The impact of green human resource management practices on achieving the green dimension of sustainability in the Algerian textile production unit in Biskra

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Abstract:

This study aimed to identify the role played by Green Human Resource Management (GHRM) practices in achieving the green dimension of sustainability in the Algerian Textile Production Unit of Biskra. Accordingly, the quantitative approach was used for this analysis, relying on a questionnaire as the main tool for data collection. The questionnaire was distributed to a random sample of workers totaling (145) employees. The study reached a set of results, the most important of which is the existence of a statistically significant effect of GHRM practices on the green dimension of sustainability in the same institution. This effect was strong, which is attributed to the fact that environmental sustainability—particularly waste management—is a core part of the institution's activities, as it works to reduce fabric and yarn waste in the production process.

1. Introduction:

In recent years, the world has witnessed a profound shift in the orientations of organizations and their production and administrative practices. There has been a growing interest in the concept of environmental sustainability, or what is referred to as the "green dimension of sustainability," in response to increasing environmental awareness due to

environmental pressures and international regulations. Initially, the focus was on combating pollution and complying with environmental regulations. With the growth of environmental awareness, these practices have evolved to include broader agendas such as corporate social responsibility, circular economy principles, and the Sustainable Development Goals (Tennakoon, Janadari, & Wattuhewa, 2024, p. 02). Based on the role played by human resources in leading the transformation toward sustainability in general, it has become necessary to enhance the green dimension of sustainability within this resource through human resource management practices, which are considered the primary driver for changing professional behaviors and transforming organizational culture toward sustainability.

1.1 Research Problem:

When discussing environmental sustainability, attention is usually directed toward industrial institutions. Given the economic importance of manufacturing industries, particularly the textile sector, there is an urgent need to study the ability of green human resource management practices to contribute to achieving the green dimension of sustainability, especially in production units facing multiple environmental challenges, such as the Algerian Textile Production Unit of Biskra. From this perspective, the following research problem was posed: **Is there an effect of green human resource**

management practices on achieving the green dimension of sustainability in the Algerian Textile Production Unit of Biskra? From this main question, several sub-questions arise as follows:

- Is there an effect of green recruitment on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra?

- Is there an effect of green training on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra?

- Is there an effect of green performance appraisal on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra?

1.2. Research Hypotheses:

Based on the sub-questions of the research, the hypotheses were formulated as follows:

- **Main hypothesis H0:** "There is no statistically significant effect of green human resource management practices on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra."

- **First sub-hypothesis:** "There is no statistically significant effect of green recruitment on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra."

- **Second sub-hypothesis:** "There is no statistically significant effect of green training on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra."

- **Third sub-hypothesis:** "There is no statistically significant effect of green

performance appraisal on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra."

Research Objectives:

This section aims to assess the level of application of green human resource management practices and the environmental dimension of sustainability in the Algerian Textile Production Unit of Biskra, examine the extent of workers' and management's awareness of the importance of transitioning toward environmentally friendly practices, measure the impact of these practices on achieving environmental sustainability, and provide practical proposals and recommendations to enhance the adoption of green management and improve the unit's environmental performance.

Research Methodology:

The descriptive-analytical method was used to study the research problem, as it relies on understanding and analyzing available information in a manner that accurately and correctly describes reality.

2. Green Human Resource Management Practices

2.1 Concept of Green Human Resource Management Practices:

Green human resource management can be defined as a set of policies, practices, and systems that encourage environmentally friendly behavior among an organization's employees, with the aim of creating a work environment and an organization as a whole characterized by environmental awareness, efficient resource use, and social responsibility. Various researchers have provided multiple definitions in the context of green human resource management; however, this definition is the simplest and easiest to understand. Accordingly, green human resource management can be summarized as follows (Chandak, 2021, p. 2541):

- It is an integration of human resource management and environmental management.
- It relates to the shift toward environmentally friendly practices in organizations.
- It aims to make employees more environmentally aware.
- It is an important part of corporate social responsibility.
- The core concepts, strategies, functions, and applications of human resource management are based on environmentally friendly concepts.
- It enhances workforce sustainability and social responsibility.

2.2 Dimensions of Green Human Resource Management:

Integrating environmental and social responsibility into organizational management is no longer an option; rather, it has become a strategic necessity for organizations seeking long-term success in a rapidly changing world. By adopting sustainability as a core value and integrating it into all aspects of their operations, organizations can not only mitigate

risks and enhance reputation but also drive innovation, strengthen stakeholder trust, and contribute to the well-being of society and the planet. In the complexities of the twenty-first century, integrating environmental and social responsibility into organizational management will be key to building a more sustainable and resilient future for generations to come (Natalisa, 2024, p. 2). Some of these management practices include:

Green Recruitment:

Studies highlight that green recruitment and selection (GRS) are based on two main elements: e-recruitment, which reduces the consumption of natural resources and lowers operational costs, and attracting candidates with environmental interest and awareness, thereby contributing to improving the organization's environmental performance. Wehrmeyer pointed to the importance of recruiting environmentally concerned candidates, while Tang and Chen emphasized that green recruitment includes attracting environmentally aware individuals, enhancing the organization's environmental image, and adopting environmental criteria in selection and recruitment, stressing that various green management strategies can enhance the environmental image, not green recruitment alone (Wang, Tang, Zhang, Phillips, & Aldawish, 2024, pp. 413–414).

Green Training:

Green training is considered one of the most important green human resource management practices, as it contributes to raising employees' awareness of the environmental impact of the organization's activities and providing them with necessary skills such as waste data collection, as well as enhancing environmental culture and expertise. Trained and environmentally aware employees are more capable of identifying waste and reducing it due to their direct proximity to its sources (Renwick, Redman, & Maguire, 2012, p. 3).

Green Performance Appraisal:

Green performance appraisal refers to evaluating employees' performance according to indicators related to environmental sustainability to measure the extent of their contribution to achieving the organization's environmental goals. This ensures the integration of sustainability into work culture and employee behavior, in addition to using it as a tool to provide constructive feedback and encourage continuous improvement of green practices (Syahridhan, 2024, p. 461).

3. The Green Dimension of Sustainability

3.1 Concept of the Green Dimension of Sustainability:

Environmental sustainability is defined as a fundamental dimension of sustainable development and aims to reduce the environmental impacts of human activities and protect natural resources. One of the United Nations Millennium Development Goals also

focuses on achieving sustainable development by reducing greenhouse gas emissions, enhancing forest management and protection, implementing biodiversity agreements and combating desertification, and adopting sustainable water management strategies to reduce irrational exploitation (ZIAUL & SHUWEI, 2023, p. 904).

3.2. Indicators of the Green Dimension of Sustainability:

Academic studies have recently shown increasing interest in the topic of sustainable development. This growing interest is due to several factors, including social and economic transformations, environmental degradation, and increased awareness. These studies have widely demonstrated the importance of environmental sustainability indicators in shaping environmental management practices and policy formulation (Sarkar, Sarker, Sadeka, Ali, & Al-Amin, 2024, p. 4). Some of these indicators include:

Waste Management:

Waste management is defined as a set of integrated processes that include collection, transportation, treatment, recycling, disposal, and monitoring, with the aim of preserving natural resources and protecting human health and the environment. It also seeks to reduce the negative impacts of waste, encourage reuse, and limit waste generation and resource depletion, thereby achieving healthy living conditions and an unpolluted environment (Hanh, Nguyen, Phạm, & Dang, 2022, p. 103).

Energy Management:

Energy management practices are systematic efforts aimed at improving energy efficiency, reducing energy consumption, and integrating the use of renewable energy into corporate operations. Environmental performance is defined as the extent to which companies manage their environmental aspects and impacts, which may include reducing waste, improving resource efficiency, curbing emissions, and supporting clean production efforts (Abdullahi, Al-Amrani, Mohamed, Sukeri, Mahmoud, & Allumi, 2025, p. 703).

Water Consumption Rationalization:

Water is one of the most important renewable natural resources that sustain life in nature. This resource is unevenly distributed in different forms: approximately 97.5% of global water exists as saline water, and 2.5% as freshwater. Of the total freshwater, only 31.1% is available in groundwater, lakes, and rivers for human consumption, while the remainder is trapped in ice caps. Moreover, this available freshwater is unevenly distributed spatially and temporally (Degefu, He, Liang Yuan, Huang, & An, 2018).

Reducing Air Emissions:

According to the International Organization for Standardization (ISO), air pollution refers to the phenomenon of substances that exceed environmental quality standards and reach a certain concentration in the atmosphere, thereby posing risks to human health and the environment (Xu, Yang, & Li, 2022, p. 3).

4. Research Procedures

4.1. Research Population and Sample:

The study population included the workers of the Algerian Textile Production Unit of Biskra, whose number reached (200) workers. The study sample consisted of (145) workers selected randomly.

Table 1: Distribution of the Study Sample

Educational Qualification / Age Group		Secondary and Below	Vocational Training	University	Postgraduate Studies
Less than 30 years	Frequency	7	0	0	0
	Percentage	100%	0%	0%	0%
From 30 to less than 40 years	Frequency	78	16	1	1
	Percentage	81.3%	16.7%	1%	1%
From 40 to less than 50 years	Frequency	24	9	1	0
	Percentage	70.6%	26.5%	2.9%	0%
50 years and above	Frequency	6	1	0	0
	Percentage	79.9%	18.1%	1.4%	0%

Source: Prepared by the researchers using SPSS outputs, V21.

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From the above table, it is noted that most of the institution's workers have a secondary educational level or less and are aged between 30 and less than 40 years. This is due to the fact that the institution largely recruits workers at the operational level and does not require high academic qualifications. This was also stated by the Human Resources Manager of the same institution during the interview. Moreover, the institution currently seeks that future recruits hold at least a baccalaureate certificate.

4.2 Reliability Test of the Instrument:

It was found that the reliability coefficient (Cronbach's alpha) equals (0.922) for the entire questionnaire, which is greater than the coefficient (0.60), indicating the reliability of the study instrument.

4.3 Normal Distribution Test:

Before starting regression analysis, it is necessary to determine whether the data follow a normal distribution. To test this, the significance level of the Kolmogorov–Smirnov and Shapiro tests was used, which reached (0.200), greater than 0.05. Accordingly, it can be said that the data follow a normal distribution.

4.4 Testing the Study Hypotheses:

¬ The first hypothesis, which states:

"There is no statistically significant effect of green human resource management practices on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra," was tested as follows:

Table 2: Simple Regression Coefficients for the Effect of Green Human Resource Management Practices on the Green Dimension of Sustainability

Statement	Green HRM Practices	Constant
F	282.922	–
Sig (F)	0.000b	
B value	0.989	-0.173
Correlation coefficient (R)	0.815a	–
Adjusted R²	0.662	

Source: Prepared by the researchers using SPSS V.21 outputs.

Based on the above, and after ensuring that the conditions of the simple regression model are met, it is found that there is an effect of green human resource management practices on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra. The correlation coefficient (R) reached (0.815), indicating a strong relationship between the variables. The adjusted coefficient of determination reached (0.662), which shows that green human resource management practices explain 66.2% of the changes occurring in the green dimension of sustainability in the same institution, while the remainder is attributed to other factors.

Accordingly, the hypothesis stating:

"There is no statistically significant effect of green human resource management practices on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra" is rejected, and its alternative is accepted.

¬ The second hypothesis, which states:

"There is no statistically significant effect of the dimensions of green human resource management practices on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra," was tested as follows:

Table 3: Stepwise Multiple Regression Coefficients for the Effect of the Dimensions of Green HRM Practices on the Green Dimension of Sustainability

Statement	Green Training	Green Performance Appraisal	Constant
F	411.786	–	
Sig (F)	0.000c		

Statement	Green Training	Green Performance Appraisal	Constant
B value	0.518	0.421	0.052
Correlation coefficient (R)	0.924b	–	
Adjusted R²	0.851		

Source: Prepared by the researchers using SPSS V.21 outputs.

Based on the above, and after confirming that the conditions of the multiple regression model are met, it is found that there is an effect of the dimensions of green human resource management practices on the green dimension of sustainability in the Algerian Textile Production Unit of Biskra. The correlation coefficient (R) reached (0.924), indicating a strong relationship between the variables. The adjusted coefficient of determination reached (0.851), which shows that the two dimensions together explain 85.1% of the changes occurring in the green dimension of sustainability in the same institution, while the remainder is attributed to other factors.

Accordingly, the sub-hypothesis stating:

"There is no statistically significant effect of the dimensions of green human resource management practices on the green dimension of the Algerian Textile Production Unit of Biskra"

is rejected, and its alternative is accepted.

5. Analysis of Results:

It was found that there is a high level of green recruitment practice in the Algerian Textile Production Unit of Biskra, as the human resources management focuses on qualifications and experience while paying attention to environmental issues, in accordance with the institution's basic law, which obliges all workers to preserve the environment inside and outside the workplace, and subjects violators to inquiry procedures and the determination of appropriate penalties. It was found that there is a high level of green training practice in the Algerian Textile Production Unit of Biskra, because the unit's human resources management works to disseminate an internal culture centered on environmental preservation through continuous instructions regarding workplace cleanliness, continuous monitoring of workers' activities, and their commitment to environmental instructions, which are considered part of its activities. Moreover, when new employees join, they are trained in positions lower than their assigned positions and under the supervision of responsible personnel who focus on instilling the necessities of the activity, including concern for the work environment and the institution and reducing waste, as it constitutes a major part of its activity.

The study also shows a high level of green performance appraisal practice in the Algerian Textile Production Unit of Biskra, as the human resources management sets objectives for workers that include fulfilling orders in the required quantities and sizes, and reducing production waste from fabric and fiber remnants. The programming and auditing department monitors workers' progress daily, and productive workers are rewarded with increased productivity bonuses upon achieving objectives, which enhances commitment to environmental and production practices.

It was found that there is a high level of green human resource management practices, as the Algerian Textile Production Unit of Biskra actually applies these practices in recruitment, training, and appraisal. This high level can be explained by the fact that this institution keeps pace with new trends, and the environmental trend is among the most prominent emerging trends; therefore, the institution seeks to align itself with this trend despite the simplicity of its activity.

The results indicate a high level of attention to waste and energy management in the Algerian Textile Production Unit of Biskra. Human resources management works to reduce waste to increase production efficiency and meet orders using the same quantities of fabric, while adopting modern machines that consume less energy and others that reduce waste volume. The institution also ensures a clean work environment by selling fiber remnants to other institutions for reuse and contracting with a specialized company to collect non-industrial waste and transport it for recycling in technical landfill centers.

The results also show a high level of attention to rationalizing water consumption in the Algerian Textile Production Unit of Biskra, through the construction of a well to support fabric washing activities, and the maintenance department's responsibility to limit leaks and accurately determine water quantities according to fabric size without waste. In addition, the water treatment and purification department purifies water before use and discharges it in environmentally safe ways.

The results further show a high level of attention to reducing air emissions in the Algerian Textile Production Unit of Biskra, as reducing emissions is part of its environmental responsibility. Its activity is limited to simple and non-toxic air emissions resulting from the ironing machine after manufacturing and washing, with no harmful gaseous emissions.

The results demonstrate a high level of attention to the green dimension of sustainability in the Algerian Textile Production Unit of Biskra, as waste management constitutes a core part of its activity through reducing fabric remnants and reusing them by selling them to private institutions, with revenues used to meet the unit's needs. The unit also adheres to special procedures for fabric waste related to security apparatuses in accordance with legal

234

regulations, rationalizes water consumption by determining appropriate quantities for each type and size of fabric, and does not produce any gaseous emissions due to the nature of its activity.

6. Conclusion:

The results of the study showed that green human resource management practices—especially those related to green training and green performance appraisal—are among the effective practices that strongly contribute to achieving the green dimension of sustainability, particularly in the activity of the Algerian Textile Production Unit of Biskra, which relies heavily on reducing waste during production, thereby reducing the resulting volume of waste (yarns, fabrics, fibers).

Based on the obtained results, several recommendations can be presented to the Algerian Textile Production Unit of Biskra:

- Reconsidering the recruitment policy by activating the concept of green recruitment through incorporating environmental criteria into job advertisements.
- Recruiting according to the condition of holding a university degree to ensure a proper understanding of the meaning of green practices.
- Organizing awareness campaigns and workshops within the institution to consolidate a culture of green work.
- Developing training content that suits the nature of the textile industry and contributes to raising operational environmental efficiency.

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