a result, as far as egoism, corporations would increase their CSR behaviors when air pollution becomes more severe [8].

Both companies recognize the value of data analytics in driving informed decision-making for sustainable development. HKMTR has implemented a cloud-based big data analytics software platform, allowing for the analysis of energy consumption, efficiency, and other relevant factors. HangLung leverages artificial intelligence for AI diagnosis and smart operation reminders. These initiatives provide valuable insights into energy usage patterns, enabling targeted improvements in energy efficiency and resource management. Also, both companies recognize the importance of digitalization in achieving their ESG goals. They leverage technologies such as solar panels, big data analytics, and artificial intelligence to increase energy efficiency, reduce greenhouse gas emissions, and drive sustainability. However, HKMTR emphasizes renewable energy adoption and data analytics for sustainable development and ESG disclosure. At the same time, HangLung focuses on intelligent energy meters, AI technology, and energy efficiency improvements, particularly in specific areas of electricity consumption.

Both companies tend to make efforts to decrease greenhouse gas output and to promote greening and energy-efficient use of buildings, which helps to reduce the carbon footprint and implications on

the environment. In the meanwhile, both companies are inclined to have taken steps to focus on employee rights, care for the needs of the local community, and promote social causes.

3.2. Social

Smart meters provide utility companies with detailed data about consumers' electricity usage, specifically for load monitoring and billing purposes [9]. The unauthorized manipulation of energy usage data to extract private and sensitive information about customers is considered a violation of privacy. Privacy breaches pose a significant concern in the context of Energy Smart Grids (ESGs), which creates a reluctance to adopt intelligent meters in everyday life [9]. To address this, homomorphic encryption, a cryptographic technique, is widely employed in data aggregation schemes to ensure adequate privacy for smart meters. In [10], the authors propose a privacy-preserving data aggregation scheme for ESGs based on this technique, which allows intelligent meters to periodically report their measurements while preventing the leakage of private information [9].

Artificial Intelligence (AI) systems facilitate the practical analysis of large-scale data, and this combination holds potential for various applications that can contribute to the achievement of the Sustainable Development Goals (SDGs) [11]. For instance, implementing AI at each stage of an enterprise resource planning system (ERP) can lead to improved production efficiency, allotment of human resources, and financial decision-making, among other benefits [12].

3.3. Governance

Firm competitiveness (FC) refers to the comprehensive ability of firms to realize their value creation through digital transformation (Ghasemaghaei, 2021; Rahman et al., 2021). By implementing measures related to digitalization, companies can enhance their competitiveness, both companies have completed their digital transformation well, achieved excellent results, and are still constantly improving. Firstly, in terms of risk management policies, both Sun Hung Kai Properties and MTR Corporation have developed sound risk management policies. The MTR Group wrote a sound digital transformation plan in the risk management section of its 2022 Annual Report. For example, on the operational side, the company plans to use technology to monitor asset status and performance; for new projects, MTR plans to enhance the application of technology in project delivery and management, including the use of architectural consultant models, digital surveillance and archival technology. Sun Hung Kai's policy focuses on the construction safety of personnel, using AI technology to predict risks, which greatly reduces the accident rate of construction and improves construction efficiency. Both have different emphases, but both have a contributing role to the development of their respective companies.

Digital technologies can reduce the impact of time and space, allowing employees to join the work anytime, anywhere, and improve business market performance. Adopting and mastering a wide range of data capabilities in digital transformation helps companies improve performance (Ciampi et al., 2021). The study found that in terms of back-office and personnel management, Sun Hung Kai Group uses e-learning to train employees to enhance their anti-corruption awareness and strengthen personnel management. And using the intelligent management system, employees can manage inventory through QR codes, strengthening the company's internal management, at the same time, Sun Hung Kai's employees can communicate through the company's website to improve work efficiency. The MTR Group has developed a security management system to ensure the safety and compliance of all operations, and checked regularly in order to improve effectiveness, which is conducive to the company's ESG governance. As a result, Sun Hung Kai Group excels in the digital transformation of people and back-office management.

4. The Necessary of Digital Transformation

In summary, as two leaders in different fields, the two companies have effectively used digitalization to improve corporate governance and environmental protection policies from three

aspects: environmental, social and corporate governance by formulating a series of sound measures and policies, and have achieved remarkable results in ESG governance. From this, the article draws the following conclusions.

4.1. Digital Transformation is Conducive to Improving the Environment

Digital transformation is conducive to helping enterprises optimize the carbon emission system by electronic means, so that corporate governance can meet the international development goal of "carbon reduction", enhance corporate social responsibility, and promote the environmental aspects of ESG governance.

4.2. Digital Transformation is Conducive to Strengthening the Connection between Enterprises and Society

On the one hand, in the process of using apps, corporate websites and other ways to operate, enterprises can enable consumers to participate in the corporate governance link, which is conducive to increasing consumers' understanding of enterprises. On the other hand, it also makes the governance mode and operation mechanism of enterprises better serve the needs of society, so as to improve the operation system and strengthen the supervision of the market and society over enterprises.

4.3. Digital Transformation Helps Modernize the Corporate Governance System

In terms of corporate information disclosure, corporate personnel governance, corporate risk management, etc., the construction of a digital platform can greatly improve the efficiency of corporate governance, improve the corporate management structure, and enhance the standardization and rationality of corporate governance. In addition, the company's digital establishment of a governance evaluation system is also conducive to enterprises to better discover potential management problems and promote the modernization and upgrading of enterprises.

5. Suggestions

In summary, by analyzing the measures and effectiveness of MTR Corporation and Sun Hung Kai in digital transformation, it is found that digital transformation has positive influence on enterprises' ESG performance. Therefore, the research in this paper can provide suggestions and enlightenment for other similar traditional enterprises.

5.1. Environment

Companies should recognize the importance of digitalization in achieving their ESG goals and leverage technologies, such as solar panels, Data analytics, and AI to enhance energy efficiency, reduce greenhouse gas emissions, and drive sustainability. Companies in the renewable energy industry must prioritize effective management of these materials. They should invest in research and development to find alternative materials less harmful to the environment and human well-being.
In addition, companies should promote cloud computing adoption. Companies should emphasize that cloud computing can enhance transparency, enabling companies to showcase their environmental practices and social responsibility to stakeholders.

By implementing these suggestions, companies in the renewable energy sector can enhance their environmental performance, promote sustainable development, and improve their overall reputation and competitiveness.

5.2. Social

At present, it is worthy of attention that enterprises accelerate the realization of enterprise digitalization and intelligent operation efficiency in society. [13] Through the above case analysis, both Hang Lung Corporation and Hong Kong MTR Corporation have adopted digital transformation

and innovative development in the social aspect, using a combination of online and offline methods to pay attention to the well-being of the public and respond to social needs. In terms of social responsibility, enterprises should pay more attention to employees, understand their needs, speed up the cultivation of digital talents, and strengthen communication between departments.

5.3. Governance

Today, the culture of digital-based innovation has a moderating effect, which has a positive impact on the relationship between the use of digitalization and the competitiveness of enterprises, as well as the relationship between digital application and digital management [14]. Based on the case studies, it is found that both Sun Hung Kai Properties and MTR Group have leveraged digital transformation to improve their corporate management system and governance structures, which can positively impact the company's ESG governance.

First of all, in terms of corporate governance, traditional enterprises can use the digital employee management system to strengthen the management of the company's personnel, use the digital education platform to improve the enthusiasm of employees to learn actively.

At the same time, use electronic technology to make employees' lives more convenient, improve the happiness of employees' work, and help improve the overall work efficiency of the company.

In addition, enterprises can improve their work efficiency in risk management, operation status analysis, market supervision and other aspects by adopting a good electronic data management system, which can help enterprises make strategies and decisions in line with the company's development goals, promote the development of corporate governance, and help improve the level of ESG governance.

6. Conclusions

Through the comparison and analysis of these two cases, this paper concludes that digital transformation can promote the development of all aspects of ESG, and is conducive to the completion of the "dual carbon plan".

However, this paper is limited to two enterprises in Hong Kong. The scope is small, and the conclusions obtained from the case study are limited, so we can continue to study the relevant topics in the future, increase the scope of enterprises studied, and compare enterprises in different regions and at different levels, so as to draw more comprehensive conclusions.

Authors Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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