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ORIGINAL RESEARCH PAPER

Investigating the Relationship Between Green Human Capital, Logistics Practices, Competition and Social-Financial Performance in Businesses of Kermanshah City

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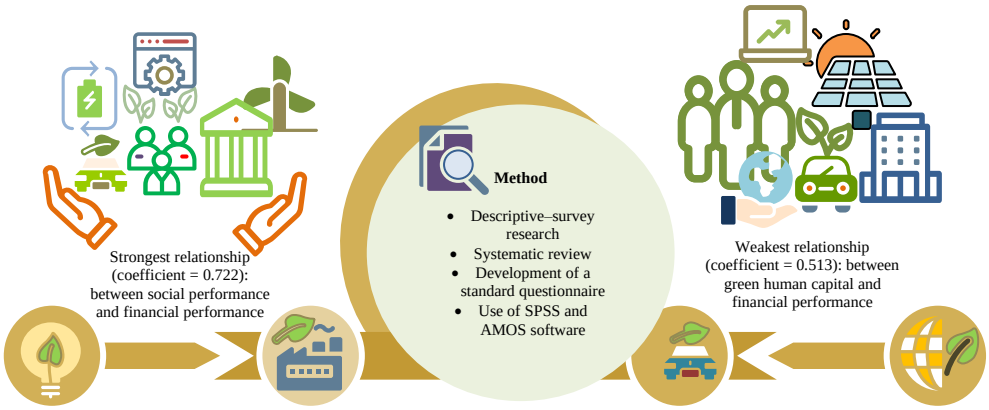
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A B S T R A C T

The present study, in terms of its objective, is classified as applied research and is a descriptive-survey study. Based on the data collection method, it is a non-experimental (descriptive) study conducted using a survey method. The research data were analyzed using SPSS and AMOS software. Data collection was carried out using both library and field methods. In the library section, up-to-date Persian and English articles from information databases such as SID, ScienceDirect, Elsevier, Google Scholar, etc., were used to gather information for the theoretical foundations and research background. In the field section, a standard questionnaire was used to collect the necessary data concerning the variables and their indicators.The statistical population of this research consisted of employees of large businesses in the city of Kermanshah. Sample members were selected first through stratified sampling, followed by simple random sampling from within each stratum. The findings of this research were presented in two parts: descriptive statistics (mean, median, standard deviation, etc.) and inferential statistics (correlation and regression). The results of the study indicated that there were positive and significant relationships between the research variables. Regarding the strength of the correlations, the strongest relationship, with a coefficient of 0.722, was between social performance and financial performance, while the weakest relationship, with a coefficient of 0.513, was between green human capital and financial performance.



1. Introduction

Intensifying competition and growing dissatisfaction regarding environmental degradation encourage companies to adopt environmental management practices such as green logistics to reduce the negative impact of inbound and outbound activities on the natural environment. Green logistics practices involve integrating sustainable practices into forward and reverse logistics activities to achieve balanced performance improvement (social, environmental, and economic). Sustainable business practices are not optional, but are fundamental drivers of competitive advantage in today's dynamic business environment [1]. Studies show that green logistics practices including issues related to purchasing and reverse logistics have attracted the attention of many policymakers, researchers, companies, and other stakeholders, leading to a gradual increase in the number of studies.

Green human capital is a resource of a company that can enhance the implementation of green supply chain management practices [2]. Green human capital includes the abilities, skills, expertise, and experiences of employees that are used for the effective implementation of green practices. Studies show that the expertise, skills, and capabilities of employees are crucial for the successful implementation of sustainable practices and act as a competitive advantage. Despite the accepted role of employees' skills, expertise, and capabilities in implementing sustainable practices, there are still few studies on examining the impact of green human capital on green logistics practices. Most recent studies examining the drivers of green logistics focus on external factors without much attention to internal resources or capabilities [3]. Green performance includes the set of company operations that are consistent and compatible with the environment, and this performance is widely measured through criteria and scales determined by relevant national and international

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institutions and agencies [4]. Green performance, which refers to the extent of business and environment interaction, is estimated based on indicators of reducing environmental damages such as reducing the use of water, energy, and non-renewable resources, and reducing the production of toxic waste, noise pollution, and environmental degradation [5]. According to a United Nations report, transportation causes approximately 22% of the world's carbon dioxide emissions, and without environmental conservation measures, it will increase to 60% by 2050. Furthermore, the transportation industry is mainly reliant on oil and fossil fuels as their consumption constitutes 96% of the total energy demand. Excessive energy consumption, in addition to increasing energy demand, intensifies greenhouse gas emissions. Therefore, companies and decision-makers are paying more attention to environmental protection and sustainable development [6], and the concept of green logistics emerges. Logistics is an important part of the supply chain. With the internationalization of green supply chain management and sustainable supply chain management, more and more researchers began to explore the field of green logistics. Green logistics is a multidisciplinary subject involving economic, environmental, and social factors [7]. Therefore, it is important for companies' human resource strategies to be aligned with environmental objectives aimed at enhancing sustainable operations performance [8].

Today, the needs related to the protection of the natural environment have become a primary prerequisite for finding new management concepts that provide solutions that are environmentally responsible and yet economically effective. One of the concepts that can be a response to the requirements related to environmental protection is the concept of "green logistics." A large number of company owners and managers, when deciding on logistics processes, consider not only economic criteria but also environmental criteria (for example, choosing means of transportation that cause less damage to the environment or using reusable packaging). A review of the research literature shows that the conducted research in the field of developing "green logistics" has so far focused on the implementation and development processes of "green logistics" in large companies or entire supply chains, as less attention has been paid to this important issue in small and medium-sized enterprises. Researchers noticed a research gap related to the development of "green logistics" among large companies. The level of employment and consequently the role of the workforce for companies is very influential in economic growth, but today environmental issues have become a more important factor for company development. To ensure business sustainability, it is necessary to introduce environmental and social aspects into the business framework. Environmental management in business operational processes has a positive effect on business sustainability in the short and long term. Green human resource management is one of the tools that can be used to manage the company's workforce including environmental aspects. The purpose of this research is to determine the relationship between green human capital, green logistics practices, green competitiveness, social performance, and financial performance in large businesses in Kermanshah city.

The availability of green human capital in an organization strengthens the adoption of environmental management practices such as green supply chain management including green production and reverse logistics in order to achieve sustainability [2]. Numerous problems revolve around the reverse logistics adoption process and this is mainly related to human factors such as the availability of green human capital. Human resources play an important role in implementing environmental management policies in the company. Focus in this research area can help companies expand their knowledge base and create awareness among managers to intelligently plan and manage human resource management activities that can support the implementation of green strategy. Green human resource management not only leads to workforce satisfaction but also attracts talents and retains creative individuals in the company. Adopting reverse logistics is a complex process that involves business processes such as adopting the correct set of standards, jointly by the human resources team, marketing team, and operations team; selecting suitable supply chain partners; strategic procurement of old cores and components, finalizing contracts with suppliers and logistics service providers; receiving, separating old products, refurbishing, remanufacturing, quality checking, warehousing, and finally performance measurement [9].

Environmental protection has become part of a comprehensive strategy and companies refer to it as green competitiveness. By using ecological principles for business studies, companies can increase green competitiveness beyond environmental constraints through innovation, iteration, and improvement in the cycle of operational mechanisms. Some researchers have also conducted an empirical study on firms' green competitiveness. Carraro and Galeotti used the WARM model to simulate the interaction between industry and environment among European Union countries and found that policies that stimulate research, development, and innovation can provide appropriate incentives for companies to avoid harm and preserve business [10]. Fankhauser et al. by analyzing 110 manufacturing sectors in eight countries, identified three success factors for green competitiveness at the sector level: the speed of sectors' conversion to green products, the ability to gain and maintain market share, and a favorable starting point [11]. Chiu et al. using a structural equation model to analyze a survey of 124 companies in eight industries in Taiwan, found that it is necessary to encourage companies to implement green supply chain and green innovation to improve environmental performance in order to increase competitive advantage in the global economy [12]. Overall, research on regional green competitiveness is still in the development stage and more attention is focused on the micro-firm level [13].

The lack of a comprehensive definition of social responsibility and the disagreements that exist about this category, most reference is made to the definition of the European Union Commission. The European Union Commission considers social responsibility as a concept whereby companies voluntarily observe social and environmental considerations in their business operations and in interactions with their stakeholders. The new view is that "it considers a vision in which a business sees more value in serving a broader set of social needs and expectations and understanding the net benefits resulting from socially responsible actions" [14]. Social responsibility refers to a set of activities that capital owners and economic enterprises voluntarily carry out as a useful and effective member of society [15].

Regarding the managers presented attitude towards implementing pro-ecological solutions in management performance, companies were classified based on their attitude towards environmental protection during the implementation of logistics processes. In the first group, they refer to progressive companies where logistics plays a very important role in formulating environmental strategies. Companies belonging to this group use a wide range of pro-environmental solutions within the scope of implemented logistics processes, all of which are carried out with the support of senior management. Furthermore, progressive companies tend to have an active, not passive, attitude towards environmental challenges.

In the second group, there are moderate companies for whom environmental issues are not as important as for progressive companies. These companies are considered an intermediate type between progressive and so-called conservative companies, characterized by the fact that logistics has little impact on the development and/or implementation of environmental policies. Possible actions in the field of environmental protection are carried out in case of specific problems related to compliance with applicable regulations and are often implemented at the lowest management levels [16].

Green Human Capital is the set of knowledge, skills, capabilities, experience, attitudes, wisdom, creativity, and commitments of employees, among others, concerning environmental protection or green innovation that is embedded in employees and not in organizations [17]. Green Logistics Practices have evolved as a concept encompassing a set of green activities that limit the overall environmental impact of logistics activities and ensure the protection and sustainability of the natural environment for society and companies [18]. Green Competitiveness refers to the non-imitable nature of a company's environmental management practices and strategies that enhance its market position and improve its economic benefits relative to its competitors [19]. Social Performance is defined as the extent to which a company's environmental strategies contribute to complying with environmental regulations and protecting the health and safety of employees and community members [20]. Financial Performance is a company's responsibility towards its shareholders with the aim of achieving maximum profit and return on assets [19].

In the contemporary world, the transition from traditional business models towards sustainable paradigms has become an inevitable necessity. On this path, "Green Human Capital" is recognized as the engine of organizational transformation. This capital, which embodies the environmental knowledge, skills, and commitment of employees, empowers the organization to implement complex sustainability strategies [21]. Aligned with this perspective, international research also emphasizes that human capital plays a foundational role in the successful transition towards low-carbon and agile organizations [2].

Gheyoor Baghbani et al in a study titled "Investigating the Impact of Green Supply Chain Management Practices on Social Performance and Competitiveness in Chadormalu Iron Ore Mine" found that internal practices and external collaborations of green supply chain management have a significant positive relationship with the company's green performance and competitiveness. Furthermore, the relationship between both aspects of green supply chain management and the company's social performance was confirmed. The mediating role of competitiveness in the relationship between green supply chain management and social performance was only confirmed for the dimensions of internal practices and external participation [22]. Ghasemi et al. in a study titled "Investigating the Effects of Greenhouse Gas Emissions, Environmental Performance, and Social Performance on the Financial Performance of Companies Listed on the Tehran Stock Exchange" concluded that greenhouse gas emissions have a significant negative impact on financial performance, while the environmental and social performance of companies had a significant positive impact on their financial performance [23]. Tavakoli Dehghani et al. in a study titled "Investigating the Relationship Between Sustainable Supply Chain Management and Environmental and Financial Performance" showed that there is a significant positive relationship between components of sustainable supply chain and environmental performance. Also, a significant relationship was observed between the components of sustainable procurement and sustainable design with financial performance, but this relationship was not confirmed for the components of sustainable distribution and investment improvement [24]. Ghorbanpour et al. in their research titled "Prioritizing Green Supply Chain Management Practices in the Domain of Iran's Oil Industries" found that the practices of "internal

environmental management", "legal and regulatory requirements", "green design", "green technology", and "green purchasing and supply" hold the highest importance compared to other practices in this domain [25].

Agyabeng-Mensah and Tang in a study titled "The Relationship Between Green Human Capital, Green Logistics Practices, Green Competitiveness, Social Performance, and Financial Performance" found that green human capital has a significant impact on financial performance, but does not have a significant direct impact on social performance and green competitiveness. On the other hand, green logistics practices significantly improve social performance, financial performance, and green competitiveness. Their key findings indicate that green logistics practices mediate the relationship between green human capital and green competitiveness, social performance, and financial performance [1]. Mowaffi and Kusumawati in a study titled "Green Human Resource Management and Its Impact on Supply Chain and Business Performance: An Empirical Study in Indonesia" concluded that green human resource management does not have a direct significant impact on business performance, but positively affects supply chain organizational learning and supply chain performance. Also, supply chain performance mediates the relationship between green human resource management and business performance [26]. Triolias et al. in their research titled "The Implications of Green Logistics Management on Sustainable Business and Supply Chain Performance: Evidence from a Survey in the Greek Agricultural and Food Sector" found that information sharing, logistics network, and transportation are the strongest influencing factors on sustainable business and supply chain performance. Furthermore, green packaging was associated with aspects of financial and social performance, while green warehousing and procurement failed to establish a significant relationship with performance outcomes [27]. Beg and Gupta in a study titled "Investigating the Impact of Green Human Capital Availability on the Adoption of Reverse Logistics Performance and Remanufacturing Operations" showed that the availability of green human capital positively impacts the adoption of reverse logistics and remanufacturing operations performance. Also, top management commitment and sustainability culture act as moderating factors in these relationships [9].

Despite the growing understanding of the importance of these concepts, it appears that few domestic studies have systematically and comprehensively investigated the interconnected relationships between these variables within a causal model framework. Most studies have been limited to examining scattered pairwise relationships. Therefore, the present study aims to fill this gap by seeking to elucidate the intertwined network of relationships between green human capital, green logistics practices, green competitiveness, and performance dimensions within the specific context of large businesses in Kermanshah city. The background of this research can be examined from several aspects: Thematically, a study with these dimensions and this comprehensiveness has not been conducted domestically. Most research conducted in the domain of large businesses in Kermanshah city has examined the statistical population from a marketing perspective. However, this research attempts to investigate this important matter with an integrated perspective, considering the role of human resources, environmental, marketing, social responsibility, and financial components. On the other hand, the results of this research will be made available to the Kermanshah Industrial Towns Company to be utilized for improving and enhancing the performance of its subsidiary companies.

2. Method

2.1. Methodology

This research is classified as applied from an objective perspective because its results can contribute to improving the performance of large businesses in Kermanshah city. Additionally, this study falls under descriptive-survey research. The statistical population of this research consists of employees of large businesses in Kermanshah city. The researcher first obtains the number of these companies and their employees from the Kermanshah Industrial Towns Company. Then, after determining the number of active large companies and their employees, the sample size will be determined using Cochran's formula, and sample members will be selected using simple random sampling. The main instrument for data collection in this research will be a standardized questionnaire. After data collection, analysis will be conducted using SPSS and AMOS software (SPSS statistical software will be used to determine relationships between variables, and AMOS software will be used to specify impact coefficients). The research findings will be presented in two sections: descriptive (mean, median, standard deviation, etc.) and inferential (correlation and regression). This research was conducted during the six-month period of the second half of 2021 in Kermanshah city and falls within the fields of logistics, supply, and human resources.

From a methodological perspective, this research is quantitative, and in terms of objective, it is applied. Regarding its nature, it is a descriptive-survey study.In this research, the statistical population consists of several selected, large, and active companies in Kermanshah city. The criterion for selecting large companies in this study is the number of employees; companies with over 250 employees are considered large. Their names were obtained from the Kermanshah Industrial Towns Company, and their employee counts were verified by contacting each company. The companies considered as the statistical population in this research include: Nazgol Oil, Saman Cement, Zagros Carpet, and Bakhtar Cable. The total population size of these four companies was determined to be 1,359 individuals. In this research, since the researcher had access to the precise size of the statistical population (several large and active companies in Kermanshah), the sample size was determined to be 300 individuals using Cochran's formula. It should be noted that sampling was initially conducted using quota sampling based on the number of employees in each company, and then selection from within each quota was performed through simple random sampling.

Data collection in this research was conducted using two methods: library and field research. In the library section, to gather necessary information for the theoretical foundations and literature review, up-to-date Persian and English articles from databases such as SID, ScienceDirect, Elsevier, Google Scholar, etc., were used. In the field section, a standardized questionnaire was used to collect necessary information about the variables and their indicators.

In this research, after collecting 30 questionnaires, Cronbach's alpha test was administered on the completed questionnaires. Based on the obtained reliability values, which were above 0.7, the appropriate reliability of the research instrument is indicated. Therefore, the researcher proceeds with relative confidence to distribute and collect the remaining questionnaires for the research.In this research, although standardized questionnaire instruments were used and their reliability and validity had been confirmed in previous studies, the researcher, in consultation with their supervisor, once again examined and analyzed the validity and reliability of these questionnaires. Therefore, to confirm the content validity of the questionnaires, they were sent via email and presented in person to six expert professors in the field of management with specializations in (Entrepreneurship, Marketing, Human Resources, Industrial, Systems) for their approval.

As shown in figure 1, main hypotheses are:

1. Green logistics practices have a positive and significant relationship with green competitiveness.
2. Green logistics practices have a positive and significant relationship with social performance.
3. Green logistics practices have a positive and significant relationship with financial performance.
4. Green competitiveness has a positive and significant relationship with financial performance.
5. Social performance has a positive and significant relationship with financial performance.
6. Green human capital has a positive and significant relationship with green competitiveness.
7. Green human capital has a positive and significant relationship with financial performance.
8. Green human capital has a positive and significant relationship with social performance.
9. Green human capital has a positive and significant relationship with green logistics practices.

The following section presents the statistical analysis of the demographic characteristics of the studied sample. The information obtained from the research questionnaires showed that 197 individuals (65.7%) in the sample were male and 103 individuals (34.3%) were female.

Regarding education, 37 individuals (12.3%) had a high school diploma or lower, 20 individuals (6.7%) had an associate degree, 162 individuals (54%) had a bachelor's degree, and 81 individuals (27%) had a master's degree or higher. In terms of age, 8 individuals (2.7%) in the sample were under 20 years old, 81 individuals (27%) were between 20 and 30 years old, 116 individuals (38.7%) were between 31 and 40 years old, 76 individuals (25.3%) were between 41 and 50 years old, and 19 individuals (6.3%) were over 50 years old. The information obtained from the research questionnaires indicates that 90 individuals (30%) in the sample had less than 5 years of work experience, 101 individuals (33.7%) had between 5 and 10 years of work experience, 60 individuals (20%) had between 11 and 15 years of work experience, and 49 individuals (16.3%) had over 15 years of work experience.

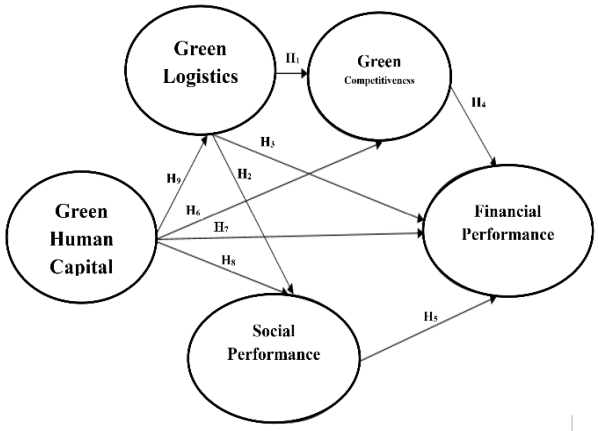


Figure 1. Conceptual model of the research.

3. Result and Discussion

The following section presents the statistical analysis of the demographic characteristics of the studied sample. The information obtained from the research questionnaires showed that 197 individuals (65.7%) in the sample were male and 103 individuals (34.3%) were female.

Regarding education, 37 individuals (12.3%) had a high school diploma or lower, 20 individuals (6.7%) had an associate degree, 162 individuals (54%) had a bachelor's degree, and 81 individuals (27%) had a master's degree or higher. In terms of age, 8 individuals (2.7%) in the sample were under 20 years old, 81 individuals (27%) were between 20 and 30 years old, 116 individuals (38.7%) were between 31 and 40 years old, 76 individuals (25.3%) were between 41 and 50 years old, and 19 individuals (6.3%) were over 50 years old. The information obtained from the research questionnaires indicates that 90 individuals (30%) in the sample had less than 5 years of work experience, 101 individuals (33.7%) had between 5 and 10 years of work experience, 60 individuals (20%) had between 11 and 15 years of work experience, and 49 individuals (16.3%) had over 15 years of work experience.

In this part of the analysis, the research variables are described using descriptive statistics indicators (measures of central tendency and dispersion):

Table 1. Central tendency and dispersion indicators of research variables.

Variable	Skewness	Kurtosis	Mean	Media	Max	Min	Variance	Standard Deviation
Green competitiveness	-1.101	1.273	3.64	3.714	4.9	1.4	0.411	0.370
Green logistic	-0.714	-0.322	3.57	3.714	5.0	1.2	0.630	0.458
Green human capital	-1.085	1.511	3.74	3.714	5.0	1.6	0.373	0.353
Social performance	-0.403	-0.376	3.42	3.714	5.0	1.0	0.602	0.448
Financial performance	-1.048	0.778	3.65	3.714	5.0	1.0	0.628	0.457

In examining the central tendency and dispersion indicators of the research variables presented in Table (1), the mean of all variable dimensions in the sample was above the average level. This means that on the 5-point Likert scale, the mean of each variable was higher than 3. The skewness and kurtosis indices also fell within the range of -2 to +2.

In this part of the analysis, the correlation matrix between the main research variables is presented according to Table (2).

Table 2. Spearman's correlation matrix of main research variables.

Variable	1	2	3	4	5
Green competitiveness	1				
Green logistic	0.595	1			
	(0.000)				
Green human capital	0.638	0.523	1		
	(0.000)	(0.000)			
Social performance	0.621	0.703	0.658	1	
	(0.000)	(0.000)	(0.000)		
Financial performance	0.613	0.538	0.513	0.722	1
	(0.000)	(0.000)	(0.000)	(0.000)	

Singnificance level: 0.05

The results of the Spearman's correlation matrix showed a significant relationship between all research variables. In terms of correlation strength, the strongest relationship with a coefficient of 0.722 was between social performance and financial performance. The weakest relationship with a coefficient of 0.513 was between green human capital and financial performance.

3.1. Examining the Effect Coefficients Between Research Variables

Given the non-normal distribution of the research data, software needed to be selected that was not sensitive to the normality of the data. For this purpose, considering the large sample size of the research, the researchers used AMOS software that results are shown in feagure 2.

Table 3. Goodness-of-fit indices for the overall measurement model of the research.

Category	Index Name	Abbreviation	Final Model Value	Acceptable Fit Threshold
Absolute Fit Indices	Chi-Square probability level	CHI-SQUARE (P-Value)	0.062	> 0.05
	Goodness of fit index	GFI	0.981	> 0.90
Incremental Fit Indices	Normal fit index	NFI	0.974	> 0.90
	Comparative fit index	CFI	0.961	> 0.90
	Relative fit index	RFI	0.982	> 0.90
	Icremental fit index	IFI	0.976	0-1
Parsimonious Fit Indices	Parsimonious normal fit index	PNFI	0.562	> 0.50
	Root mean square error of approximation	RMSEA	0.0522	< 0.10
	Notmal Chi-Square (CMIN/df)	CMIN	1.969	Value between 1-3

The goodness-of-fit indices for the overall measurement model of the research indicate that, in general, the hypothesized model is supported by the research data. In other words, the data fit the model, and all indices suggest the desirability of the research structural model.

Table 4. Results of the research hypotheses.

Hypothesis	Constructs (Relationship)	Correlation (β)	Effect (Path Coef.)	P-Value	Result
Hypothesis 1	Green logistics practices - Green competitiveness	0.595	0.43	0.000	Supported
Hypothesis 2	Green logistics practices - Social performance	0.703	0.75	0.000	Supported
Hypothesis 3	Green logistics practices - Financial performance	0.538	0.36	0.000	Supported
Hypothesis 4	Green competitiveness - Financial performance	0.613	0.48	0.000	Supported
Hypothesis 5	Social performance - Financial performance	0.722	0.79	0.000	Supported
Hypothesis 6	Green human capital - Green competitiveness	0.638	0.61	0.000	Supported
Hypothesis 7	Green human capital - Financial performance	0.513	0.35	0.000	Supported
Hypothesis 8	Green human capital - Social performance	0.658	0.65	0.000	Supported
Hypothesis 9	Green human capital - Social performance	0.523	0.53	0.000	Supported

The results of the research hypotheses indicate that the strongest relationship and effect, with a Spearman correlation coefficient of 0.722 and an impact coefficient of 0.79, was between the two variables of Social Performance and Financial Performance. The weakest relationship and effect, with a Spearman correlation coefficient of 0.513 and an impact coefficient of 0.35, was between the two variables of Green Human Capital and Financial Performance. As shown in Figure 2, the effect coefficients between the main and latent variables of the research are positive and significant at the 0.05 error level, supporting the validation of the nine hypotheses. Additionally, the high factor loadings indicate a good fit of the model.

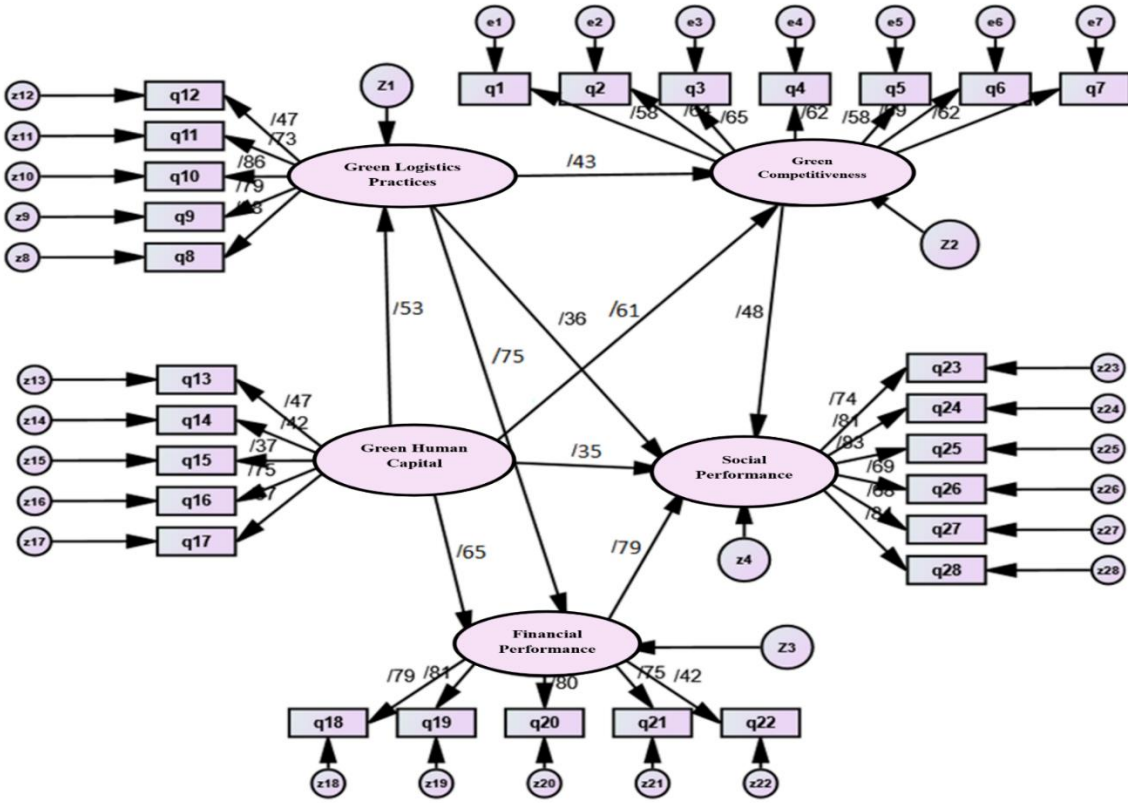


Figure 2. Structural equation model of the research.

4. Conclusions

Green logistics practices have a positive and significant relationship with green competitiveness. This hypothesis was confirmed with a correlation coefficient of 0.595 and an impact coefficient of 0.43. The results of this hypothesis align with the findings of Agyabeng et al. [19]. In their research conducted in the automotive sector, they concluded that green logistics practices have a significant impact on green competitiveness. However, this impact was estimated to be moderate in that study. Ambek , in a study on the role of green logistics practices on green competitiveness in the food industry, also concluded that green industrial practices create a competitive advantage [28]. Furthermore, the results of this hypothesis are consistent with the findings of Gheyoorbaghbani et al. [22]. In their study population within the mining sector, they found that internal practices and external collaborations of green supply chain management have a significant relationship with the company's competitiveness. Therefore, the first hypothesis is confirmed. Green logistics practices have a positive and significant relationship with social performance. This hypothesis was confirmed with a correlation coefficient of 0.703 and an impact coefficient of 0.75. The results of this hypothesis do not align with the findings of Agyabeng and Mensah [29]. They concluded that green logistics practices do not have a significant direct impact on social performance. However, the results are consistent with Agyabeng et al. [19], who, in their study on small and medium-sized businesses, identified a positive relationship between green logistics and social performance. Green logistics practices have a positive and significant relationship with financial performance. This hypothesis was confirmed with a correlation coefficient of 0.538 and an impact coefficient of 0.36. The results of the third hypothesis align with the findings of Yildiz and Sezen [30]. This research was conducted in Turkish manufacturing companies, and one of the dimensions affecting the financial performance of manufacturing companies was green supply chain management. Although they also identified other factors such as green purchasing, green production, green distribution, etc., as influencing financial performance. Additionally, the results of this hypothesis are consistent with the research of Tavakoli Dehghani [24]. In their study with a statistical population of chemical fertilizer producers, they concluded that a sustainable supply chain has a positive and significant impact on financial performance, and sustainable practices should replace traditional production methods. Green competitiveness has a positive and significant relationship with financial

performance. This hypothesis was confirmed with a correlation coefficient of 0.613 and an impact coefficient of 0.48. The results of the fourth hypothesis align with the findings of Logoni et al. [31]. This research, conducted in manufacturing sectors in Italy, showed that green supply chain practices create a competitive advantage and lead to high financial performance. The difference is that in this study, the impact of competitive advantage was measured directly, while in the research by Logoni et al. [31], competitive advantage was considered as a mediating variable.Social performance has a positive and significant relationship with financial performance. This hypothesis was confirmed with a correlation coefficient of 0.722 and an impact coefficient of 0.79. The results of this hypothesis align with the findings of Gheyoorbaghbani et al. [22]. They concluded that any sustainable environmental plan can lead to improved financial performance, which will ultimately result in improved social performance. Also, the results of this hypothesis are consistent with the findings of Ghasemi et al. [23]. They concluded that companies active in the stock exchange can be financially successful if they fulfill their social responsibilities. Therefore, they considered all economic, social, and cultural sectors essential for improving social responsibility, moving towards sustainable development, and enhancing the financial performance of companies. Green human capital has a positive and significant relationship with green competitiveness. This hypothesis was confirmed with a correlation coefficient of 0.638 and an impact coefficient of 0.61. The results of this hypothesis are not consistent with the findings of Chen [17]. Chen [17] concluded that green human capital does not significantly improve green competitiveness because the sampled small and medium-sized manufacturing companies, due to resource (financial) constraints, likely lack sufficient resources to commit to human capital development. Additionally, SMEs are reluctant to make substantial investments in human capital development, as they often experience employee turnover (migration), which comes at the cost of their investment. These reasons may affect companies' ability to develop sufficient green human capital to influence green competitiveness and social performance. The results of this hypothesis are consistent with the findings of Gheyoorbaghbani et al. [22]. They argued that offering high-quality green products enhances employees' perception of the company's image, and the satisfaction derived from this perception motivates employees to have higher commitment in their duties. Hence, increased company competitiveness directly results in improved social performance.

Green human capital has a positive and significant relationship with green logistics practices. This hypothesis was confirmed with a correlation coefficient of 0.523 and an impact coefficient of 0.53. The results of this hypothesis align with the findings of Beg and Gupta (2019) [9]. They considered the reservoir of employees' expertise, wisdom, capabilities, innovation, attitude, creativity, skills, and experiences as essential assets for implementing green logistics practices.

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