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THE ROLE OF GREEN HUMAN RESOURCE MANAGEMENT IN PROMOTING SUSTAINABLE MANUFACTURING PRACTICES: AN ANALYTICAL STUDY IN INDUSTRIAL ORGANIZATIONS IN NAJAF ASHRAF

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Abstract
The main purpose of this research is to study the role of green human resource management in achieving sustainable manufacturing practices in industrial organizations in Najaf. The study question is the degree of practicing green human resource management in industrial organizations in Najaf. To determine the extent of the relationship and impact of green human resource on sustainable manufacturing practices in industrial organizations in Najaf The main and sub-hypotheses of the research were tested and the study used a sample of 40 individuals. working in industrial organizations in Najaf. Use the statistical program (SPSS) to analyze the data. The results showed that there is a correlation and impact between green human resource management and the variable of sustainable manufacturing, While the study recommended that the researched organizations should carry out employee competencies development processes based on environmental foundations, the study also recommended that human resource management in the organizations under study should develop indicators for green performance that are friendly to the environment to manage and evaluate performance.

Keyword: Green Performance Evaluation, Green recruitment, Sustainable Manufacturing.

Introduction

The emergence of globalization, the increasing progress in the manufacturing sectors, the increase in customer awareness, and the increasing pressures and expectations from stakeholders have led industrial organizations to reconsider their approach to managing their human resources towards increasing their focus on commitment to business activities that promote sustainability and reformulating their strategy to provide and implement more integrated and sustainable practices.

Green human resources management practices play a major and effective role in supporting and implementing environmental laws, adhering to environmental management standards, and supporting environmental awareness. They have become a basic mechanism for organizations to proactively address environmental issues, which makes the world more inclined towards green management.

organizations seeking to apply green human resources management and work with it to ensure the best performance are industrial organizations due to their effective role during their operations from product design and industrial operations to supply chain management. Industrial organizations are considered to be organizations that have an effective role during the processes of product design and industrial operations to supply chain management. Research on the key influencing factors that lead to the successful implementation of sustainable manufacturing practices has received limited attention, although previous research literature has identified a comprehensive list of motivating factors that have had an impact on organizations to adopt environmental initiatives. Sustainable manufacturing practices are not just about affects business performance but It also includes affects competitive advantage through competitive priorities.

First Section

Methodology

First: Research questions: - Sustainable manufacturing has attracted increasing attention. Most studies have attempted to explore the motivating factors for implementing sustainable manufacturing or sustainable manufacturing practices. The main topics of sustainable manufacturing research tend to develop environmental indicators or assess the environmental impact of manufacturing without focusing on the factors or methods that can contribute to enhancing sustainable manufacturing practices. Therefore, research has begun on the methods and approaches that can be accessed in an attempt to explore their impact on sustainable manufacturing processes. In this context, the current study attempted to test the green management approach for human resources as one of the methods that is directly related to sustainable manufacturing practices. In light of the tremendous developments that we see today in green human resource management practices and the resulting significant impact on the performance of business organizations and their functions, and the intense competition that organizations are witnessing today to provide advanced service quality that meets the desires and needs of all parties, the problem of the current study lies in the lack of awareness of the importance of applying green human resource management practices and their impact on sustainable manufacturing practices, which can be embodied by asking:

1- What is the nature of understanding the concept of green human resource management in the research sample organizations in Najaf?

2- What is the degree of practicing green human resource management in the research sample organizations in Najaf?

3- How much do you use sustainable manufacturing practices In the community under investigation?

4- What is the nature of the correlation between main research variables in the research community?

5- Is there an impact of green human resource management in achieving sustainable manufacturing practices in the research sample organizations?

Second: **The Importance**

The title of the study is considered one of the important topics in the administrative field that deals with this type of variables by presenting a set of concepts related to this aspect and revealing It has an important role in resource management in improving the capacity of sustainable industries. Which if applied to the performance of industrial organizations can lead to achieving the desired goals, i.e. enhancing strengths by employing green human resources management in An approach that leads to enhancing the efficiency and effectiveness of organizations through the important role played by sustainable manufacturing processes.

Third: **Research Objectives:**

1- Identify the concept of green human resource management in the study sample organizations.
2- Identify green human resource management and the extent of its application in the research sample organizations.
3- Determining the level of availability of sustainable manufacturing practices in the study sample organizations in Najaf.
4- Identifying of interconnection of green human resource management with the level of achieving sustainable manufacturing practices in the research sample organizations in Najaf.

Fourth: Hypothetical research model:

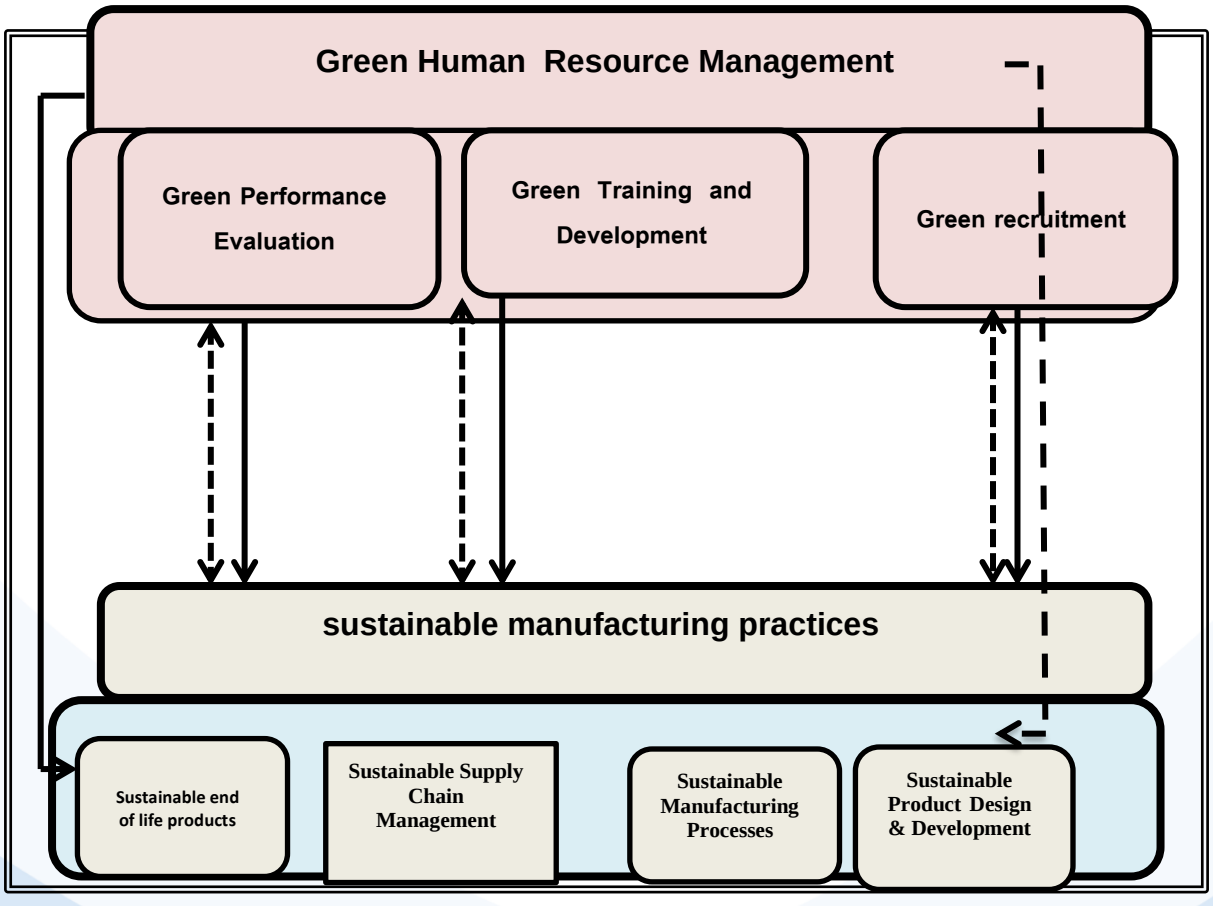

Figure (1) Hypothetical research model

Fifth: - Research hypotheses: -

The first main hypothesis: -

There is a significant relationship between (green human resource management) and the variable of (sustainable manufacturing) in the research sample organizations in Najaf.

1- There is a positive association between (green employment) and (sustainable manufacturing).

2- There is a positive association between (green training and development) and (sustainable manufacturing).

3- There is a positive association between (green performance evaluation) and (sustainable manufacturing).

The second main hypothesis: -

There is a positive effect between (green human resource management) and (sustainable manufacturing) in the research sample organizations in Najaf

1- There is a positive effect of (green recruitment) on the (sustainable manufacturing).

2- There is a positive effect of for (green training and development) in (sustainable manufacturing).

3- There is a positive effect of for (green performance evaluation) in (sustainable manufacturing).

Sixth: - **Research methodology and method**:

1- Research Methodology

The descriptive analytical approach was used, as the questionnaire form was used during the data collection process, which included (35) paragraphs.

2- **Research community and sample**

The research community included industrial organizations operating in Najaf Al-Ashraf. The study sample included (40) individuals working in the industrial organizations of the research sample.

3- Research tool and scale

A- **green human resources management** variable according to the scale (Owino & Kwasira, 2016), (AnuSingh, 2015), (Opatha & Arulrajah, 2014), where green human resources management was divided into three: (green training, green recruitment, development and green performance evaluation), these Components included (15) paragraphs.

B- **Sustainable manufacturing practices** The researcher relied on the scale (Ibrahim & Abdulameer, 2020) (Abdul al et. 2017) to measure sustainable manufacturing practices, as this variable was represented by four dimensions: (design and development of sustainablefor products , sustainable manufacturing for processes , sustainable management of the supply chain, sustainable end of life of products) and included (20) paragraphs, and the five-point Likert scale.

The second section: The theoretical framework

First: Green Human Resources Management

A- The concept of green human resource management: It is the practices and policies of human resource management to encourage the sustainable use of resources in business and enhance the environment that would be beneficial to increase satisfaction and thus the morale of employees within organizations (Obaid, 2015: 951), and it is also an emerging issue in management that may have an impact on broader institutional and strategic issues including human resource practices and policies (Hosain, & Rahman, 2016: 55). It is also the process by which companies want the environment through developing environmental management strategies. There is a need for companies to achieve balance the growth that is necessary and the preservation of environment to enable it for future generations (Mishra & Kiranma, 2014: 27). While (Muzammel) sees it as the practices related to forming, implementing and supporting a structure that makes employees preserve the environment. It involves changing the usual workforce to a green workforce to achieve green goals participating in environmental sustainability (Muzammel, 2019: 20). It is also known as a recruitment model designed to help industry professionals recruit, retain and develop the necessary talent to ensure that initiatives and strategies are met. Future works. (Lawal & Olawoyin 11 ,2021: 266) Others see it as A field of human resource management and an important field in organizational management and a necessary subject or work for all types of managers working in any organization regardless of their fields of specialization and interest. (Opatha, & Hewapathirana,2019:2)

B- Importance of (Green HRM)

Advantages of Using Green HRM, which were indicated by (Bangwal & Tiwari, 2015:46) as follows:

1- Human resource management leads to more efficiencies and less waste of raw materials.
2- Improving the position related to the job.
3- Improving work and private life.
4- Reducing costs.
5- Improving employee performance and retention.
6- Flexible work scheduled electronically (file storage)
7- Job sharing.
8- Holding remote conferences.
9- Recycling and remote work.
10- Online training.
11- Energy-saving office spaces.

C- Dimensions of (Green HRM)

1- Green recruitment

It is a means of attracting potential applicants and attracting them to apply for vacant positions in the organization, whether internally or externally. Recruitment can be used as a business plan to bring in employees with a green mindset, which makes it easier for organizations to hire workers who have the required skills and knowledge in the field of environmental

conservation and are familiar with the basics of environmental sustainability such as recycling, reusing, and creating a suitable climate (Fapohundh, 2022: 1). Green recruitment is also referred to as The process of attracting unique talents who have knowledge of the ecosystem and are familiar with the words of sustainable environment conservation, as green recruitment involves that the distinguished and unique talents are aware of green practices and the ecosystem that will increase the effectiveness of the environment within the organization and in the race to attract the most creative and innovative employees. Increasing the potential for high-quality recruitment is an important challenge in the war for talent (Ullah, 2017: 14)

2- **Green training and development**

Training and developing employees helps improve their knowledge, skills and attitudes towards sustainability and aims to enhance their work behaviors. Green training is an important effort towards appropriate environmental behavior for employees by providing information about green goals and objectives, by instilling environmental responsiveness in employees through their participation in green human resources activities, and by enabling them to search for the best solutions to environmental problems. Green training for employees can be arranged by organizing seminars and workshops at the organizational level. This is an important step towards achieving green goals, thus making employees more sensitive to society (Kaukab, 2021: 65). Green training and development also contributes to training employees on employee work methods that reduce waste, use resources properly, conserve Energy and reducing degradation of the ecosystem, and it also allows the opportunity to involve employees in solving environmental problems. (Bangwal & Tiwari,2015:48)

3- Green Performance Evaluation

Human resources management is interested in including environmental performance standards for employees in various organizational units, and setting performance indicators for each area of environmental risks. Therefore, in order to effectively evaluate the green performance of employees, organizations must set green goals for each employee (Ullah,2017:15). Green performance assessment focuses on providing more efforts to assess the organization's capabilities to achieve its goals to become sustainable in order to help the organization achieve its goals and environmental management objectives (Ramasamy, 2017: 119).

Second: sustainable manufacturing

1- Concept of sustainable manufacturing

concept of sustainable manufacturing is as providing goods and services to satisfy the needs of customers in society while accelerating economic growth and curbing environmental damage through technologies applied by highly educated individuals and according to strict ethical laws (Mola & Ismail, 2013: 3). Sustainable manufacturing is also defined as designing and manufacturing high-quality and high-performance products while improving and enhancing their functions using energy-efficient manufacturing technologies and methods that are free of toxic and non-hazardous materials in an optimal manner by producing the least

possible materials and emissions and providing the greatest recovery, recycling, reuse and remanufacturing, all of which aim to enhance social benefits and economic impact (Jowahir, 2008: 37). The development of sustainable manufacturing practices can be seen at three levels: product, process and system. At the product level , sustainable manufacturing is no longer related to three-dimensional - reduce, reuse and recycle - to promote sustainable technologies, but focuses on the six-dimensional (reduce , reuse, recover, redesign, remanufacture and recycle). process level, sustainable manufacturing takes into account activities such as(process planning that help reduce toxic waste, occupational hazards and energy consumption). Finally, system level, sustainable manufacturing focuses on the entire supply chain (Hami et al., 2015:193). Sustainable manufacturing is defined as the manufacture of goods and services and the use of processes and systems that do not lead to pollution, conserve energy and natural resources, are economically viable for communities and consumers, contribute to enhancing the creativity of workers, and ensure their safety and health (Kopa, 2009:182).

2- Dimensions of sustainable manufacturing

A- Sustainable Product Design and Development

Industrial design is concerned with process that includes shaping the technical form of use for the product that is linked to the benefits or package of benefits and advantages that result from the final product (Abdul-Rashid et al.,2017:623).

The purpose of the sustainable product design and development process is to reduce or eliminate hazardous materials, reduce waste, improve resource efficiency and conservation, save energy, increase resource recovery through recycling, design, reuse and remanufacturing, as well as increase aspects of sustainability where design activities take sustainability into account, and sustainable product design and development practices integrate many environmental initiatives into the design stage of environmental design. These practices are known as ecological design - or design for the environment or design for sustainability. (Adekunle & Dakare,2020:1009)

B- Sustainable manufacturing processes

Sustainable manufacturing applications use processes and technologies that reduce negative environmental impact (reducing waste, using renewable energy sources, adopting closed-loop manufacturing systems, and using environmentally friendly materials).(Abdul-Rashid et al.,2017:622)

In general, manufacturing processes have a significant impact on the environment because they consume a large amount of energy and generate unwanted waste, so manufacturing processes must be d operated in a way that minimizes waste and non-compliant by products eliminates hazardous, toxic materials, conserves materials and energy and reduces physical risks). Adopting sustainable manufacturing processes can Improving the Its commitment to social responsibilities can be demonstrated in line with customers' desire to obtain products that are compatible with environmental sustainability.(Habidin et al., 2020:95).

C- Sustainable Supply Chain Management

Implementing sustainable manufacturing practices poses significant challenges, but they can be overcome with the right investments and strategies. By working with stakeholders in supply chain management and adopting a long-term strategy perspective, manufacturers can achieve sustainability while realizing the many benefits of these practices, such as cost savings, improved efficiency, and enhanced brand reputation. (Li et al,2017:44)

Supply chain management is defined as a set of entities that are directly involved in the upstream or downstream activities of products, services, finance, and information flow from source to customer. The goal of supply chain management is to seamlessly integrate information and material flows across the supply chain as an effective competitive weapon. Sustainable supply chain management includes sustainable warehousing, sustainable packaging, reverse logistics, and environmental purchasing. (Abdul-Rashid et al,2017:660)

D- Sustainable end-of-life products

Products that have reached the final stage of their life cycle are a major concern for workers, society, and other stakeholders of organizations, as a result of the damage they cause if not addressed (Abdul-Rashid et al,2017:620). Sustainable end-of-life practices for products include A set of activities such as: providing maintenance and support services to customers to Extending the life of products and disposing of hazardous waste after they are recovered from the market (Ibrahim et al, 2020:63)

Section Three: The Applied Aspect of the Research

topic includes three parts:-

Part One: Descriptive Analysis of Research Variables:

Table (1) Descriptive Analysis of components of (Green HRM) (n=40)

the components	Paragraph	respondents					Arithmetic mean	deviation	Arithmetic mean	deviation
		Totally agree	Agree	neutral	Don' t agree	Totally Don' t agree				
Green recruitment	1	7	22	7	4	0	3.80	0.853	0.224	1
	2	5	22	6	2	1	3.90	0.900	0.231	2
	3	9	19	9	2	1	3.83	0.931	0.243	4
	4	17	9	10	3	1	3.95	1.108	0.281	5
	5	15	20	1	3	1	4.10	0.968	0.236	3
	total for dimension						3.9163	0.7306	0.187	
green training and development	6	9	22	5	3	1	3.87	0.939	0.243	2
	7	11	7	19	1	2	3.60	1.081	0.300	4
	8	4	30	1	5	0	3.83	0.781	0.204	1
	9	8	12	16	3	1	3.58	0.984	0.275	3
	10	14	17	6	2	1	4.00	0.973	0.243	2
	total for dimension						3.773	0.6714	0.178	
green performance evaluation	11	5	25	7	1	2	3.75	0.899	0.240	4
	12	9	22	5	3	1	3.87	0.939	0.243	5
	13	7	22	8	3	0	3.83	0.813	0.212	2
	14	10	21	6	3	0	3.95	0.846	0.214	3
	15	12	21	5	2	0	4.05	0.793	0.196	1
	total for dimension						3.870	0.6339	0.164	

Describe the Components of (Green HRM)

1- Table (1) measures the green recruitment dimension, which represents one of the components of (Green HRM),where the difference in the degree of green recruitment in the organizations studied is noted, as paragraphs (2,1) obtained the first and second place, while paragraphs (4,3) obtained the fourth and fifth place among the green recruitment paragraphs, which indicates the necessity for the management of the organizations studied to develop programs and standards that facilitate the process of (attracting, selecting, appointing) green (environmentally friendly) competencies and skills. The human resources management in the organizations studied must also have visions and perceptions about green practices (and use standards) for candidates for green jobs. the green recruitment obtained a general arithmetic mean of (3.976), a standard deviation of (38.30) and a coefficient of variation of (0.187).

2- The green training and development Components, which represents one of the (Green HRM), where it is noted that the degree of availability of the green training and development dimension differs in the researched organizations, as paragraph (6) obtained the first rank and paragraphs (8,10) obtained the second rank, which means that the advantages enjoyed by the researched organizations are their integration of training processes with instructions generated from environmental values, as the researched organizations enjoy training programs related to safety aspects in environmental management. While paragraphs (7,9) obtained the third and fourth rank, which indicates the necessity for the researched organizations to employ illustrative techniques in training processes related to environmental management, as the researched organizations should carry out employee competency development processes based on environmental foundations green training and development dimension, as the green training and development Component obtained a general arithmetic mean of (3.9163), a standard deviation of (0.7306), and a coefficient of variation of (0.178).

3- dimension evaluating the green performance, which represents one of the Components of green HRM, it is noted that the degree of availability of this Component in the organizations under study differs, as paragraphs (11,12) obtained the fourth and fifth ranks, which indicates the necessity for the management of the organizations under study to adhere to a special internal system to achieve the goals that are set in order to maintain a sustainable green environment. The human resources management in the organizations under study should also set indicators for green performance that is friendly to the environment to manage and evaluate performance. In general, it appears that there is a degree of interest below the good level in the dimension of evaluating green performance, as the green performance evaluation obtained a general arithmetic mean of (3.870) and a standard deviation of (0.6339) and a coefficient of variation of (0.164). From the above, it is clear that the order of the dimensions of green human resources management in the organizations under study differs according to the coefficient of variation, as the green performance evaluation obtained the first rank of (0.164), while the green training and development obtained the second rank of (0.178), and green recruitment obtained the third rank. By (0.187).

Description of the answers to the sustainable manufacturing variable

Table (2) Descriptive Analysis of the Paragraphs of the Sustainable Manufacturing Variable (n=40)

The dimension	Paragraph	respondents					Arithmetic mean	deviation	Arithmetic mean	deviation
		Totally agree	Agree	neutral	Don' t agree	Totally Don' t agree				
Sustainable Product Design & Development	16	15	13	10	2	0	4.02	0.920	0.229	3
	17	79	23	6	4	0	3.83	0.844	0.220	2
	18	11	18	9	1	1	3.92	0.917	0.234	4
	19	14	20	4	2	0	4.16	0.789	0.190	1
	20	7	25	3	4	1	3.765	0.9290	0.247	5
	total for dimension						3.932	0.6523	0.166	
Sustainable Manufacturing Processes	21	13	17	8	2	0	4.03	0.862	0.214	2
	22	5	20	1	10	4	3.6623	0.827	0.226	5
	23	8	24	6	2	0	3.95	0.749	0.190	1
	24	11	22	4	2	1	4.00	0.906	0.227	4
	25	8	25	4	1	2	3.90	0.928	0.238	3
	total for dimension						3.907	0.6497	0.165	
Sustainable Supply Chain Management	26	9	22	5	3	1	3.87	0.939	0.243	4
	27	9	22	5	3	1	3.88	0.939	0.242	3
	28	13	22	2	1	2	4.07	0.971	0.239	2
	29	7	25	5	3	0	3.90	0.778	0.199	1
	30	6	18	12	3	1	3.63	0.925	0.255	5
	total for dimension						3.870	0.7126	0.1841	
Sustainable end of life products	31	5	17	12	1	0	3.90	0.810	0.208	3
	32	8	21	9	2	0	3.88	0.791	0.204	1
	33	5	19	10	3	0	3.80	0.853	0.224	4
	34	8	24	3	4	1	3.85	0.949	0.246	5
	35	10	20	8	2	0	3.95	0.815	0.206	2
	total for dimension						3.875	0.5391	0.1391	

Source: Prepared by the researcher based on computer results

1- Table (2) measures the Component of designing and developing sustainable products, which represents one of the Components of sustainable manufacturing, where it is noted that the degree of designing and developing sustainable products differs in the researched organizations, as paragraphs (20,18) obtained the fourth and fifth ranks among the paragraphs of designing and developing sustainable products, which indicates the necessity for the management of the researched organizations to use environmentally friendly materials such as recyclable materials, and it also requires the organizations under study to design products that operate in a way that reduces energy consumption. designing and developing sustainable products obtained a general arithmetic mean of (3.932), a standard deviation of (0.6523), and a coefficient of variation of (0.166).

2- The Component of sustainable manufacturing processes, which represents one of sustainable manufacturing, where it is noted that the degree of availability of the dimension of sustainable manufacturing processes in the researched organizations differs, as paragraphs (21,23) obtained the first and second place among the paragraphs of sustainable manufacturing processes, and this is an indication that the organizations under study enjoy a commitment to saving energy during the manufacturing process, as the organizations under

study enjoy a commitment to emission reduction standards during the manufacturing process. While paragraphs (24,22) obtained the fourth and fifth place, which indicates the necessity for the organizations under study to use production processes free of loss, as the researched organizations must adhere to sustainable programs, standards and systems. sustainable manufacturing processes, as the dimension of sustainable manufacturing processes obtained a general arithmetic mean of (3.907), a standard deviation of (0.6497), and a coefficient of variation of (0.165).

3- The Component of sustainable supply chain management, which represents one of the Components of sustainable manufacturing, where it is noted that the degree of availability of this Component differs in the organizations under study, (30, 26) obtained the fourth and fifth ranks, which indicates necessity for management of the organizations under study influence suppliers to practice sustainable initiatives, and the management in the organizations under study should use energy-saving logistics services (such as the location of warehouses, in general, it appears that there is a degree of interest below the good level in the dimension of sustainable supply chain management, as this dimension obtained a general arithmetic mean of (3.870) standard deviation (0.7126) and a variation of (0.1841).

4- The Component of sustainable end of life of products, which represents one of the Components of sustainable manufacturing, where it is noted that the degree of availability of this dimension differs in the organizations under study, (34, 33) obtained the fourth and fifth ranks, indicates necessity for management of the organizations under study to provide support for recycling of materials and components used, and the organizations under study should provide and manage product withdrawal operations (such as reconfiguration dimension obtained a general arithmetic mean of (3.875), a standard deviation of (0.5391), and a coefficient of variation of (0.1391).

From the above, it is clear that the ranking of the dimensions of sustainable manufacturing in the researched organizations differs according to the coefficient of variation, as the dimension of sustainable end of life of products obtained the first rank of (0.1391), while the dimension of sustainable manufacturing processes obtained the second rank of (0.165), and the design and development of sustainable products obtained the third rank of (0.166), while sustainable supply chain management obtained the fourth and last dimension among the dimensions of sustainable manufacturing with the amount of (0.1841).

First: - Validity of the questionnaire: -

Table (3): Degree of correlation of the (HRM) paragraphs and the total score of the component (out of = 40)

Components of Green Human Resource Management	Paragraph	Correlation coefficient
Green recruitment	1	0.743**
	2	0.776**
	3	0.672**
	4	0.788**
	5	0.861**
green training and development	6	0.751**
	7	0.793**
	8	0.624**
	9	0.653**
	10	0.741**
green performance evaluation	11	0.752**
	12	0.781**
	13	0.744**
	14	0.737**
	15	0.699**

Calculating the correlation values of each paragraph of the Components of green human resource management and the total value of the Component to which it belongs as shown in Table (3)

Table (4) The correlation value of each paragraph of the variable (sustainable manufacturing) and the total value of the variable (n=40)

Components of sustainable manufacturing	Paragraph	coefficient
Sustainable Product Design & Development	16	0.645**
	17	0.756**
	18	0.779**
	19	0.691**
	20	0.820**
Sustainable Manufacturing Processes	21	0.654**
	22	0.744**
	23	0.733*
	24	0.810**
	25	0.847**
Sustainable Supply Chain Management	26	0.857**
	27	0.772**
	28	0.867**
	29	0.707**
	30	0.694**
Sustainable end of life products	31	0.522**
	32	0.648**
	33	0.647**
	34	0.744**
	35	0.616**

Tables (4.3) show values of the paragraphs are positive at the significance level ($p \leq 0.01$), and thus there is a good relationship between all paragraphs and their Components.

Second: Questionnaire stability:

Table (5) Values of Cronbach's alpha coefficients for the questionnaire Components and the total score of the questionnaire

Components	Paragraphs	reliability coefficient
Green recruitment	5	0. 886
green training and development	5	0. 840
green performance evaluation	5	0. 869
Components of (GHRM)	15	0 .964
Sustainable Product Design & Development	5	0.872
Sustainable Manufacturing Processes	5	0.877
Sustainable Supply Chain Management	5	0.893
Sustainable end of life products	5	0.757
Dimensions of sustainable manufacturing	20	0.958
The questionnaire is complete	35	0.965

Table (5) shows that the Cronbach's alpha stability for the questionnaire variables ranged between (0.757, 0.958), while the stability values for the entire questionnaire were (0.965), and these are acceptable stability values.

Stability using the split-half method:

Table (6) Correlation values for the Components of the questionnaire

Components	Paragraphs	Spearman's	Gutman's
Green recruitment	5	0.927	0.912
green training and development	5	0.833	0.807
green performance evaluation	5	0.849	0.801
Components of Green Human Resource Management	15	0.940	0.879
Sustainable Product Design & Development	5	0.861	0.812
Sustainable Manufacturing Processes	5	0.901	0.880
Sustainable Supply Chain Management	5	0.859	0.850
Sustainable end of life products	5	0.688	0.685
Dimensions of sustainable manufacturing	20	0.958	0.911
The questionnaire is complete	35	0.980	0.933

Table (6) shows reliability coefficient for split-half for values of the Spearman-Brown t-coefficient is (0.688-0.958), while Getman is (0.685-0.912), and all of these have high and acceptable reliability coefficients.

The Third: Testing the research hypotheses

1- Correlations between research variables

In order to examine the relationship between GHRM variable and sustainable manufacturing variable, the statistical results of the Pearson correlation coefficient were used, as shown in Table (7).

Indicators / Dimensions	sustainable manufacturing		
	Correlation coefficient value	Calculated t value	Significance level(Sig)
Green recruitment	0.623	4.909	0.000
green training and development	0.648	5.243	0.000
green performance evaluation	0 .654	5.325	0.000
Dimensions of (GHRM)	0.665	5.486	0.000

1- Table (7) 1- It shows the existence of a direct relationship between the green employment dimension and the sustainable manufacturing variable, Pearson value (0.623) at the level (p≤0.01), the first sub-hypothesis is accepted (there is a positive correlation between the green employment dimension and the sustainable manufacturing variable)
2- There is a direct relationship between the green training and development dimension and the sustainable manufacturing variable, Pearson value (0.648) at the level (p≤0.01), the second sub-hypothesis is accepted (there is a direct relationship between the green training and development dimension and the sustainable manufacturing variable)
3- There is a direct relationship between the green performance evaluation dimension and the sustainable manufacturing variable, Pearson value (0.654) at the level (p≤0.01), the third sub-hypothesis is accepted (there is a direct relationship between the green performance evaluation dimension and the sustainable manufacturing variable)
From the previous table, there is also a relationship between the dimensions of the green human resource management variable combined and sustainable manufacturing, the correlation coefficient reached (0.665) and at the significance level (p≤0.01), The first main hypothesis is accepted (there is a direct relationship between green human resource management and the variable of sustainable manufacturing in the research sample organizations in Najaf).

3-Influence relationships between research variables

Table (8) Statistical indicators of the impact of (green HRM) in achieving sustainable manufacturing (n=40)

Indicators / Dimensions	(F)	Slope	(β)	(Sig)
Green recruitment	24.098	0.388	0.623	**at 1% level**
green training and development	27.493	0.420	0.648	**at 1% level**
green performance evaluation	28.357	0.427	0.654	**at 1% level**
Dimensions of Green Human Resource Management	30.092	0.442	0.665	**at 1% level**

The table above shows that the green employment dimension had a positive impact on the sustainable manufacturing variable, where the calculated value of (F) (24.098) and at a significance level (p≤ 0.01) and the coefficient of determination (0.388), which means that the green employment dimension explains (38.8%) of the variance in achieving the sustainable manufacturing variable and the regression value (0.623), which indicates that a change of (1) in the value of green employment leads to a change of (0.623) in achieving the sustainable manufacturing variable, and accordingly the first sub-hypothesis is accepted (there

is a positive impact relationship for the green employment Component on the sustainable manufacturing variable). The results of the table above also proved the existence of an impact relationship for the other two Components of (GHRM) on the sustainable manufacturing variable

Table (8) shows that (GHRM) variable with its combined Components had a positive impact on the sustainable manufacturing variable, the calculated value of (F) (30.092) at a significance level ($p \leq 0.01$) and the coefficient of determination (0.442), meaning that (GHRM) variable explains 44.2% of the variance in achieving sustainable manufacturing, and the regression coefficient (0.665), which indicates that change (1) in (GHRM) leads to a change (0.665) in the value of sustainable manufacturing, and accordingly the second main hypothesis is accepted (there is a positive impact relationship for (GHRM) on the sustainable manufacturing variable in the research sample organizations in Najaf).

Section Four: Conclusions and recommendations

First: Conclusions

1- The researched organizations lack programs and standards that facilitate the process of (attracting, selecting, appointing) green (environmentally friendly) competencies and skills.

2- The researched organizations are characterized by their commitment to saving energy and reducing emissions during the manufacturing process.

3- The researched organizations do not employ illustrative techniques in training processes related to environmental management.

4- The researched organizations are weak in the field of developing employee competencies based on environmental foundations.

5- The researched organizations do not have a special internal system to achieve the goals set in order to maintain a sustainable green environment.

6- The human resources management in the researched organizations does not have indicators for green environmentally friendly performance to manage and evaluate performance.

7- The management in the researched organizations should use energy-saving logistics services such as warehouse location.

8- The results showed that there is a low level of interest in (GHRM) in its various Components in the research sample organizations, as green performance evaluation came in first place, followed by green training and development, then green recruitment.

9- The results proved the positive relationship between the dimensions of (GHRM) and sustainable manufacturing in the research sample organizations in Najaf Al-Ashraf.

Second: - Recommendations

1- It requires the management of the organizations under study to develop programs and standards that facilitate the process of (attracting, selecting, appointing) green (environmentally friendly) competencies and skills

2- The management of the researched organizations is required to adhere to a special internal system to achieve the goals set in order to maintain a sustainable green environment.

3- Support the efforts of the researched organizations to commit to saving energy and reducing emissions during the manufacturing process.

4- The need for the researched organizations to employ illustrative techniques in training processes related to environmental management

5- The management of the researched organizations must carry out employee competency development processes based on environmental foundations.

6- The human resources management in the researched organizations should set indicators for green environmentally friendly performance to manage and evaluate performance

7- The management in the researched organizations should use energy-saving logistics services such as warehouse location

8- The management of the researched organizations should focus in a balanced manner on the dimensions of (green HRM) in its various dimensions (green recruitment, green training and development, green performance evaluation) due to its role in achieving sustainable manufacturing.

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Appendix No. (1)
Research questionnaire form
Al-Furat Al-Awsat Technical University
Administrative Technical College / Kufa
Department of Business Administration Technologies
Mrs.....
good greeting ....

In your hands is a questionnaire about the research tagged (The role of green human resource management in promoting sustainable manufacturing practices: an analytical study in industrial organizations in Najaf Ashraf). The success of the research depends on the extent of your cooperation in answering precisely and objectively the paragraphs of this questionnaire, and you have been chosen to answer the phrases contained in it. Therefore, we kindly ask you to choose the answer that you deem appropriate, as this has a significant impact on the validity of the results that will be reached, bearing in mind that the recorded data will be used for research purposes and your answer will be treated with complete confidentiality.

My sincere thanks and appreciation to you...

Researcher
Mundher Abbas Shaalan
Part One: Personal Data
Place a tick ( ) in front of the appropriate choice:
First: Gender
1- ( ) male
2- ( ) female

Second: Duration of service in the current job:
1- ( ) Less than 5 years.
2- ( ) From 5 years to less than 10 years.
3- ( ) 10 years and more.

Third:- Educational qualification:
1- ( ) Diploma or less
2- ( ) Bachelor’s degree
3- () Postgraduate studies

Fourth: Career level

1- ( ) Senior management
2- ( ) Middle management
3- ( ) Minimum management

Part Two: - Topics of the study

The first variable: - Green Human Resource Management

A: Green recruitment

Paragraphs	Phrase	Totally agree	Agree	neutral	Don't agree	Totally Don't agree
	5	4	3	2	1	
1	Understand what Green HR Practices mean					
2	Green administrative jobs in our organization are described to employees that include green objectives					
3	The organization works to (attract, select, appoint) green (environmentally friendly) competencies and skills					
4	Our organization's HR department has visions and perceptions about green practices (and uses criteria) for candidates for green jobs					
5	Employees who have green awareness are hired, which has become an integral part of the interview schedule in our organization					

B: Green Training and Development

6	Our organization intends to promote green human resources practices					
7	Our company employs illustrative techniques in training processes related to environmental management					
8	Our organization works to integrate training with instructions generated from environmental values					
9	Employee competency development processes are based on environmental foundations					
10	Our organization works on training on safety aspects of environmental management					

C: Green Performance Evaluation

11	Our organization is committed to a special internal system to achieve the goals set in order to maintain a sustainable green environment					
12	Our organization's human resources department has green performance indicators that are environmentally friendly to manage and evaluate performance					
13	Our organization's managers set green goals and objectives					
14	The application of green human resources practices is necessary and urgent in our organization					
15	Environmental criteria are written and integrated into the evaluation and put into practice					

The second variable: sustainable manufacturing

A:- Sustainable Product Design and Development

16	Avoid using hazardous materials when designing products					

17 Design products to facilitate repair and rework
18 Design products to reduce energy consumption
19 Design products to reduce material use
20 Use environmentally friendly materials such as recyclable materials

B:- Sustainable Manufacturing Process

21 Saving energy during the manufacturing process
22 Using lean production processes
23 Reducing emissions during the manufacturing process
24 Committing to sustainable programs, standards and systems
25 Improving manufacturing and machinery efficiency

C: - Sustainable Supply Chain Management

26 Influencing suppliers to practice sustainable initiatives
27 Influencing customers to accept practices, services or products
28 Use less, cleaner or reusable packaging
29 Use energy-efficient transportation
30 Use energy-efficient logistics (e.g. warehouse location

D:- Sustainable End of Life of Products

31 Extend the service life of products or materials by providing services
32 Provide in-house hazardous waste treatment for products after they have been recovered
33 Provide recycling support for used materials and components
34 Provide and manage product recalls (e.g. reconditioning and reconditioning
35 Provide and manage product warranty returns.