Green construction practices, challenges and green growth strategies: Inputs to green construction management

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Abstract

This paper systematically analyzes the relationship between green construction in practice and green construction challenge, and then finds green growth strategy in green construction challenge. Specifically, this study determine the green construction practices in terms of recruitment and selection, trainings and development and performance management and appraisal; determine the green construction challenges encountered by construction companies in terms of green managerial innovation, green technology innovation and green transformational leadership; assess the green growth strategies of construction companies in terms of environmental, economic and social sustainability; test the significant relationship between green construction practices and green construction challenges and analyzed the significant relationship between green construction practices and green growth strategies. Finally, based on the result provide inputs to green construction management framework. This paper makes a comprehensive investigation and research on green construction, collects data through questionnaires, and makes a comprehensive analysis of the data results. This paper adopts the method of quantitative analysis. Through multivariate statistical analysis, SPSS software is used to conduct data analysis on the statistical results, in which not only descriptive analysis, but also correlation analysis, regression analysis and other methods are used, which are combined with the quantitative analysis results. Form a green construction management mechanism. Results of the study revealed that there is a significant correlation, and reflected that the better green construction practices, the better the green construction challenges, and that the better green construction practices, the better green growth strategies. It is an important relationship between green construction challenges and corporate green growth strategies, indicating that the better the green construction challenges, the greater the green growth strategies. Then, there is indicated that green construction practices and green growth strategies are significantly positively correlated, indicating that the better green construction practices, the greater the green growth strategies.

Keywords: green construction practices, green construction challenges, green growth strategies

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1. Introduction

Since the beginning of the 21st century, the world economy has continued to grow, but the problem of environmental deterioration and climate change has become more and more serious. Therefore, green and sustainable development is related to the future of the earth on which human beings depend for survival, and is closely related to human economic production and social development.

The publication of Silent Spring in 1962 opened the way for thinking about human development and the sustainability of natural ecology. In 1972, the Club of Rome raised the issue of the sustainability of development in its Limits to Growth. In the same year, the United Nations Conference on the Human Environment in Stockholm included environmental protection as an important part of development. In 1987, the United Nations World Commission on Environment and Development, Our Common Future, proposed that sustainable development is a development model that meets the needs of contemporary development without endangering the needs of future generations. In 1992, the United Nations Conference on Environment and Development in Rio de Janeiro stressed that today's development must not threaten the needs of current and future generations. In 2000, the United Nations Millennium Development Goals (MDGs) stated that we must spare no effort to prevent all humanity, especially our children and grandchildren, from living on a planet irreparably damaged by human activities and whose resources are no longer sufficient to meet their needs. In 2002, the United Nations Johannesburg World Summit on Sustainable Development proposed that sustainable development needs to integrate three elements - economic development, social development and environmental protection, which are interdependent and mutually complementary and mutually reinforcing pillars. In 2015, the United Nations adopted the global Sustainable Development Goals (SDGs) for 2016-2030, To "change our world" by focusing on the "five Ps" of People, Planet, prosperity, Peace and Partnership (Lv Yonglong, 2018).

The construction process of a construction project is a responsible system engineering, which has the characteristics of long working period, consumption of a large amount of resources, will produce a large amount of waste, etc. The construction process will also cause negative impact on the environment and resources. Therefore, it is necessary to carry out environmental management in the construction process of construction projects, and adopt green construction with the basic purpose of saving energy, reducing consumption and reducing the emission of pollutants, which plays a very positive role in promoting the sustainable development strategy of the construction industry (Shen, 2007).

Research on the definition and scope of green construction continues to deepen. The term "green construction" was proposed earlier, but there is no specific definition of it. Green construction is mainly a process, which is the materialization stage of architecture. Xiao (2013) proposed that green construction refers to the engineering construction production activities that improve resource utilization efficiency, save resources and energy, reduce pollution, protect the environment, and achieve sustainable development through scientific management and technological progress while ensuring safety and quality in the whole process of construction drawing design and construction. Green construction includes green design of construction drawings and green construction of engineering projects. Xiao (2022) pointed out that according to the current way of engineering organization in China, green construction mainly includes three stages, namely, green project initiation, green design and green construction. It shows that the understanding of green construction is deepening, and the research goal is more and more clear.

Research on green construction technology continues to deepen. QI Ligang (2021) pointed out that based on the project, the whole life period control, whole process supervision and full participation are the guidelines, and

the green construction technology is studied from three aspects: design, construction and operation and maintenance. Xiao (2022) proposed that the construction, user and related people should be the first, emphasizing the integration of the construction process, the efficient utilization of resources, the reduction of waste emissions, lean engineering management, intelligent construction process, and professional engineering operations, and the implementation of key technologies for green construction. Some study the green construction technology of different types of engineering projects, and some study the green construction from the perspective of carbon emissions in a deeper field, and more and more attention is paid to the green construction technology research.

The management research of green construction is further deepened. Meng Yangyang (2015) summarized the technical system of green construction in the implementation process, analyzed the problems of green construction promotion by constructing an evaluation system and using research methods such as fuzzy comprehensive evaluation and analytic hierarchy process, designed the financial incentive mechanism model of green construction promotion in China, and put forward targeted policy suggestions. Li Jiao (2018) pointed out that the government should formulate corresponding policies with construction enterprises and their owners as the main objects to play a guiding role in cultivating green construction-related talents. For construction enterprises applying green construction, they should focus on capacity innovation, technology and equipment innovation, customer and market innovation, supply innovation, and income model innovation. All these studies provide ideas for ensuring the development of green construction.

I have been engaged in research in the field of green construction for a long time. On the practice of green construction, challenges faced by green construction and how to strengthen investment in green building management, I have realized the green growth strategy of the construction industry. Through a large number of investigations, this study has obtained important data and summarized and analyzed. This study provides an effective way to realize the green and sustainable growth of construction industry.

Objectives of the Study - This study aims to assess the effect of green construction practices and to determine whether green construction challenges has impact on green growth strategies of construction companies. Specifically, the thesis aims to: determine green construction practices in terms of Recruitment and Selection, Trainings and Development and Performance management and appraisal; assess the Green construction challenges in terms of Green Managerial Innovation, Green Technology Innovation and Green Transformational Leadership; describe the green growth strategies of the firm in terms of environmental sustainability, economic sustainability, and social sustainability; test the significant relationship between green construction practices and Green construction challenges; analyze the significant relationship between green construction practices and green growth strategies of the firm; and finally, based on the results, develop Inputs to Green Construction Management.

2. Methods

Research Design - The study used the research methods of normative analysis and empirical analysis, utilized literature analysis to lay the theoretical foundation and research framework, and then employed questionnaires to collect data. The collection of questionnaire data is carried out through the online questionnaire platform "Questionnaire network". In terms of research content, the first is the theoretical foundation and the definition of variables, the second is data collection, that is, the design and implementation of questionnaires, and the last is descriptive analysis, correlation analysis and regression analysis. This study utilized a combination of normative and empirical methods, which are summarized as follows: Literature research method, adopting the method of literature research, to find out the shortcomings in the existing research by reading the literature, and determine the research ideas of the thesis. After searching for literature related to green construction management in databases such as CNKI, the research ideas of the thesis are determined after combing the existing research.

The Questionnaire survey method was used and through the analysis of the results of in-depth interviews with the engaged in the construction of the staff, the direction and scope of the questionnaire interviews were

formulated, and the final questionnaire questions were formed. The results of the questionnaire survey were summarized through the form of online distribution. By using the quantitative analysis method, researcher used the SPSS software-based multivariate statistical analysis of the data content of the questionnaire feedback, including descriptive analysis, correlation analysis and regression analysis, organically combines the quantitative analysis results to provide inputs to green construction management.

Participants of the Study - Because the questionnaire is distributed via the Internet, it is possible to break company and geographical restrictions. Finally, 400 questionnaires were sent and 365 valid questionnaires were collected. The interviewees come from all regions of China, covering most provinces, have reasonable age structure, profound professional knowledge, rich experience and understanding of the construction industry, and can grasp the development direction of the construction industry. The research in this paper is widely representative.

Instrument - In this study, a self-compiled questionnaire was used to collect data, and the Likert 4 scale was used for measurement. The main content of the questionnaire is composed of three parts: the first part is a survey of the respondents' personal information to filter the questionnaire data; the second part is the measurement of the three variables in the topic of the thesis; the third part is on the open question and answer.

Data Gathering Procedures - The questionnaire was done through literature analysis and integrated expert opinions, and then distributed the questionnaire online through the Questionnaire website research platform for pre-survey. After the questionnaire was revised and improved under the guidance of the adviser, the questionnaire was distributed online through WeChat and email. After the preliminary design of the questionnaire was completed, 30 experts were invited to conduct a pre-test of the questionnaire, which further improved the questionnaire structure and language expression. Reliability results showed that Cronbach's alpha for green construction practices (0.972), challenges encountered by construction companies (0.982), and green growth strategies (0.972) suggesting that the items have an excellent level of internal consistency. The pre-test of the questionnaire shows that the Cronbach's α and CR values of each variable are both higher than 0.9, indicating that the scale has good reliability. After the questionnaire was confirmed, researcher prepared a letter of intent as a request by the researcher to collect data from the respondents.

Data Analysis - The research made use of the different statistical tools to count, code and interpret the data. These include the following: One is the frequency distribution and weighted mean for descriptive statistical analysis, in order to quantitatively obtain the overview of the relevant variables. The second is analysis of variance to test the significance of the difference between the means of two or more samples. The third is the use of correlation test for all variables to verify the correlation between the variables, which provides a preliminary basis for the subsequent regression analysis. Finally, after the previous descriptive statistics and correlation statistics analysis, the thesis used multiple regression to empirically test. The use of the above tools was based on research goals. In addition, all data were processed using the statistical spss version to analyze the research results.

Ethical Consideration - The research was based on academic ethics and is transparent to the research process and findings. The questionnaire used was researcher made based on the research of existing scholarly works and studies. In the course of the questionnaire survey, there have been questionnaire reminders to assure the surveyed that the data provided will be kept confidential. If it is shared with others without the respondents' consent, it is an unethical behavior. When designing the questionnaire, the name of the respondents were not involved, and the number 0 was assigned to the missing data or wrong input.

3. Results and discussion

Table 1 shows a summary assessment of green construction practices. The comprehensive average is 3.54, indicating that the various indicators are strongly consistent. The evaluations of all projects are consistent, among which the Recruitment and Selection ranks first, with a weighted average score of 3.58. The survey shows the importance of recruitment and selection in green construction practices. Recruitment and selection are of great

significance in construction enterprises. The introduction of high-quality talents is the basis for the success and development of enterprises. Recruitment and selection of people with specialized knowledge and skills help to enhance the competitiveness of the organization, shape a positive organizational culture, and build a talent pool for the future. So as to ensure the healthy development of the enterprise. Chen Qinqin (2020) Analyzes Behavioral Event Interview (BEI). This method is proposed by McClelland in combination with the critical event method and thematic apperception test. It is generally used in the refinement of the competency model. Through the communication with the interviewee, we can understand whether the interviewee has really experienced it in all aspects, and judge whether the interviewee meets the competency characteristics through these experiences. Do a preliminary screening of your resume to find information that matches your qualifications. Re-screen your resume and make an initial contact with the candidate, asking for examples of one or more of his or her competencies. Then through the written test, interview, background investigation and other links to complete the job selection.

Table 1

Summary Table on Green Construction Practices

Key Result Areas	Composite Mean	VI	Rank
Recruitment and Selection	3.58	Strongly Agree	1
Trainings and Development	3.54	Strongly Agree	2
Performance Management and Appraisal	3.51	Strongly Agree	3
Grand Composite Mean	3.54	Strongly Agree	

Legend:3.50-4.00=Strongly Agree;2.50-3.49=Agree;1.50-2.49=Disagree;1.00-1.49=Strongly Disagree

Followed by trainings and development , the weighted average score is 3.54. Enterprise staff training and development is the process of providing learning opportunities and development programs for staff to upgrade their skills, knowledge and vocational competencies. As the working environment and needs continue to change, skills upgrading and professional development are necessary. Through training and development programs, employees can continuously upgrade their skills and professional knowledge, enhance their career competitiveness and adaptability, and lay a solid foundation for their professional development. Strengthen the culture and values of the enterprise, and form a unified value concept. Ji Xue (2022) believes that at present, the training content of many enterprises in the construction and construction industry is mainly pre-job training. During the pre-job training, employees can receive multi-dimensional training including theoretical training, skill training and cultural training, but they have no chance to contact the training when they really enter the job. Even though enterprises in the construction and construction industry occasionally carry out post-job training, they can also receive multi-job training. It is also limited to playing videos for employees or leading employees to conduct brief discussions in the group, which has no significant effect on the improvement of employees' ability and is not conducive to the improvement of employees' own level.

Followed by performance management and appraisal, the weighted average score is 3.51. Performance management and appraisal is a process for construction enterprises to evaluate and feedback the work performance of green construction talents. It aims to improve the performance of green construction talents and promote the development of green construction talents and construction enterprises. Performance management and assessment are of great significance to construction enterprises and green construction talents. Through effective performance management and assessment, construction companies can build efficient teams and excellent work culture to achieve sustainable development. Wei Peipei (2023) believes that in order to carry out human resource performance management smoothly, it is inseparable from the strategic goals of enterprises, and scientific and reasonable key performance indicators must be formulated based on market dynamics and around the actual situation of enterprises. At the same time, the development of performance appraisal objectives should follow the production and operation requirements of the enterprise. The management personnel and performance appraisal staff of the enterprise should closely focus on the strategic development objectives of the enterprise and formulate the performance appraisal objectives of the enterprise and the performance appraisal objectives of various departments and positions.

Table 2

Summary Table on Challenges Encountered by Construction Companies

Key Result Areas	Composite Mean	VI	Rank
Green Managerial Innovation	3.14	Agree	1
Green Technology Innovation	3.13	Agree	2
Green Transformational Leadership	2.99	Agree	3
Grand Composite Mean	3.09	Agree	

Legend:3.50-4.00=Strongly Agree;2.50-3.49=Agree;1.50-2.49=Disagree;1.00-1.49=Strongly Disagree

Table 2 shows a summary assessment of challenges encountered by construction companies. The comprehensive average is 3.09, indicating that the various indicators are consistent. The evaluations of all projects are consistent, among which the green managerial innovation ranks first, with a weighted average score of 3.14. The survey shows the importance of green managerial innovation in challenges encountered by construction companies. Li et al. (2019) believes that although domestic green construction has been gradually promoted and popularized, there are still many problems and development obstacles, such as the lack of management means, and in many cases, comprehensive coordinated management cannot be achieved. At present, the vast majority of enterprises only pay attention to the basic work of green construction, and do not play the maximum role of comprehensive coordination, basically are for green construction and green construction, too much attention to social influence, but ignore the effect analysis of green construction on the environmental impact. Green technology management will inevitably become the development direction of construction and management innovation in the future. Green construction management innovation refers to the introduction of new management methods and strategies in green construction to further promote the sustainable development of the construction industry. Green construction management innovation emphasizes the introduction of integrated design and teamwork concepts at the early stage of the project. By bringing together architects, engineers, designers and other professionals in interdisciplinary teams, environmental and sustainability considerations are incorporated in the planning and design stages of projects to minimize environmental impact. In the building construction process, do a good job in the construction organization, and widely use green construction technology to protect the environment. After the completion of the project, the green construction is summarized and evaluated to provide experience for the future green construction.

Followed by green technology innovation, the weighted average score is 3.13. Liu et al (2023) believes that green construction technology is still in the process of improvement, and many innovative research and applications related to green construction technology should be gradually carried out to implement the management of green construction technology. It is necessary for the government, enterprises and owners to work together, with the extensive participation of all sectors of society, to establish perfect green construction technical specifications and standards and evaluation levels, and to study and innovate green construction technology. Green construction technology innovation refers to the introduction of sustainable development concepts in the construction industry, to find new construction technologies and methods to achieve environmental protection in the construction process. In the choice of green materials, the use of environmentally friendly and sustainable building materials. For example, the materials purchased are recyclable materials, renewable materials and low VOC (volatile organic compounds) materials. Use locally produced building materials and reduce transportation. The materials produced are consistent with the field specifications and sizes, reducing the link of post-processing. Use building information modeling (BIM) and digital technologies to enhance construction and management, optimize resource utilization, and reduce errors and waste. In the green construction technology, the development of itself consumes less energy, high efficiency, environmentally friendly technology.

Followed by green transformational leadership, the weighted average score is 2.99. Transformational leadership in construction enterprises refers to the leadership style and ability to lead and promote change in construction enterprises. Construction enterprise transformation leadership can stimulate the motivation and enthusiasm of green construction technicians, and promote the transformation of construction enterprises in the

direction of sustainable development and success. Construction enterprise transformation leaders have the strategic vision, flexibility and influence to meet the challenges of change in the construction industry and inspire innovation and growth among green construction technicians. The transformation leadership of construction enterprises is very important for the promotion of green construction. Hu et al (2017) believes that in the theory of organizational socialization, transformational leadership emphasizes the humanized relationship between leaders and employees, which can provide employees with care not only in work but also in life and family, facilitate employees to complete the process of organizational socialization, and promote the matching with organizational values.

Table 3

Summary Table on Green Growth Strategies of Construction Companies

Key Result Areas	Composite Mean	VI	Rank
Environmental Sustainability	3.53	Strongly Agree	1
Economic Sustainability	3.50	Strongly Agree	3
Social Sustainability	3.52	Strongly Agree	2
Grand Composite Mean	3.52	Strongly Agree	

Legend:3.50-4.00=Strongly Agree;2.50-3.49=Agree;1.50-2.49=Disagree;1.00-1.49=Strongly Disagree

Table 3 shows a summary assessment of Green Growth Strategies of Construction Companies. The comprehensive average is 3.52, indicating that the various indicators are strongly consistent. The evaluations of all projects are consistent, among which the Environmental Sustainability ranks first, with a weighted average score of 3.53. Environmental sustainability refers to the use of environmental needs and natural resources in a way that is moderate and ensures their continued use in the future. Environmental sustainability requires the protection and sustainable use of natural resources such as water, soil and forests to ensure their sustainable supply and the stability of ecosystems. Maintain ecological balance and biodiversity. In the process of green construction, clean production technology is adopted, environmentally friendly products and services are applied, waste management and circular economy are implemented. Consider social justice and participation. Cao and Dai (2009) believes that the sustainable development of enterprises is embodied in the harmonious interdependence and common development between enterprises and society and nature based on the three levels of "economy, environment and society". This is the basic concept of sustainable development of enterprises. According to the characteristics of high energy consumption and pollution in the construction industry, the hot issues in the construction industry are discussed based on the concept of sustainable development. It is concluded that the energy consumption and pollution of steel structure residential buildings are smaller in the construction stage, while the energy consumption of building materials in the production stage is greater than that of concrete structure.

Followed by Social Sustainability, the weighted average score is 3.52. Social sustainability refers to the development and progress of a society that, in the long term, is able to meet not only the needs of the present, but also the needs of the future, and is able to maintain social stability, justice and balance. It emphasizes social justice, social well-being and social responsibility in parallel with economic development to ensure that people's quality of life and rights and interests are protected and enhanced. Green construction plays an important role in social sustainability. Green construction focuses on reducing the negative impact on the environment, including reducing carbon emissions, reducing energy consumption, protecting water resources, and reducing waste generation. Green construction reduces the pressure on the environment during the construction process and promotes sustainable development. Green construction has created more job opportunities, and green construction projects require professional and technical personnel, which has promoted the development of related industries and increased employment opportunities. Zhou Zhenguo (2023) believes that corporate social responsibility is not only conducive to improving corporate image, but also conducive to making green transformation under the background of dual carbon. To fulfill the social responsibility under the background of dual carbon, enterprises must enhance the ability of green innovation and strengthen technical support. Use the media and public welfare activities to strengthen publicity and education, and enhance the green awareness of consumers and the general public. At the same time, we actively respond to the relevant national policies on

green buildings, improve enterprise management norms, clarify the focus of future development of enterprises, and innovate a set of enterprise business models that adapt to the development of the green era.

Followed by Economic Sustainability, the weighted average score is 3.50. Economic sustainability refers to the ability to sustain economic growth over a long period of time while protecting the environment and meeting social needs. Economic sustainability The consumption of natural resources and the damage to the environment are minimized through sustainable construction economic activities and construction industry development. Economic sustainability reduces the waste of building resources and the damage to the environment by improving the utilization efficiency of building resources, the reuse and recycling of waste, and the extensive use of renewable energy. Green construction can improve people's living conditions. The innovation of green construction technology can realize the transformation of the construction industry and reduce the dependence on limited resources, and provide impetus for the long-term development of the construction industry.

Table 4 illustrates the relationship between green construction practices and challenges encountered, and analyzes the recruitment and selection, the trainings and development and the performance management and appraisal in relation to green managerial innovation, green technology innovation, and Green Transformational Leadership. As seen in the table, the computed rho-values ranging from 0.242 to 0.423indicate a weak to moderate direct relationship among the sub variables of green construction practices and challenges encountered. There was a statistically significant relationship between green construction practices and challenges encountered because the obtained p-values were less than 0.01. This means that there is a significant relationship between green construction practices and challenges encountered, indicating that the better the green construction practices, the greater the challenges encountered.

Table 4

Relationship Between Green Construction Practices and Challenges Encountered

Variables	rho-value	p-value	Interpretation
Recruitment and Selection			
Green Managerial Innovation	0.389**	0.000	Highly Significant
Green Technology Innovation	0.351**	0.000	Highly Significant
Green Transformational Leadership	0.242**	0.000	Highly Significant
Trainings and Development			
Green Managerial Innovation	0.414**	0.000	Highly Significant
Green Technology Innovation	0.368**	0.000	Highly Significant
Green Transformational Leadership	0.268**	0.000	Highly Significant
Performance Management and Appraisal			
Green Managerial Innovation	0.423**	0.000	Highly Significant
Green Technology Innovation	0.382**	0.000	Highly Significant
Green Transformational Leadership	0.275**	0.000	Highly Significant

**. Correlation is significant at the 0.01 level

There is a certain correlation and mutual influence between the practice of human resource management in green construction enterprises and the challenges of green construction. As a concept and practice of sustainable development, green construction faces a series of challenges in human resource management when it is promoted and implemented in the construction industry. For example, in terms of technology and knowledge, promoting green construction requires relevant technology and knowledge. Everyone from designers to builders needs to understand the principles, standards and best practices of green building. Companies need to improve employees' awareness and understanding of green construction through training and education. In terms of compensation and benefits, green construction may require a higher level of expertise and responsibility, so employees may expect commensurate compensation and benefits packages. Companies need to adjust their compensation systems and welfare policies to attract and motivate talent. In terms of employee relations, promoting green construction needs to establish good employee relations, strengthen communication and cooperation with employees, and enhance employees' identification and cohesion of the enterprise.

The first is the correlation between recruitment and selection and the challenges of green construction.

Green construction puts forward higher requirements for the quality and ability of employees. Companies in the recruitment and selection process need to find people with environmental awareness and professional skills to meet the needs of green construction projects. Jiang Delong (2022) believes that enterprises should design perfect and reasonable human resource management planning schemes according to their own development goals, and increase the proportion of high-quality professionals in enterprises through the combination of internal staff training and external talent absorption.

The second is the correlation between training and development and the challenges of green construction. Green construction technologies and methods are constantly evolving, and employees need to continually learn and update their knowledge. Companies need to invest more resources in providing ongoing training and development opportunities for their employees. Enterprise human resource management can improve employees' awareness and skill level of green construction through training and development programs. Sun Xiliang (2022) believes that comprehensive employee training should be implemented. Targeted training can not only effectively improve the work ability of employees, but also enhance the team consciousness and corporate identity of employees. Construction enterprises should pay attention to the principle of target and difference when training employees.

The third is the correlation between performance management and appraisal and the challenges encountered in green construction. Enterprises can motivate and reward employees who perform well in green construction projects through performance management systems. Implementing green construction requires evaluating employee performance and contributions. Due to the complex and long-term nature of green construction projects, performance evaluation can be even more complex and challenging. Zheng Jing (2021) believes that the application of incentive mechanism in enterprise human resource management is conducive to stimulating employees' work enthusiasm and retaining talents with potential for enterprises. Enterprises must strengthen the understanding of the importance of the application of incentive mechanism, promote the combination of spiritual reward and material reward for incentive, conduct comprehensive assessment and evaluation of employee performance, formulate incentive models consistent with the actual situation of enterprises, and ensure the effectiveness of incentive mechanism in enterprise human resource management.

Table 5

Relationship Between Green Construction Practices and Green Growth Strategies

Variables	rho-value	p-value	Interpretation
Recruitment and Selection			
Environmental Sustainability	0.636**	0.000	Highly Significant
Economic Sustainability	0.688**	0.000	Highly Significant
Social Sustainability	0.701**	0.000	Highly Significant
Trainings and Development			
Environmental Sustainability	0.651**	0.000	Highly Significant
Economic Sustainability	0.703**	0.000	Highly Significant
Social Sustainability	0.732**	0.000	Highly Significant
Performance Management and Appraisal			
Environmental Sustainability	0.671**	0.000	Highly Significant
Economic Sustainability	0.726**	0.000	Highly Significant
Social Sustainability	0.744**	0.000	Highly Significant

**. Correlation is significant at the 0.01 level

Table 5 illustrates the relationship between green construction practices and green growth strategies, and analyzes the recruitment and selection, the trainings and development, and the performance management and appraisal in relation to environmental sustainability, economic sustainability and social sustainability. As seen in the table, the computed rho-values ranging from 0.636 to 0.744 indicate a strong direct relationship among the sub variables of green construction practices and green growth strategies. There was a statistically significant relationship between green construction practices and green growth strategies because the obtained p-values were less than 0.01. This means that there is a significant relationship between green construction practices and green growth strategies, indicating that the better the green construction practices, the greater the green growth

strategies. Green growth strategies emphasize environmental protection and sustainable development, and construction companies pay more attention to environmental awareness and related skills in talent recruitment to meet the market demand for environmentally friendly buildings. Green growth requires technological innovation and employee training, and construction enterprises should increase investment in training and development to improve employees' green building professional skills and cognition.

The first is the correlation between recruitment and selection and green growth strategies in the construction industry. Green construction companies need to attract people with environmental awareness and relevant expertise who can drive green construction practice and innovation. Wang Lihong (2015) believes that enterprises should change the habit of employing "ready-to-use" talents at great cost, and be willing to bend down and spend money and experience to cultivate talents, rather than engage in vicious competition for talent use. In the competition in high-end fields, suitable talents who truly adapt to the enterprise can not be hired with money. Support the long-term development of the company Talent with high loyalty and sense of value is crucial.

The second is the correlation between training and development and green growth strategies in the construction industry. Green construction involves new technologies and methods, and employees need to constantly learn and improve their skills. Construction enterprises should invest resources to cultivate employees' environmental awareness and green construction skills. Liang Xianchao (2022) believes that the integration of industries, enterprises and universities should pay attention to the integration and development of different disciplines in the process of talent training. Through the establishment of industrial colleges, enterprises can maintain close contact with relevant departments of universities and industries to form a positive interaction between teaching and industry development, and constantly improve the direction and goal of teaching reform with regional characteristics.

Third, the correlation between performance management and appraisal and green growth strategy of construction industry. Construction companies can motivate employees to perform and contribute to environmental protection by setting performance indicators related to green construction. Green construction companies may need to attract high-quality employees, and reasonable compensation and benefit policies can increase employee motivation and loyalty. Jiang Dehua (2018) believes that we should vigorously promote the professional manager system, boldly employ outstanding employees outside the system in leadership positions and key positions, implement market-oriented salaries for key employees recruited by society, and build market-oriented employment system, wage system, piecework wage system, etc.

Table 6

Relationship Between Challenges Encountered and Green Growth Strategies

Variables	rho-value	p-value	Interpretation
Green Managerial Innovation			
Environmental Sustainability	0.385**	0.000	Highly Significant
Economic Sustainability	0.408**	0.000	Highly Significant
Social Sustainability	0.414**	0.000	Highly Significant
Green Technology Innovation			
Environmental Sustainability	0.390**	0.000	Highly Significant
Economic Sustainability	0.375**	0.000	Highly Significant
Social Sustainability	0.397**	0.000	Highly Significant
Green Transformational Leadership			
Environmental Sustainability	0.319**	0.000	Highly Significant
Economic Sustainability	0.289**	0.000	Highly Significant
Social Sustainability	0.308**	0.000	Highly Significant

**. Correlation is significant at the 0.01 level

Table 6 illustrates the relationship between challenges encountered and green growth strategies, and analyzes the green managerial innovation, the green technology innovation and green transformational leadership in relation to environmental sustainability, economic sustainability, and social sustainability. As seen

in the table, the computed rho-values ranging from 0.289 to 0.414 indicate a weak to moderate direct relationship among the sub variables of challenges encountered and green growth strategies. There was a statistically significant relationship between challenges encountered and green growth strategies because the obtained p-values were less than 0.01. This means that there is a significant relationship between challenges encountered and green growth strategies, indicating that the better the challenges encountered, the greater the green growth strategies.

The challenges encountered in green construction are closely related to green growth strategies in the construction industry. Green construction faces some challenges in practice, and the green growth strategy of the construction industry aims to address these challenges and promote the development of the construction industry in a more environmentally friendly and sustainable direction. In the process of implementing green construction, it is greatly influenced by traditional concepts. In the traditional construction industry, the popularity of environmental awareness and green building concept still faces certain challenges, and some people may be skeptical about the feasibility and benefits of green buildings. The construction industry can increase public awareness and understanding of green buildings through education and advocacy.

The first is the correlation between green management innovation and green growth strategies in the construction industry. Green construction involves the use of more environmentally friendly materials and technologies, which can lead to higher construction costs for projects. At the same time, green buildings have a relatively long payback period and may take longer to pay off. The construction industry can adopt a variety of strategies to address the high cost challenge. For example, governments can provide policies that give tax incentives or subsidies to companies that adopt green construction. Qiu Zhenpei (2021) believes that great changes have taken place in the economic development environment of construction enterprises in the information age. Enterprises should conform to the development trend of The Times, fully grasp the characteristics of information technology, continuously optimize the economic management of enterprises through management concepts, organizational structure and resource integration, and promote the innovative development of economic management of enterprises. Only in this way can we effectively solve the many problems facing the economic management of construction enterprises and realize the long-term and healthy development of construction enterprises and construction industry.

The second is the correlation between green technology innovation and green growth strategy of construction industry. Lack of uniformity in technology and standards. Green construction involves a variety of technologies and standards, but there is still a lack of unified standards, which brings some problems to the green construction of construction enterprises. Government and industry organizations can strengthen cooperation to promote the unification and development of green building standards. Quan Li (2023) believes that It is necessary to create a good social environment for enterprise green technology innovation, vigorously promote green consumption to highlight consumption-oriented value, set up a green technology development service platform and carry out green technology innovation popularization, establish a sound enterprise green technology innovation financing management system, train enterprise managers to form a good environmental awareness, deepen the cooperation between enterprises and universities and scientific research institutions.

Third, the correlation between green transformation leadership and green growth strategy of construction industry. Green construction requires leading talents with green building knowledge and skills. The construction industry can increase investment in the training and development of leaders, and improve the professional skills and cognition of leaders in the field of green building. At the same time, construction companies can cooperate with academic institutions to promote the training of green construction-related majors and increase the supply of green construction leaders in the industry. Peng Cheng (2022) believes that leaders in enterprises are playing an increasingly important role in contemporary society, and the quality of leaders is related to the level of leadership effectiveness and the smooth realization of enterprise goals. Leaders should combine the current social development situation, establish the concept of continuous learning, improve the overall quality of individuals, and then enhance the effectiveness of leadership to achieve sustainable development of enterprises.
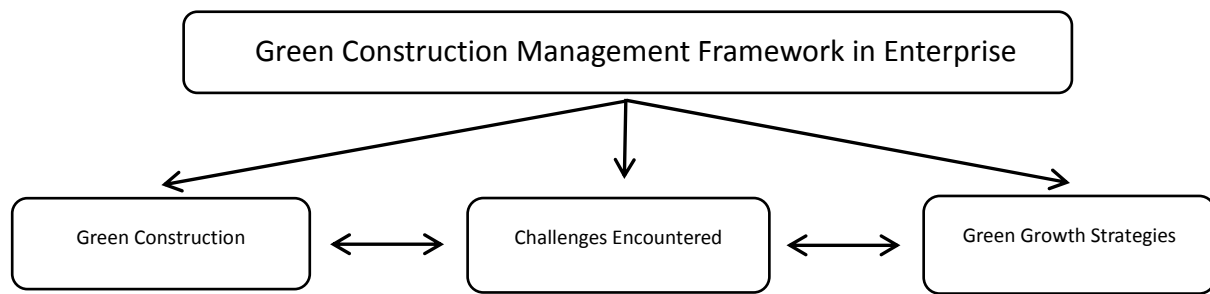
Figure 1. Green Construction Management Framework in Enterprise

As can be seen from Figure 1, for Construction companies, the Green construction management framework consists of Green Construction Practices, Challenges Encountered and Green Growth Strategies. First of all, the emergence of green construction is an innovation to the original construction mode, and actively carrying out green construction practice to seize the opportunity of industrial upgrading is conducive to the sustainable development of the construction industry. Secondly, in the process of green construction, it is necessary to improve the management level and pursue advanced technology. Finally, the system mechanism of building enterprises to develop green construction is obtained, and it is also the framework of building enterprises to promote green construction.

4. Conclusion and recommendations

The respondents strongly agreed the importance of Recruitment and Selection, Trainings and Development and Performance, Management and Appraisal in Green Construction Practices. The Challenges Encountered in terms of Green Managerial Innovation, Green Technology Innovation and Green Transformational Leadership were rated agree by the respondents. The respondents strongly agreed on the Green Growth Strategies in terms of Environmental Sustainability, Economic Sustainability and Social Sustainability. It was established that there is significant relationship between Green Construction Practices and Challenges Encountered, Green Construction Practices and Green Growth Strategies and Challenges Encountered and Green Growth Strategies. Green Construction Management Framework in Enterprise has been developed.

Strengthen the human resource management of green construction enterprises, recruit personnel with green building concepts, clarify job responsibilities, actively carry out training, and all employees participate in green construction. Increase green construction management innovation. Timely introduction of regulations and technical standards, attention to the absorption and application of new technologies, the whole process of construction using green construction. Green construction is an inevitable choice for the construction industry to reduce carbon emissions and take the road of environmental sustainable development. Green construction is carried out in all aspects of construction projects. The developed framework can be used as a green construction management practice. For future researchers, consider other variables that affect the effect of green construction management practices.

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