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The effect of green human resource management on green supply chain management

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Abstract

In the 21st century, concerns about environmental warnings has increased the importance of protecting the environment in different societies and organizations. A review of the literature in this regard states that appropriate environmental management in companies requires the support of human resource management. This research aims to investigate the effect of green human resource management on the green supply chain management through the role of recruitment and selection, training, performance evaluation and reward on the green supply chain management. In this research, data were collected through a researcher-made questionnaire and distributed electronically between 70 managers and experts from 40 manufacturing companies of various industries in Iran of which 59 questionnaires were received. The response rate of the questionnaires was 0.843. All of the 59 questionnaires were used. The reliability of the questionnaire was tested by Cronbach test. Cronbach's alpha in the questionnaire was 0.70 which is a very acceptable value. Data in this research are analyzed through SEM, which was introduced in the late 1960s. It provided a tool for researchers to study the relationships between several variables in a model. Finally, data was analysed using the LISREL software. The results affirmed the variable of recruitment and selection with the loading factor of 4.38, training with the loading factor of 4.37, performance evaluation with the loading factor of 4.91, and reward with the loading factor of 4.92. The level of significance in all variables is less than 5%, which indicates confirmation of the relevant hypotheses. The results affirmed that the factors of the green human resources management were very influential on the green supply chain management. Additionally, the results illustrated that recruiting educable staff with competencies, skills and knowledge, their training and development, their performance evaluation and sharing facilities with them, all have significant impacts on green supply chain management.

1. Introduction

The world today is facing hazardous problems such as global warming, increasing amounts of greenhouse gases, various types of pollution, etc. Therefore, environmental protection and related strategies soon became a priority in organizational innovation and strategy. The organizations had to focus on profitability and competitive advantage on one hand, and eliminate or minimize waste (energy, greenhouse gas, chemical / hazardous waste) on the other hand. The history of green supply chain management dates back to the early 1990s, when it was first introduced at Michigan State University. From the perspective of product life cycle, Green SCM includes all stages of raw materials, product design and manufacturing, sales and transportation, the use and recycling. By using SCM and green technology, the companies can decrease the environmental damages and benefit from resources and energy optimally. The issues of environmental sustainability and green organizations are growing in management

programs, creating a green revolution in traditional principles such as human resources and operations management. In the HR field, the topic of "Green Human Resource Management" (GHRM) has been emerged and introduced as a new research line. Sustainability in operations management has attracted considerable attention and is moving into a new competitive subject. Topics such as Green Supply Chain Management (GSCM) are trending in the scientific community. Thus, GHRM and GSCM influence the programs of scientists and professionals in HRM and operations management, respectively. Supply chain greening is the process of considering environmental criteria or considerations throughout the supply chain. With the advent of environmental management, biocompatible production strategies and the literature on green supply chain management grew. The emergence of the green supply chain has been one of the most significant advances in the last decade, providing opportunities for companies to tailor their supply chains to environmental goals. The set of internal and external actions of each firm across the supply chain that helps prevent pollution and improve the environment is called a green supply chain. Greening the supply chain provides a great opportunity for those concerned with sustainable consumption issues and environmental business practices. (Shekari, 2013). The main idea of the green supply chain is to reduce waste. In recent years, green SCM has become a preventive approach to improve environmental performance and plays an important role in traditional SCM. Unlike traditional environmental management, the concept of green SCM assumes full responsibility of a company for its products, from the stage of extraction and preparation of raw materials to the final product and waste (Safaei, 2013). Extending government regulations to meet environmental standards and growing consumer demand for supply of green products to the supply chain, which enforces all activities related to the flow of goods from the raw material stage to the delivery of goods to final consumers, as well as information flow throughout the chain, leads the emergence of the new concept of "Green Supply Chain Management", which includes the stages of the product life cycle from design to recycling. Adopting an investment strategy to improve the environmental performance of the supply chain brings many benefits, such as saving energy resources, reducing pollutants, eliminating or reducing waste, creating value for customers, and improving productivity for companies and organizations (Imani and Ahmadi, 2010). In the 21st century, growing concerns about environmental warnings have enhanced the importance of environmental protection in various communities and organizations (Rajabpour, 2017). A review of the specialized literature in this regard indicates that proper environmental management in companies needs the support of HRM. Human resource is a key factor for excellent operations management, including aspects of SCM that can have a positive effect on reducing barriers to the success of SCM. If human resource is important for SCM, it will be important for green SCM too. Consequently, it reduces barriers to adopt green SCM techniques. In the content of greener organizations, HR converts more to green SCM and green SCM as a more advanced and more active approach to environmental management in organizations, affects the behavioral and human aspects and becomes important for green HRM (Chiappetta Jabbour and Sousa Jabbour, 2016-1). Given that environmental management is an emerging organizational goal, human resource functions will be very helpful in this regard. Therefore, the general objective of this study is to investigate the impact of green HRM on the green SCM in manufacturing companies. For this purpose, four outstanding aspects of human resource management are selected as the independent variables to survey their effects on supply chain management. On the other hand, the five aspects of internal environmental management, green purchasing, eco-design, investment recovery and reverse logistics are the under-study dimensions of green supply chain management.

Four hypotheses based on four aspects of GHRM are defined to study as the particular objectives of this research. They are: the effect of selection and recruitment on GSCM, the effect of training on GSCM, the effect of performance evaluation on GSCM and finally the effect of reward on GSCM.

The structure of this paper is as follows: in Section 2, the literature of GSCM and GHRM is reviewed, section 3 presents the problem statement. Section 4 demonstrates the research hypotheses and method. Section 5 presents data analysis and finally, the conclusion and suggestions is included in Section 6.

2. Literature Review

The history of green SCM dates back to the early 1990s, when it was first introduced at Michigan State University. With the advent of environmental management, biocompatible production strategies and the literature on green SCM grew. The emergence of the green supply chain has been one of the most significant advances in the last decade, providing opportunities for companies to tailor their supply chains to environmental goals. The set of internal and external actions of each firm across the supply chain that helps prevent pollution and improve the environment is called a green supply chain. Greening the supply chain creates a great opportunity for those concerned with sustainable consumption issues and environmental business practices. (Shekari, 2013).

The components of green supply chain are green design, green materials, green production, green marketing and green consumption (Seyed Javadin et al., 2016):

- The green design of the company should consider an overall description of the environment, health and safety in the process of raw materials, production and distribution; its purpose is to prevent pollution at the source.
- Green materials consume less resources and energy and make less noise, they are non-toxic and do not destroy the environment. Green productivity is much greater than total management productivity.
- Green production is also known as clean production. At different levels of development or in different countries, the names of green production are not exactly the same. But the main meaning is the same.
- The purpose of green marketing is to create coordination between the goals of social, environmental and economic development and promote the perception of overall sustainable development.
- Green consumption is in fact the attempt to select and use an environmental friendly product or service and prevent a waste product that may harm the environment.

In the 1990s, the researches on greening became popular in organizations. It was mainly due to development of environmental management systems and the beginning of ISO 14001, the largest environmental management system in the world. As the number of studies on organizational greening increased, it was found that organizations needed support for human resource techniques such as training, performance evaluation and reward for greening. The most important study at that time was related to human resources and environmental management system. This study was conducted by Wehrmeyer (1996) in his book (Greening People). The need for human resource management support for green issues was reinforced by studies that more broadly discussed the positive effects of human resources on corporate performance. Since then, a number of studies have been conducted on this subject that emphasize the following:

- HR techniques are important for the implementation of environmental management systems and their maintenance;
- Human aspects are important for adopting more advanced environmental techniques;
- Manufacturing the products with lower environmental harm, requires human resource support;
- Environmental education is one of the main methods for human resources to help support the environmental management (Renwick et al., 2008).

By 2008, integrating the human resource and the environmental management remained unknown. A study conducted by Renwick et al. (2008) has been named after this emerging field, and with its introduction, it became more systematically on the research agenda of HRM researchers. As a result, human resource scientists were encouraged to focus more on environmental issues in their studies (Jackson et al., 2014). Beard and Rees (2000) argued that in order to achieve better environmental outcomes in moving toward green SCM, organizations should adopt participatory management structures and processes to use employees' ideas, innovations, and creativity. Today, many experts recommend the use of green teams. The steps of hiring a green team are: reviewing the environment, establishing an environmental plan, establishing an environmental unit, establishing working groups for environmental activities, setting the organization's environmental goals, combining environmental issues with the organization's monitoring framework, and reviewing environmental program achievements. Hiba and Ayham (2016) in a study of 110 manufacturing companies in Palestine, analyzed the management of green human resources in quantitative and qualitative dimensions. They examined green recruitment and selection, green education and development, green operations management and evaluation, green reward and service compensation, enhancing green employee capacity, and green management organizational culture. Seyed Javadin et al. (2016) in their research stated that the world is entering and experiencing a green economy, an economy in which human capital, as a fundamental axis in economic growth, shows the superiority of the company share over physical capital, and the need for survival will be considering the consumer demand and future job changes. Environmental issues and sustainable development will be among the priorities of these changes. HRM with a focus on human capital and environmental management programs and their integration in their activities introduces green HRM and provides interesting facilities and conditions for all activists and investors to participate in these

programs while improving the environmental performance of the organization and paying attention to sustainable development policies to create a beneficial relationship. Green management is moving from industry-based financial systems to a talent-based economy by optimizing resources and reducing energy waste.

A summary of studies conducted in this field are as follows:

- Beard and Rees (2000) believe that organizations should adopt participatory management structures and use employees' ideas, innovations and creativity so that they can move towards green SCM. Many experts recommend the use of green teams. The steps of organizing a green team are: reviewing the environment, establishing an environmental plan, establishing an environmental unit, establishing working groups for environmental activities, setting the organization's environmental goals, combining environmental issues with the organization's monitoring framework and reviewing environmental program achievements.

- According to Yu (2001), consumers are aware that their purchases affect the environment and are encouraged to consider not only the quality of the goods, but also to the production conditions. Green consumption first began in Europe and peaked in the 1980s, and was even more pronounced in Germany. Consumers have advocated for producers considering environment. As a result, green consumerism has made environmental awareness as a competitive advantage for producers. Green Consumerism emphasizes that producers must ensure that their products conform to environmental standards.

- Shang et al. (2010), by studying an electronics company, extract 22 indicators using factor analysis to measure the green supply chain in the field of electronics industry.

- Ren et al. (2010) present the multi-objective model of economic optimization of energy distribution systems. Their model reduces CO2 and fossil fuels, which has negative consequences for the environment.

- Ip et al. (2011) provide a comprehensive approach to modeling and evaluating supply chain performance. For this purpose, they consider six criteria: product reliability, employee satisfaction, customer satisfaction, timely delivery, profitability growth and efficiency. They identify 34 green supply chain indicators in the field of retail and allocate them to eight categories of environmental management systems, energy use, attention to inputs, product, packaging, transportation, consumption and waste.

- Zhu et al. (2012) believe that there are barriers and limitations for selecting suppliers from the perspective of environmental concerns. Some of these limitations are: environmental government regulations, the company's environmental purchasing mission, potential liability for hazardous materials disposal, and the cost of disposing of hazardous materials. They believe that for producers, the production and supply of green products to markets are not enough. They need consumers who want green products. In fact, green firms need green markets.

- Bose and Paul (2012), regarding the impact of green SCM activities on costs, find that many large companies with strong R&D sectors can see a significant reduction in their costs by implementing such policies. They identify the indicators of green SCM and present the capabilities of green supply management, green purchasing, environmental commitment, environmental assessment of suppliers and cooperation with suppliers under five components.

- Huang (2014) discusses green purchasing, in which in the process of production and supply of products, large quantities of raw materials, office supplies, etc. are needed. In order for companies to be able to produce green products, they must use materials and products that comply with environmental standards. Therefore, companies should consider the environmental issues when negotiating with their suppliers (in order to maintain market share or sometimes only for survival). Some reasons for companies to turn to green purchasing are responding to consumers' interest in environmental friendly products, distinguishing between company products and competitors, and cost savings. Most companies consider principles to be more environmental friendly, some of which are:

  • Preparing the list of chemicals that should not be used;

  • Preparing the list of accepted products,

• Cooperation with suppliers to enhance environmental performance and take into account multiple environmental features when making purchasing decisions.

- Geng et al. (2016) in the field of studying the impact of green supply chain on the performance of the organization, survey 11127 manufacturing companies in Asian developing countries from 1996 to 2015. The results of these studies affirm that the establishment of green SCM improves the performance of organizations from four different perspectives: economic, environmental, operational and social performance. This study also states that the type of industry, organization size, ISO certification and export orientation of the organization, modulates many operational relationships of green SCM in the organization.

- Hiba and Ayham (2016) in a study of 110 manufacturing companies in Palestine, analyze the green HRM in quantitative and qualitative dimensions and examine green recruitment and selection, green training and development, green operations management and evaluation, green rewards and service compensation, enhanced green employee empowerment, and green management of organizational culture.

- Imani and Ahmadi (2010) express in their research that extending government regulations to meet environmental standards and growing consumer demand for supply of green products to the supply chain, enabling all flow-related activities from the raw material stage to the delivery of goods to final consumers, as well as the flow of information throughout the chain, all lead to the emergence of the new concept of "green supply chain management", which includes the stages of the product life cycle from design to recycling. Adopting an investment strategy to improve the environmental performance of the supply chain brings many benefits, such as saving energy resources, reducing pollutants, eliminating or reducing waste, creating value for customers, and ultimately improving productivity for companies and organizations. Their paper begins with stating the importance of GSCM for organizations and companies, then examines the factors affecting companies or drivers of compliance and acceptance of GSCM. These drivers can be categorized in market, government, industry, competitors and organizations.

- Rajabpour (2016) states in his article that in the 21st century, growing concerns about environmental warnings have enhanced the importance of environmental protection in various communities and organizations. A review of the specialized literature in this regard indicates that proper environmental management in companies needs the support of HRM. Given that environmental management is an emerging organizational goal, human resource functions will be very helpful in this regard. Therefore, the purpose of this study is to investigate the impact of HRM on the adoption and implementation of environmental management.

- Seyed Javadin et al. (2016) in their research state that the world is entering and experiencing a green economy in which human capital, as a fundamental axis in economic growth, show the superiority of their share over physical capital. In order to survive, it is necessary to pay attention to the demands of consumers and future changes in jobs; environmental issues and sustainable development are among the priorities of these changes. HRM with a focus on human capital and environmental management programs and their integration in their activities introduces green HRM and provides interesting facilities and conditions for all activists and investors to participate in these programs while improving the organization's environmental performance and paying attention to sustainable development policies to create a beneficial relationship. Green management is moving from industry-based financial systems to a talent-based economy by optimizing resources and reducing energy waste.

- Nejati M. et al. (2017) investigate the link between GHRM and GSCM, considering the effect of employees' resistance to change in 161 manufacturing industries in Iran. Their results affirm the positive and significant impact of GHRM on GSCM and confirme the integration between HRM and green management. They find that “Green Development and Training”, “Green Employee Empowerment”, and “Green Pay and Reward” have the most positive influence on GSCM. They also find that “Resistance to Change” have a moderating effect on the link between GHRM (particularly green recruitment and selection) and GSCM, since it is the first step for building a sustainable corporate culture.

- Gupta H. (2018) identify the outstanding practices of GHRM and evaluated the manufacturing companies’ performance using GHRM practices.

- Formaneck (2019) investigates the integration of Sustainable Facility Management (SFM) with Green Supply Chain Management as well as the use of SFM in the innovation sustainable business environment in the United Arab Emirates. The study examines the role of GSCM in adopting environmental friendly approaches and states the role of Facility Management in Green Supply Chain Management.

- Polat (2019) investigates the main components of GSCM and GHRM application. This research also seeks for the most effective applications of GSCM and GHRM in the ecological performance of the organization. The conclusion illustrated significant differences between GSCM and GHRM relations between SC managers and HRM managers.

- Ali et al. (2020) investigate different sectors of a developing economy and their ability to manage green supply chain with respect to aspects of green procurement, green logistics, green products and process designs and regulatory framework. Their study states that corporate social responsibility (CSR) as an environmental friendly department, creates culture for implementation of CSR activities. They study the differences made by CSR departments in the sample organizations in achieving emission control objectives.

- Liu J. et al. (2020) develop a moderated multiple mediation model to state the effect of green training in Chinese manufacturing companies. They uncover the influence mechanism between green procurement and top management support. They find that their relationship could be mediated by green training on awareness and responsibility and on technical knowledge and skills.

- Al-Swidi et al (2021) investigate the outcomes of employees' green behavior and green organizational culture in Qatar. The results confirm the effect of green leadership behavior, environmental concern and GHRM on green organizational culture. Additionally, they state significant positive relationship between green organizational culture, employees' green behavior and organizational environmental performance.

- Samad S. et al. (2021) investigate the associations of GSCM methods and manufacturing companies' performance using the Natural Resource-Based View (NRBV) and Institutional Theory. In their study, they find positive and significant effect of mimetic, normative, and coercive pressures on GSCM. Additionally, the GSCM and the firms' environmental, economic and operational performances have positive and significant relevance. According to their moderation analysis, collaborative capabilities have significant moderating effects on the association of GSCM and environmental and economic performance.

- Dong Z. et al. (2021) identify the impact of GSCM on clean technology innovation (CTI) in Chinese firms and compare the effects of forward and backward GSCM and the differences by industry and home country. Their results affirm that CTI benefits from GSCM.

- Stekelorum R. et al. (2021) examine the extent to which different combinations of internal and external GSCM practices affect third-party logistics providers' (TPLs) financial and operational performances considering natural resource-based view and coordination theory. They prove that combined internal and external GSCM practices improve both operational and financial performances.

- Lamba N. et al. (2021) study the barriers causing the slow implementation of GSCM. They present the government policies and regulations as the most impacted barrier causing the slow implementation of GSCM in the Indian context.

- Midya et al. (2021) present a multi-stage multi-objective fixed-charge solid transportation problem (MMFSTP) with a green supply chain network system under an intuitionistic fuzzy environment.

- Feng Y. et al (2022) define green supply chain innovation GSCI as innovative works by manufacturers that applied emergent digital technologies to integrate environmental issues into SCM activities to enhance efficiency of environmental outcomes of GSCM activities, including internal environmental management, green purchasing, customer cooperation, inventory recovery, and eco-design.

- Das et al. (2022) present a multi-objective optimization problem for designing a solid green logistics modelling. The objectives of the presented problem are to minimize the total financial costs along with carbon emissions cost, to maximize the customers' satisfaction level simultaneously, and to maximize the

sustainable effectiveness conveyances. The global criterion method is introduced in this paper to extract a non-dominated solution to the proposed problem.

- Knouch et al. (2022) examine the relationship between GSCM, environmental collaboration (EC) and firm sustainable performance (FSP). They also investigate the help of mediating role of environmental collaboration in this transition. The results affirmed the positive effect of GSCM on FSP and EC as well as the mediation effect of environmental collaboration in the relationship between GSCM and FSP.

Research and experimental tests affirm that the establishment of a GHRM system in the organization creates a desire in employees to voluntarily consider the issue of environmental protection in all processes related to their job.

3. Problem Statement

GHRM is human resource management with an environmental approach. This means that the organization is committed to teaching environmental concepts, including those containing ISO14001, to all people at all levels of the organization. In fact, GHRM is a new term that leads to improving the environmental results of organizations by aligning their actions in line with the goals of environmental management.
GSCM, includes integrating supply chain management with environmental requirements in all phases of product design, selection and supply of raw materials, production, distribution and transfer processes, delivery to the customer and finally after consumption, recycling management and reuse in order to maximize the efficiency of energy and resource consumption while improving the performance of the entire supply chain.

This study is conducted to investigate the role of GHRM in GSCM in 40 manufacturing companies in Iran. The general objective of this study is to check whether the GHRM affects the GSCM or not. For this purpose, four particular objectives are defined as the hypotheses of the study. This research investigates the effects of recruitment and selection, training, performance evaluation and reward variables on Green Supply Chain Management. The conceptual model of the research is designed as Figure (1):

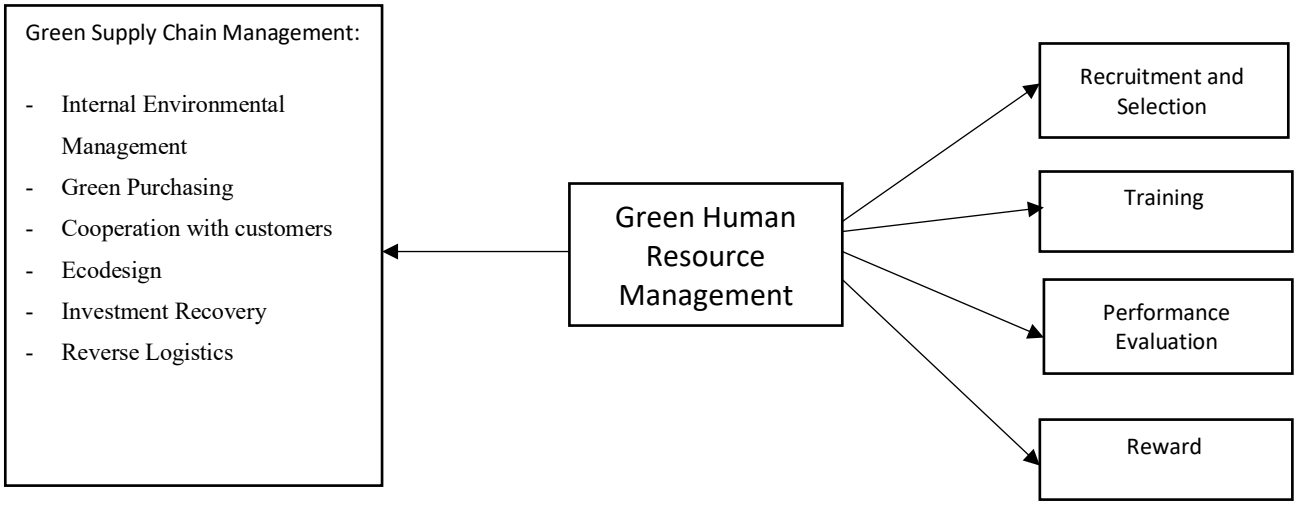

Figure 1. Conceptual Model of Study According to Charbel et al. (2016)

4. Research Hypotheses and Method

The hypotheses of this study are defined as below:

H1: Selection and Recruitment have significant effect on green SCM.
H2: Training has significant effect on green SCM.
H3: Performance Evaluation has significant effect on green SCM.
H4: Reward has significant effect on green SCM.

The research was conducted using census method. In this way, the questionnaires were distributed among 70 managers and experts of 40 manufacturing companies, of which 59 out of 70 questionnaires were returned. The response rate was 0.843. This data was collected in 2019. The results obtained from the analysis of demographic data based on descriptive statistics are as follows:

- Age of respondents

The biggest category of respondents age belongs to 40 to 50 years category with a frequency of 24 (40.7%) and the smallest for less than 30 years category with a frequency of 7 (11.9%). These results indicate that the managers of the organizations under study are people with high age experience.

- Education of respondents

Findings obtained from the questionnaire indicate that the highest frequency in terms of university degree level are respondents with a master's degree with a frequency of 52 (88.1%). This result indicates the existence of higher education managers in the organizations participated in this research.

- Years of using the organization's services

Most managers with a history of 10 years or more in using the services of their organization, have a frequency of 35 (59.3%) and the rate of 3 frequencies (5.1%) have a history of less than a year. This result indicates that the people who participated in completing the questionnaire of this research have a high history of using the services of their organizations. It can be said that people with high work experience have participated in this questionnaire.

In order to investigate the reliability of the questionnaire, the Cronbach's alpha test is applied. Cronbach's alpha coefficient, introduced by Cronbach on 1951 at Stanford University, is a widely used and common method to determine the internal correlation of the items of a variable and represents the fit of a group of items that measure a construct. The value of this coefficient is between 0-1. The more the coefficient is, the questionnaire has higher reliability.
The Cronbach's alpha of the structures in the study is described in Table (1):

Table 1. Cronbach's alpha

Questions Target	Cronbach's alpha
Green Supply Chain Management	0.777
Selection and Recruitment	0.626
Training	0.684
Performance Evaluation	0.708
Reward	0.627
Total Alpha	0.7

To evaluate the reliability of the questionnaire, the factor loadings of the variables were measured as illustrated in Figure (2):

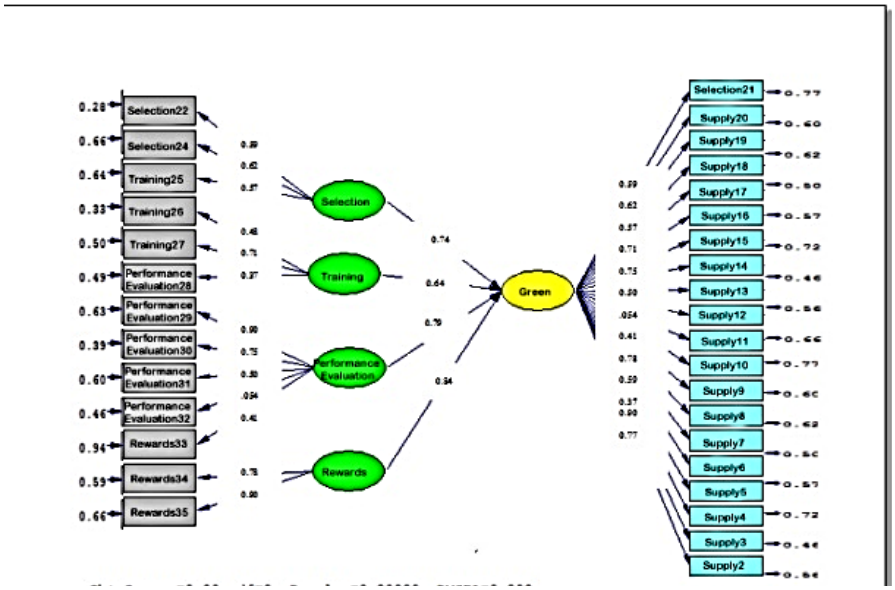

Figure 2. Variables factor loadings

The factor loadings express the relationship of each variable to the underlying factor. Factor loading is basically the correlation coefficient for the variable and factor and indicates the variance explained by the variable on that particular factor. It is a number between 0-1 and is calculated by SPSS software. The factor loading less than 0.3 indicates the week relation and that factor should be removed. The factor loading between 0.3 and 0.6 is acceptable and more than 0.6 is very favorable.

As indicated in Figure 2, the amount of factor loading in the effect of the "selection" variable on the green supply chain is equal to 0.74; the effect of "training" on the green supply chain is equal to 0.64; the effect of the "performance evaluation" variable on the green supply chain is equal to 0.79 and the effect of "reward" variable on green supply chain is equal to 0.84 which is the highest value. As it is observed, all factor loadings are higher than 0.6 which are very favorable factor loadings. It indicates that all independent variables have very favorable effect on dependent variable in this study.

After calculating the factor loading, a significance test should be performed. The T-statistic value test is performed to affirm the significance of the relations. The T-value more than 1.96 confirms the significance of the relationship between the variables. The value of T statistic is 4.38 in the selection variable, 4.37 in the training variable, 4.91 in the performance evaluation variable and 4.92 in the reward variable. All variables are higher than 1.96; so, it can be concluded that the effect of all variables under study on the green supply chain is significant.

Figure 3. indicates that T-values.

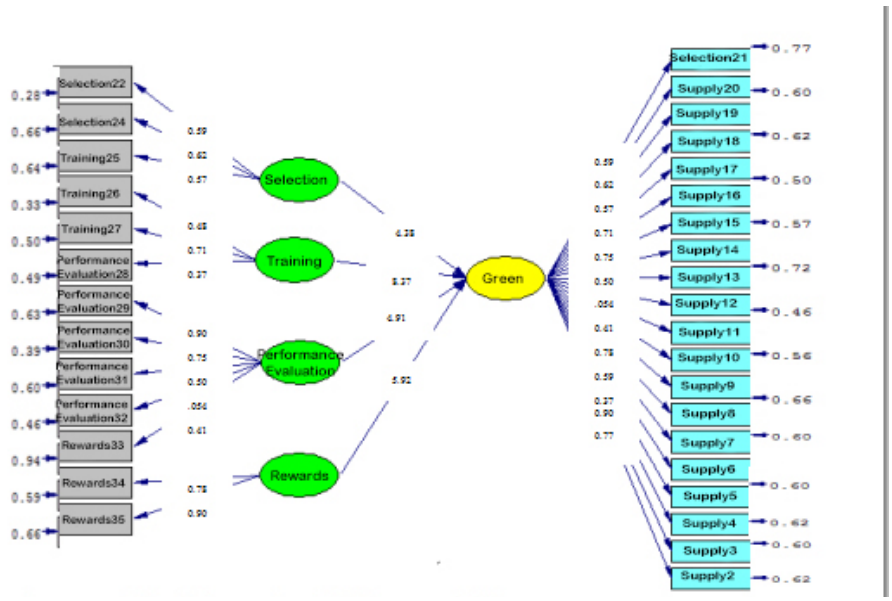

Figure 3. T-values in variables

To determine the fit of the model, a number of goodness of fit indices have been used, as presented in Table 2. Since the RMSEA index is less than 0.1, the model has a good fit. Other goodness of fit indices are in the accepted range.

Table 2. Goodness of fit indices

Fit Index	SRMR	RMSEA	GFI	AGFI	NFI	NNFI	IFI
Acceptable Values	<0.1	<0.1	>0.9	>0.9	>0.9	>0.9	0-1
Calculated Values	0.036	0.070	0.93	0.97	0.93	0.95	0.95

5. Data Analysis

Data in this research are analyzed through Structural Equations Modeling. SEM, introduced in the late 1960s, provided a tool for researchers to study the relationships between several variables in a model. The power of this technique in the development of theories has led to its widespread application in various sciences such as marketing, HR management, strategic management and information systems. One of the most important reasons why researchers use SEM so much is the ability to test theories in the form of equations between variables. Another reason is taking into account the measurement error by this method that allows the researcher to report the analysis of data by calculating the measurement error. Conventional models in structural equation modeling (SEM) actually consist of two parts: a measurement model that examines how hidden variables are explained by explicit variables (questions) and a structural model that states how hidden variables are linked to each other. (Davari and Rezazadeh, 2013).

Covariance-Based approach (CBSEM)

In covariance-based approach, more attention is paid to estimate a set of model parameters; and the goal is to bring the theoretical covariance matrix closer to the covariance matrix observed in the estimation sample. This approach estimates the path coefficients and factor loadings using the minimization of the difference between the sample-based covariance matrix and the model-based covariance matrix. The most common and famous software in this field is LISREL software.

Given the compatibility problem in large samples, one can question the appropriateness of Partial Least Squares and ask why this technique cannot guarantee one of the key features of a statistical model (estimator stability). The answer is that this approach enters different situations with its own principles. The purpose of covariance-based structural equations modeling is to determine the parameter matrix of model Φ that the covariance matrix predicted by the theoretical model $\Sigma(\Phi)$ is very close to the covariance matrix of sample S. For this purpose, the function $F(S, \Sigma)$ must be defined. When $S = \Sigma$, this function has a value of zero. When the value of the function is positive, the difference between Σ and S increases. Since the sample covariance matrix is measured based on the index probability, the function that is widely used in this regard is the function of maximizing theoretical normal.

Kolmogorov-Smironov test is used to check the normality of the data. In the Kolmogorov-Smirnov test, the null hypothesis in which the data distribution is normal is tested at the error level of 0.05. Therefore, if the significance level is greater than and equal to 0.05, then there will be no reason to reject the null hypothesis. In other words, the distribution of data will be normal. The statistical hypotheses for this test are set as follows:

H0: Data Distribution of the variable is normal
H1: Data Distribution of the variable is not normal

The summary of Kolmogorov-Smironov test is presented in table 3.

Table 3. The summary of Kolmogorov-Smironov test

Variable	Kolmogorov-Smironov

	Test statistics	Significance level
Selection and Recruitment	0.112	0.081
Training	0.141	0.112
Performance Evaluation	0.215	0.218
Reward	0.164	0.110
Green Supply Chain	0.168	0.317

Based on the information in Table. 2 (Kolmogorov-Smirnov test results), the significance level in all research variables is greater than 0.05. In other words, the results of the table affirm that due to the fact that the significance level of all variables are greater than 0.05, it can be stated at the 95% confidence level that the null hypothesis that the distribution of research data is normal, is confirmed. Therefore, due to the normality of the data, LISREL software is used.

Finally, the results of statistical analysis analyzed with LISREL software are summarized in Table 4.

Table 4. The data analysis results

Hypothesis	t-value	p-value	Result
Selection and Recruitment have significant effect on green supply chain management.	4.38	0.0000	Hypothesis accepted
Training has significant effect on green supply chain management.	4.37	0.0000	Hypothesis accepted
Performance evaluation has significant effect on green supply chain management.	4.91	0.0000	Hypothesis accepted
Reward has significant effect on green supply chain management.	4.92	0.0000	Hypothesis accepted

Hypothesis 1. Selection and Recruitment have significant effect on green SCM.

Statistical analysis: The variable of Selection and Recruitment with a factor loading of 0.74 affects the green supply chain. The value of significance level is significant with significance level of 0.000> 0.50. The t-statistic with a value of 4.38 is higher than 1.96. Therefore, it can be concluded that Hypothesis H0 is rejected, and Hypothesis H1, which is the main hypothesis of the research, **is confirmed**.

Hypothesis 2. Training has significant effect on green SCM.

Statistical analysis: The Training variable with a factor loading of 0.64 affects the green supply chain. The value of significance level is significant with significance level of 0.000> 0.50. The t-statistic with a value of 4.37 is higher than 1.96. Therefore, it can be concluded that Hypothesis H0 is rejected, and Hypothesis H1, which is the main hypothesis of the research, **is confirmed**.

Hypothesis 3. Performance Evaluation has significant effect on green SCM.

Statistical analysis: Performance Evaluation variable with a factor loading of 0.79 affects the green supply chain. The value of significance level is significant with significance level of 0.000> 0.50. The t-statistic with a value of 4.91 is higher than 1.96. Therefore, it can be concluded that Hypothesis H0 is rejected, and Hypothesis H1, which is the main hypothesis of the research, **is confirmed.**

Hypothesis 4. Reward has significant effect on green SCM.

Statistical analysis: The Reward variable with a factor loading of 0.84 affects the green supply chain. The value of significance level is significant with significance level of 0.000> 0.50. The t-statistic with a value of 4.92 is higher than 1.96. Therefore, it can be concluded that Hypothesis H0 is rejected, and Hypothesis H1, which is the main hypothesis of the research, **is confirmed.**

6. Conclusion and Suggestion

In this study, four outstanding aspects of human resource management were selected as the independent variables to survey their effects on supply chain management. On the other hand, the five aspects of internal environmental management, green purchasing, eco-design, investment recovery and reverse logistics are the under-study dimensions of green supply chain management. Four hypotheses based on four aspects of GHRM were defined to study as the particular objectives of this research. They were: the effect of selection and recruitment on GSCM, the effect of training on GSCM, the effect of performance evaluation on GSCM and finally the effect of reward on GSCM.

Since according to human capital theory, human resource is considered as one of the most important and valuable resources of the organization, it is necessary to pay more attention to this irreplaceable capital in the organization. Therefore, human resource is one of the most important factors in environmental management and must be involved in strategic decisions. The companies will enhance their productivity by creating the job satisfaction in the employees. In GHRM, the employees have better feelings on their job when they are trained to be green. They learn the social dimensions of being green and extend the "green thinking" into all dimensions of their life. The good feedbacks of this thinking, will bring them the job satisfaction. Consequently, the productivity of the company as well as the organizational culture will be improved.

6.1. Managerial Implications

Taking into account the results of this research, the HR managers are suggested to pay strong attention to the process of select and recruitment in terms of selecting the applicants with the ability of learning green issues. They are supposed to select those job applicants who are not only interested in environment, but also saving the earth is one of their concerns.

The managers are recommended to hold training courses with the aim of acquiring knowledge and skills in the way of thinking and attitude for managers and employees so that the companies will promote the organizational culture to successfully implement an environmental management system. Environmental training should be of such a good quality and quantity that each employee could gain the necessary knowledge of social, cultural and environmental conditions and be aware of their duties and observe environmental considerations while working.

According to the research results, it can be stated that the more the companies are efficient and effective in terms of human resource management functions, the more successful in implementing and adopting environmental management systems. Therefore, the managers are strongly recommended to consider the performance evaluation of the employers so that they will assure the output of the work force would be in line with green supply chain management.

The results of this study affirmed the positive and significant effect of reward on green supply chain management. Consequently, by considering this factor and implementing the suitable reward system, managers can improve the company achievements in terms of green supply chain management.

Applying above suggestions can bring valuable achievements for companies and help them to gain the competitive advantages in the market because the green issues are getting more and more important for customers and end users.

6.2. Limitations and Suggestions

Like other researches, this study has some limitations. This study was conducted in Iran and within manufacturing companies. The statistical population can be extended to a larger population. The same research can be made in two or more populations simultaneously and the results can be compared. This study did not cover all human resource management factors. Considering the limitations, the study on more factors and variables of GSCM and GHRM can be selected and examined in future. Additionally, extending the study of non-manufacturing companies or investigating the industries in other countries is suggested to the scholars who aim to have researches in this field of study.

All researchers and scholars interested in this field are suggested to study more about these concepts and to evaluate the readiness of organizations in terms of human resource management to adopt environmental management.

Conflict of Interest

The authors declare there is no conflict of interest in the manuscript.

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