

RESEARCH ARTICLE

The mediating effect of green organizational culture on the link between green human resources management and green innovation

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ABSTRACT

The growing interest in sustainable development and the increasing environmental awareness among environmentally conscious customers have prompted Tunisian export-oriented companies to adopt eco-friendly activities. This study examines how green human resources management (GHRM) and green organizational culture (GOC) influence green innovation (GI) in the Tunisian export-oriented textile and clothing industry. More specifically, the study examines the mediating effect of GOC in the link between GHRM and GI in Tunisia. Although there is existing literature on each of these factors individually, there has been no research that integrates them simultaneously, especially in Tunisian or similar contexts. Managers, who are the key decision makers were asked to fill in a questionnaire form using a pre-tested scale item. The findings of the structural model using AMOS-SEM analysis showed that both GOC and GI are significantly and positively affected by GHRM. Additionally, GOC is significantly and positively associated with GI. Furthermore, the findings confirmed that GOC partially mediates the link between GHRM and GI. Beyond its theoretical contribution, which confirms the interrelationship between these factors (GHRM, GOC and GI); the study offers practical implications for professionals, underlining the importance of a GOC in GI and overall organizational success.

Keywords: Green Human Resources Management (GHRM); Green Organizational Culture (GOC); Green Innovation (GI); greening economy; Tunisia

1. Introduction

The term “green” has become a prominent concept in studies on human resource management in both public and private sectors ^[1]. Research on green human resource management (GHRM) ^[2,3,4,5,6,7] is proliferating, and there is now a significant body of articles and studies dedicated to this issue. Organizations have realized that one of the key issues for their business sustainability is the preservation of the environment ^[8]. The significance of a green organizational culture (GOC) on organizational success has been emphasized by several studies (see for instance, ^[9,10]). These studies showed that OC has an impact on enhancing performance, fostering organizational commitment, building employee loyalty, and extending market dominance. Additionally, it can significantly influence organizational innovation policies, providing companies with a distinct competitive advantage ^[3]. However, the deficiency of a strong organizational

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culture may lead to futile investments, hindering companies from achieving their expected results. Green innovation (GI) in organizations involves mitigating potential adverse environmental impacts during production and service while demonstrating social and institutional responsibility ^[11,12]. This requires the adoption of green ideas and activities to ensure positive environmental consequences.

This paper explores some drivers of GI, which are GHRM and GOC. GHRM practices encompass a range of uniformed HR policies and procedures that promote environmental compliance by adopting pro-environmental behaviour in the working environment and beyond ^[2,13]. It investigates the mediating effects of GOC in the link between GHRM and GI. This research addresses the primary issue that organizational culture is continually influenced by normative and cognitive-cultural pressures and the values held by its members ^[14]. Additionally, according to Tajfel and Turner's social identity theory ^[15], employees' identification with an organizational culture can enhance their commitment and firm adherence to the group's practices. However, what happens when an organization adopts a culture lacking ecological values, behaviors, and beliefs at its core?

An important question would be raised, which is what impact will a non-ecological organizational culture have on the dynamics of organizational innovation in case GHRM was not adopted? Can we draw a parallel to Plato's allegory of the cave when examining this scenario, specifically in relation to the "*prison of the psyche*" developed by Socrates? We adopted the concept of Plato in his work Republic, which highlighted the impact of knowledge on understanding of nature and reality. By the way, this metaphor reminds us how people's perceptions shape their understanding of reality. Similarly, we will focus on companies that consciously or unconsciously build solid and lasting perceptions of reality for their employees, limiting their perspectives and understanding to align with the company's own view of reality. Ironically, these companies' organizational cultures prevent them from recognizing other potentially better versions of reality. As a result, they become confined by their narrow views and cannot consider different perspectives or embrace new ideas.

The current research draws on GHRM theory ^[2] to examine the interrelationship between GHRM, GOC and GI in Tunisian export-oriented textile and clothing companies. A recent study conducted by Khammadee and Ninaroon ^[16] on hotels in Thailand showed that these three variables are interrelated. The same study identified a gap in the literature and called for further studies on the same issue in other contexts and in other countries. This paper attempts to bridge this knowledge gap and aims to achieve two main goals in the Tunisian export-oriented textile and clothing context. Firstly, it examines the direct influence of GHRM on GI. Secondly, it examines the indirect influence of this relationship via GOC. The research question is what role will a GOC play in the link between GHRM and GI in the context of the Tunisian export-oriented textile and clothing industry? The study attempts to achieve these two goals and answer the research question. It provides some propositions for Tunisian companies, and certainly other companies of similar contexts, on how they could best implement GHRM and GOC to ensure GI for sustainable businesses.

2. Conceptual framework and hypotheses building

Environmental advocates introduced the term "green" as a way to integrate traditional human resource practices with environmental considerations to support conservation efforts. Jabbar ^[17] discussed the term "greening" of the functional aspects of HRM. GHRM includes adopting practices that endorse sustainable use of corporate resources and reduce actions that could harm the environment ^[18,2]. Rani and Mishra ^[19] asserted that the GHRM program is a comprehensive tool of corporate social responsibility, although Ahmad ^[20] emphasized the importance of adopting environmental management techniques. Consequently, environmental sustainability and incorporating green practices in organizations are becoming increasingly

prevalent in the managerial agenda ^[21]. Zaid et al. ^[22] argued that GHRM activities such as selection, recruitment, staff training and development, compensation and benefits, and performance appraisal are designed to promote environmentally-related behaviour ^[22]. This assertion underscores the concept of a GHRM philosophy ^[23,24] that encouraged the development of a culture of sustainability within organizations ^[24,25,3,26,7].

Controlling pollution through a carefully planned organizational process, reducing resource use, or offering more environmentally friendly products should not be undertaken by companies to avoid environmental violations and associated penalties for non-compliance with regulations ^[27]. Harris & Crane ^[28] suggested that companies are feeling pressure to think green and act in environmental friendly ways. Achieving this requires a significant cultural shift that fundamentally affects the company's awareness of social responsibility. The underlying beliefs of a GOC will be essential for successfully transforming the company's culture. Once this transformation occurs, the organizational culture would foster an environment conducive to achieve better results in terms of environmental preservation ^[29].

To understand the concept of GOC from a conceptual view, it is beneficial to explore the origins of the concept. Elliot Jaques ^[30], often credited as the founding father of the concept of "*corporate culture*", defined it as "*the shared mode of thought and action among the members of a company, the origins of which are unspecified but must be accepted by all members of the company*". Additionally, according to Schein ^[31] (p. 9), corporate culture is "*a set of principles practiced by a group of employees to address external adaptation or internal integration issues. These principles are thoroughly examined, approved, and then conveyed to new recruits to ensure continuity in the collective mode of thought and action*". Consistent with this line of reasoning, Hofstede & Bond ^[32] attested that shared values within an organization serve as the basis for communication and mutual understanding, influencing employee behaviour through internal integration and coordination. Similarly, Thévenet ^[33] emphasized the significant impact of corporate culture on organizational dynamics, stating that it explains aspects that cannot be elucidated in any other way.

Companies have shifted towards a more pro-environmental stance in response to increasing concerns about sustainability and environmental consciousness. This shift has led to greater involvement in environmental management and a heightened consideration of ecological health during production. Ahmad & Nisar ^[34] argued that organizations must cultivate a GOC to ensure the success of environmental practices. This terminology encompasses labels such as pro-environmental, environmentally friendly and green culture. Researchers ^[35,36,37,38,39,40] defined GOC as a set of values, principles, and beliefs that lead workers towards developing a sustainable environment. This intentional transformation aims to fundamentally reshape traditional organizational structures in alignment with environmental sustainability. A recent study by Vargas-Hernández et al. ^[41] aimed to examine the correlation between GOC and GI. They concluded that aligning GOC with GI results in improved environmental performance within organizations. Organizations increasingly support their employees' innovative, environmentally friendly behaviour to foster sustainable environmental development. Gharbi et al. ^[4] asserted that GI is a predictor of competitive advantage for businesses, enabling them to create better revenues than others. According to Albort-Morant et al. ^[11], eco-innovative organizations achieve greater global success than their rivals do.

Some researchers ^[42,43] have pointed out that companies are hesitant to invest in GI due to high costs, low return on investment, and the perceived lack of compensatory benefits. Other studies, such as those by Barnea & Rubin ^[44] and de Flammer ^[44] have shown that investments in GI help companies enhance their images and reputations. This, in turn, broadens their sources of financing ^[46] and reduces information asymmetry between investors and decision-makers ^[47]. In fact, according to Wu et al. ^[48], one of the

indisputable benefits of GI is economic development, which suggests efficiency and promotes the establishment of a green environment.

2.1 The relationship between GHRM and GOC

According to a study by Pelligrini et al. [49], adopting eco-friendly practices within an organization can help establish a green culture and positively affect employee behaviour. This finding emerged from research involving 589 employees of a DIY retail Italian company involved in the structural change process. Aggarwal & Agarwala [38] further asserted that a GOC exists when employees incorporate practices that extend beyond profit motives, aiming to decrease the adverse influence of operational activities on the natural environment.

Supporting the notion of GHRM theory [2] and its impact on businesses, there are pieces of evidence from several studies [50,36,16] that GHRM drives GOC in various industries and countries contexts. Shah et al. [36] conducted research involving 480 employees from various levels within Chinese companies and found a significant relationship between these variables. Additionally, Muisyo & Qin [51] investigated the influence of GHRM on GOC in Chinese manufacturing companies and, based on a large-scale survey of 300 employees in Jiangsu province, concluded that GHRM significantly and positively influenced GOC. Similarly, Khammadee and Ninaroon [16] found a significant positive impact of GHRM on GOC in hotels in Thailand. Furthermore, Aggarwal & Agarwala [38] revealed a positive relationship between HRM and developing a green culture. Similarly, Shahzad et al. [52] undertook a survey of 316 human resource specialists within various Chinese manufacturing companies. They concluded that GOC significantly and positively related to GHRM practices. Based on the above information, we can state our first hypothesis:

H1: Green human resource management positively affects green organizational culture

2.2 The relationship between GHRM and GI

GHRM practices inspire workers to incorporate green initiatives [53] in their professional and operational activities to achieve specific environmental objectives [36]. Previous studies, including those conducted by Renwick et al. [54] and Dumont et al. [55], found that GHRM practices can positively affect employee behaviour, potentially leading to enhanced creativity and, consequently, fostering innovation in green organizational practices [56].

Some empirical research studies are in line with our discussion that GHRM positively relates to GI. For instance, following research with 437 employees from various industries in Pakistan, Malik et al. [57] found that GHRM practices significantly and positively influence green creativity and innovation, which aligns with the results of Roscoe et al., [50] on Chinese manufacturing firms. Additionally, Hameed et al. [58] (2022) concluded through a survey involving 201 supervisors and 428 workers in Pakistan that GHRM had a significant and positive effect on GI. In addition, Kuo et al. [26] conducted an online cross-sectional survey with 500 workers showed a significant positive impact of GHRM practices on GI. Furthermore, Awan et al. [59] surveyed 315 SMEs in Pakistan, and their findings indicated that GHRM practices positively affected GI. In the hotel context, both Sobaih et al. [12] and Khammadee and Ninaroon [16] found a significant positive impact of GHRM on GI. Thus, we propose:

H2: green innovation is positively affected by green human resource management

2.3 The relationship between GOC and GI

The literature often presents GOC as an antecedent of GI as it promotes environmentally friendly practices that meet the organization's values [60,61,39]. Empirical research supports our argument that GOC is positively related to GI. For example, Küçükoğlu & Pınar [60] found a significant and positive link between

GOC and GI in companies listed in Turkey and possessing the ISO14001 environmental management certificate. Similarly, DelRosario & René ^[62] found a significant and positive link between GOC and GI in hotels. Gürlek & Tuna ^[63] also argued that GOC leads to increased investment, which positively affects GI, based on a study of 293 workers and 192 managers in the Antalya region of Turkey. Furthermore, Chandra et al. ^[64] researched 185 employees in Indonesia and found that GOC significantly and positively influenced GI at the company under study. In the same context, Khammadee and Ninaroon ^[16] confirmed a significant positive impact of GOC on GI in hotels. Thus, we propose:

H3: Green organizational culture positively affects green innovation

2.4 The mediating effect of GOC in the link between GHRM and GI

Existing literature has established direct connections between GHRM and GOC, as well as between the latter and GI. However, there has been limited research that integrates all three concepts while considering GOC as a mediator between GHRM and GI ^[16]. Notably, Muisyo & Qin ^[51] have revealed the noteworthy role of GI in GHRM and green performance within manufacturing companies in China. Despite this, no research has explored the mediation effect of GOC between GHRM and GI, especially in the context of developing countries such as Tunisia and industries such as export-oriented textile and clothing. Therefore, it is essential to investigate the mediation effect of GOC in the link between GHRM and GI. While there, were some attempts to examine the direct relationship between GHRM, GOC and GI ^[50,16], the direct relationship of GOC was not tested, to the best of our knowledge. Roscoe et al., ^[50] found a mediating role of GOC in the link between GHRM and environmental performance of Chinese manufacturing firms. This research builds on the GHRM theory and address the initial question: What type of mediation does GOC provide in connecting GHRM practices and GI? We can therefore put forward a final hypothesis that takes the following form:

H4: Green organizational culture mediates the link between green human resource management and green innovation

All hypotheses are summarised in **Figure 1**.

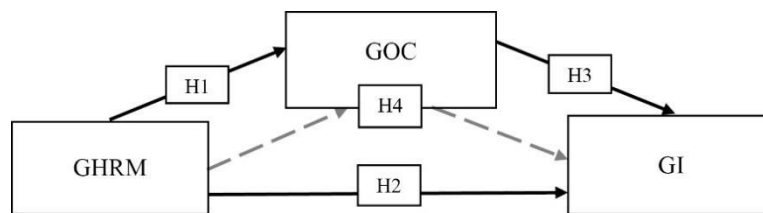


Figure 1: Conceptual Model

3. Methods

3.1. Sampling and collection procedures

This study focuses on Tunisia's textile and clothing industries, which are wholly export-oriented. There are currently 599 companies operating in Tunisia. Without claiming to be exhaustive, we tried to approach all of them, without exception, to carry out a general study of the Tunisian case, but unfortunately, for non-scientific reasons, we were only able to question 243 companies, i.e. almost half, on the way in which GHRM and GOC influence GI. The questionnaire was self-administered, which took us a long time for data collection by the second half of 2023 and the first half of 2024. We used our network to contact with our participants, as most of participants were university graduate and have good contact with our colleagues. The

questionnaires were completed only by top management. In other words, only decision-makers were asked to fill in the questionnaire and their demographics were presented in table 1. The majority of them were males (83.13%) and only 16.87 were female. In addition, because all participants were senior management, they all were above 40 years old. Most of them aged between 46 and 50 years old (78.60%). They all also have a permanent job and were not temporary holding their positions. Regarding their seniority, the vast majority were in their senior position for 4 years or above 95.89 % (see **Table 1**).

Table 1. Sample demographics

Profile		Frequencies	Percentage
Gender	Male	202	83.13
	Female	41	16.87
Age	Less than 40 years	0	0
	40- 45 years	35	14.40
	46 – 50 years	191	78.60
	Over 50 years	17	7.00
Contract type	Fixed term	0	0
	Permanent	243	100.00
Seniority in the company	Less than a year	0	0
	1 – 3 years	10	4.11
	4 – 7 years	205	84.36
	Over 7 years	28	11.53

3.2. Measure and questionnaire development

We believe that a more reliable and valid measurement scale will provide more complete and conclusive data. To this end, we created a questionnaire specific to the aforementioned concepts. We used a pre-tested research scale (see Appendix I). GHRM was measured using a measurement scale consisting of six items, derived from Shen et al. ^[65]. Similarly, GI was operationalised using a measurement scale borrowed from Rehman et al. ^[66]. We measured GOC using six items adapted from the work of Wang ^[67]. See Appendix I for the scale used in this study. We used a five-point Likert scale to examine participants' preferences. Participants were asked to tick the answer that specified their level of agreement. The options range from “strongly disagree” to “strongly agree,” where 1 = strongly disagree and 5= strongly agree.

4. Results

Following data collection, we carried out a two-step data analysis using SPSS and then AMOS-SEM. Firstly, an exploratory analysis to assess the quality of this research instrument was adopted. We undertook first-order factor analysis (**Figure 2**). The purpose of this was to ensure the validity and reliability for the research's results. For this purpose, we used a principal component analysis (PCA) combined with an internal coherence analysis. Secondly, a confirmatory type to verify the conclusions drawn from the exploratory examination. In addition, structural equation models are used to examine the existing inter-relationship between the constructs.

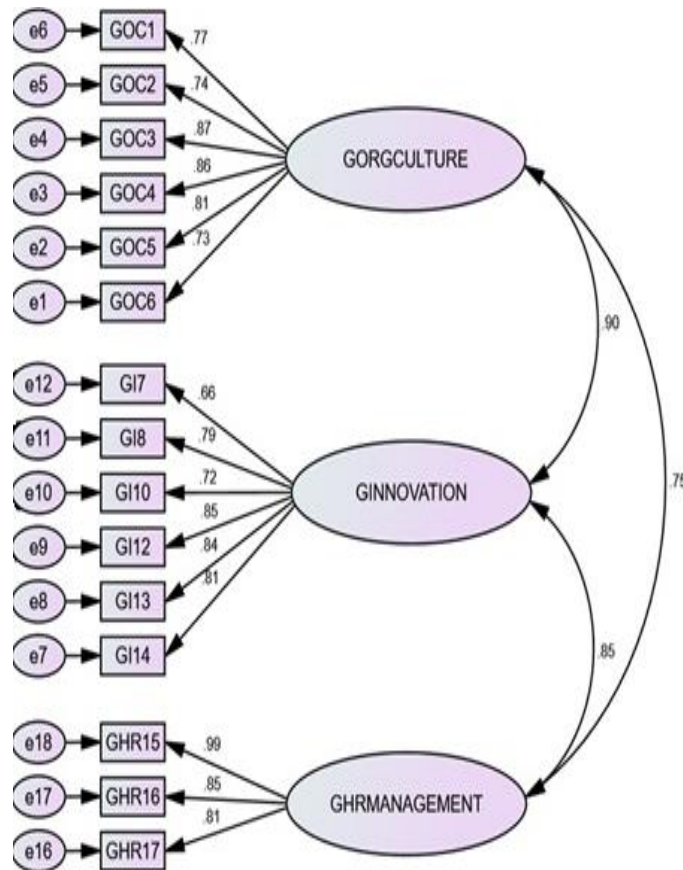


Figure 2: The First order model

4.1 Results of confirmatory factor analysis

Descriptive statistics of this study are presented in Table 2. The mean of respondents' responses varied between 3.83 and 4.07 along with gaps values that were between 1.094 and 1.155 (Table 2), indicating that answers is scattered and less concentrated around the average value [68].

Table 2 shows that the χ^2/df proportion is equivalent to "2.934", which is under the value of 3. The SRMR displays a ratio of 0.0506, and the RMSEA has a ratio of 0.0386, which is near zero. The CFI, TLI, IFI, and NFI have values of 0.953 - 0.961 - 0.987 - 0.948 respectively. These values were near to 1. Thus, we can conclude that adjustments to this model are quite good [69]. We have checked the distribution of the data whether it is balanced and normal. Therefore, we checked skewness and kurtosis values. The value of skewness should be between - 2 and + 2 and the kurtosis value should be between -7 and +7 [70]. After checking the values presented in **Table 2**, we can thus assume that distributions of variables were equally spread.

Table 2: Descriptive statistics

Abbreviation	Minimum	Maximum	Mean	Std Deviation	Skewness	Kurtosis
Green Organizational Culture						
GOC1	1.0	5.0	4.04	1.131	-1.187	0.728
GOC2	1.0	5.0	4.01	1.155	-1.111	0.432
GOC3	1.0	5.0	4.02	1.094	-1.213	1.010
GOC4	1.0	5.0	4.05	1.116	-1.231	0.913
GOC5	1.0	5.0	4.02	1.128	-1.130	0.628
GOC6	1.0	5.0	4.00	1.154	-1.222	0.805
Green Innovation						
GI7	1.0	5.0	3.86	1.136	-0.991	0.429
GI8	1.0	5.0	3.93	1.096	-1.106	0.800
GI10	1.0	5.0	3.88	1.095	-1.028	0.634
GI12	1.0	5.0	4.01	1.104	-1.195	0.902
GI13	1.0	5.0	4.04	1.100	-1.164	0.813
GI14	1.0	5.0	4.07	1.131	-1.243	0.847
Green Human Resources Management						
GHR15	1.0	5.0	3.87	1.134	-1.016	0.427
GHR16	1.0	5.0	4.02	1.148	-1.214	0.784
GHR17	1.0	5.0	3.83	1.176	-0.951	0.153

Model fit: “($\chi^2(89, N = 243) = 261.126, p < 0.001, \text{normed } \chi^2 = 2.934, \text{RMSEA} = 0.089, \text{SRMR} = 0.0386, \text{CFI} = 0.953, \text{TLI} = 0.961, \text{NFI} = 0.948, \text{IFI} = 0.987, \text{***} p < 0.001$ ”.

4.2 Convergent and discriminant validity of measurements

In order to determine whether the scale items, supposed to assess the similar concept, are related, we adopted convergent validity, through the CR, which has to be firmly above 0.7, and the AVE, which also has to be firmly above 0.5. The data given in **Table 3** shows that convergent validity was not an issue and met required criteria^[71]. Furthermore, we have assessed whether the AVE square root of every construct (items in bold in Table 3) is indeed strictly bigger than the correlations it shares with the other constructs or not. The values shown in Table 3 show that discriminant validity was confirmed for all variables.

Table 3: Convergent and discriminative validity

Factors and items	St. Loading	CR	AVE	MSV	ASV	1	2	3
1- Green Organizational Culture, ($\alpha = 0.908$)		0.912	0.635	0.847	0.807	0.797		
GOC1	0.765							
GOC2	0.739							
GOC3	0.866							
GOC4	0.855							
GOC5	0.814							
GOC6	0.733							
2- Green Innovation, ($\alpha = 0.807$)		0.903	0.610	0.847	0.826	0.847 **	0.781	

Factors and items	St. Loading	CR	AVE	MSV	ASV	1	2	3
GI7	0.657							
GI8	0.790							
GI10	0.720							
GI12	0.850							
GI13	0.839							
GI14	0.813							
3-Green HRM, ($\alpha = 0.859$)		0.919	0.792	0.805	0.786	0.767* *	0.805 **	0.890
GHR15	0.995							
GHR16	0.853							
GHR17	0.812							

Note: “CR = Composite Reliability; AVE = Average Variance Extracted; MSV = Maximum Shared Value; ASV= Average Shared Value”.

4.3 Results of structural equation analysis

We initiate structural equation modelling to confirm the effect of GHRM on GI via GOC once the validity and reliability of the measurements are established. The study's findings were consistent with the data (Table 4). Table 4 shows a Chi-square that is correlated with its χ^2/ddl (2.32) degree of freedom, which is a top-notch index. When the χ^2/ddl ratio is less than 3, the ratio is deemed satisfactory, as indicated by Hair et al. [72]. Additionally, the RMSEA value is equal to 0.074, showing that the alignment is adequate as it approaches zero [72,69]. The values were acknowledged by studies to offer a very excellent match and are also authenticated by the indices $\text{IFI}=0.982$, $\text{NFI}=0.988$, $\text{TLI}=0.982$, and $\text{CFI}=0.985$. The standard RMR, SRMR, is almost equivalent to Zero. All research hypotheses have been confirmed, and they all of the relationships were significant with $p < 0,001$ (Check Table 4 and Figure 3). In particular, GI was significantly and positively influenced by GHRM ($\beta = 0.427$, $p < 0.001$) and by GOC ($\beta = 0.747$, $p < 0.001$) respectively. GI was significantly and positively influenced by GOC ($\beta = 0.555$, $p < 0.001$). The very important substantive coefficient of R square shows the following value ($R^2 = 0.776$). In our study, the ratio of GI accounted for by GHRM and GOC in the model, serves as proof for the robustness of the final model.

Table 4: Structural model results with standardized estimates

Structural Model Results	β	T-value	P value	R ²	Results
H1: GHRM → GOC	0.747	11.611	***		Supported
H2: HRM → GI	0.555	6.628	***		Supported
H3: GOC → GI	0.572	7.517	***		Supported
GI				0.776	

Model fit: “($\chi^2(70, N = 243) = 162.4$ $p < 0.001$, normed $\chi^2 = 2.32$, $\text{RMSEA} = 0.074$, $\text{SRMR} = 0.0331$, $\text{CFI} = 0.985$, $\text{TLI} = 0.982$, $\text{NFI} = 0.988$, $\text{IFI} = 0.982$, *** $p < 0.001$)”.

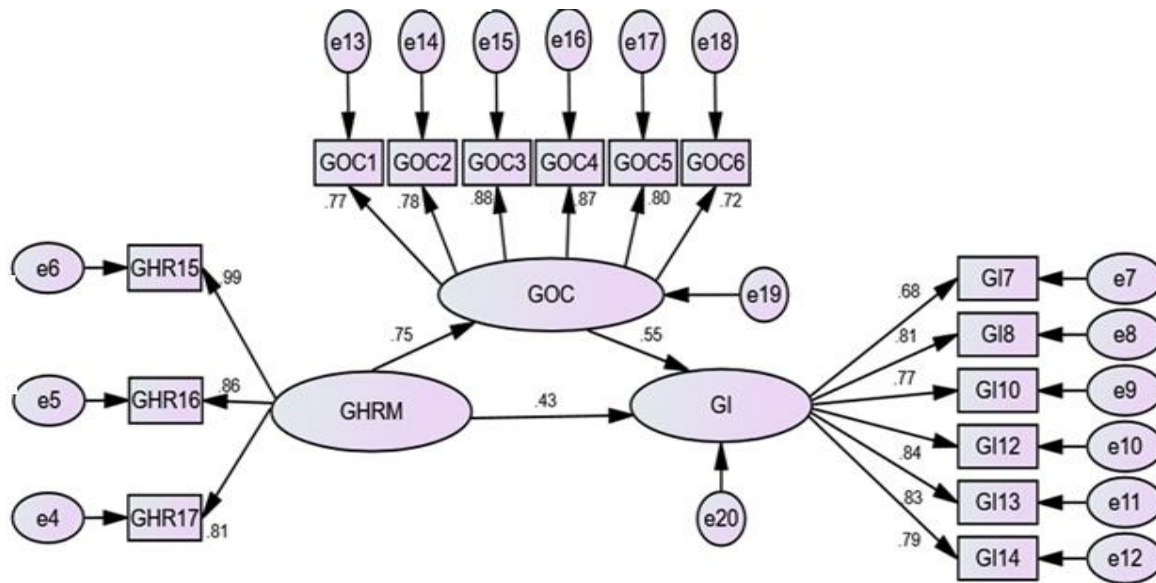


Figure 3: The Structural Model

We applied Baron and Kenny's ^[74] method to examine the mediation influence of GOC in the link between GHRM and GI. This strategy uses four subsequent tests in a sequence. To establish that there is an impact to be mediated, we must first check the link between GHRM and GI to be significant, which was confirmed ($\beta= 0.427, p <0.001$). The coefficient is significant in the regression of GI upon GHRM. Secondly, we need to check the influence of GHRM on the mediator, i.e. GOC, which has to be significant, which was also confirmed ($\beta= 0.747, p <0.001$). Thirdly, we need to check that the relationship between the mediator, i.e. GOC, and dependent variables, i.e. GI to be significant, which was confirmed ($\beta= 0.555, p <0.05$). Here, we speak of conducting a regressive step on both GOC and GHRM. When controlling for the latter, the relationship linking GOC and GI should continue to be significant, and as a matter of fact, it does. Finally, by considering the importance of this direct connection between GHRM and GI, we are brought to examine the partial or total character of GOC. The link is always significant even when the mediating construct is considered, as seen in Table 4's discussion of how GHRM affects GI through GOC ($= 0.287, \text{ with } p=0.004 <0.05$). Additionally, with respective t_a and t_b values (18,558 and 24,713), the Sobel test returns a value of $Z= 14.83969594 > 1.96$ with a P-value of $0 <0.01$. Therefore, we conclude that GOC has a significant and partial mediation as a whole (Table 5). We can conclude from the final table that GOC partially mediates the link between GHRM and GI.

Table 5: Mediation type

Parameter	Estimate	Lower	Upper	P	Mediation
H4- GHRM → GOC → GI	0.287	0.177	0.427	0.004	0.004<0.05 Partial Mediation

5. Discussion

The SEM findings revealed that GHRM in the Tunisian exporting textile and clothing industry positively and directly affects both their GOC and GI. The results confirmed a significant and positive relationship between all study variables. The first hypothesis ($\beta= +0.747, p <0.001$) and the third hypothesis ($\beta= +0.555, p <0.001$) have been confirmed. They show that one unit increase in GHRM leads to a 0.747 increase in GOC and a 0.555 increase in GI, respectively. These results support previous studies' findings [16,12,51,38,52,60,62,61,64]. The second hypothesis ($\beta= +0.572, p <0.001$) has also been confirmed. It indicates that

one unit increase in GOC results in a 0.146 increase in GI. Essentially, GOC strengthens ecological knowledge management, enhancing ecological innovation. This result supports previous studies' findings [57,58,16,26,59].

Finally, we examined the mediating role of a GOC. As detailed in Table 4, our analysis reveals that the positive and significant link between GHRM and GI ($\beta=0.287$, $p=0.004 < 0.05$) persists even after considering the mediator variable, i.e. GOC. According to these findings, it is evident that GOC serves as a significant, yet only partial mediator between GHRM and GI. This suggests that GOC accounts for some, but not all, GHRM's impact on GI. This result offers a nuanced solution to our initial question, affirming that GOC does not imprison the psyche in the link between GHRM and GI. Furthermore, the realization that the mediating effect of GOC is only partial is reassuring. It suggests that while GOC may influence the connection between GHRM practices and GI, it does not completely determine it. This prevents GOC from becoming a rigid constraint that could limit employees' freedom to act and innovate. Consequently, managers driven solely by profitability at the expense of the environment cannot confine their employees within virtual frames of reference or conceptions that reflect only their realities. A GOC is not a requirement for a company to be innovative and successful in its commitment to sustainability and environmental protection. On the contrary, employees are free to make their own choices and, with their knowledge and involvement in green practices, can influence the organizational culture to become more environmentally friendly. They can innovate while prioritizing ecological issues. Employees' autonomy and active participation cultivate a dynamic and adaptable organizational culture where GI is promoted.

6. Implications of the Study

This article presents significant theoretical and methodological contributions to the existing literature. This exploratory research aimed to provide an overview that would allow researchers to better understand three causal relationships between variables studied separately but never together. As a result, this research successfully combined them into a single model, and we tested its robustness by applying R^2 , which showed a highly significant value of 0.776. Therefore, we were able to confirm all the formulated, demonstrating significant relationships with $p < 0.001$. This research adds to knowledge by confirming the interrelationship between the three variables: GHRM, GOC and GI. The study empirically confirmed the mediation effect of GOC in the link between GHRM and GI in Tunisian export-oriented textile and clothing companies. This means that GOC not only drives GI in firms but also can mediate its link with GHRM and strengthen this link. We found that when top management has a clear vision of environmental dimensions and prioritize GOC, this contributes to the achievement of GI in their businesses, including the production of the least pollution and minimization of negative impacts on the environment including waste behaviour [75]. The study confirmed the spread of GOC could minimize the absence of GHRM and its link with GI in companies.

The study has some implications for practitioners. Decision-makers must understand the significance of fostering a GOC, as it positively influences organizational performance [76]. By developing a GOC encompassing shared values, norms, and beliefs, managers can benefit greatly from focusing on GI and environmental performance. This culture, emphasizing sustainability, can drive GI in the face of resource scarcity. A GOC also enhances the management of ecological knowledge, making it easier for the organization's green practices to contribute to innovation effectively. Companies can promote GI by developing environmentally friendly products, services, and procedures. This could involve using greener raw materials in product design, employing eco-friendly behaviour, and striving to decrease pollution, water usage, electricity consumption, and other raw material usage [12]. Green initiatives should be incorporated into the organization's several aspects, including GHRM, and green leadership. As a result, decision-makers

can see a return on their investment in the sustainability of their businesses ^[77]. It is important that GHRM spread GOC and drive employee green behaviour to ensure GI in the business. A new generation of employees is emerging, motivated and committed to green practices. They believe that their organizations prioritize environmental concerns. This shift represents a change in the psychological contract, from a narrow set of mutual expectations to a company's demonstrated commitment to not only ensuring employees motivation the physical and mental well-being of its employees but also providing a healthy work environment ^[78]. Unlike the traditional psychological contract, which ends with the conclusion of an employee's career, the new green psychological contract considers the well-being of future generations. Establishing this new psychological contract within the organization requires socializing employees and aligning them with the organization's green principles, values, and beliefs.

7. Conclusion

We examined the role of GOC as a mediator in the relationship between GHRM and GI in Tunisian export-oriented textile and clothing companies. The results confirmed all suggested direct relationships between GHRM, GOC and GI in Tunisian companies. Additionally, the results confirmed a partial mediating effect of GOC in the link between GOC and GI. This partial mediating role shows that the culture does not solely determine the relationship between HR practices and innovation, thus avoiding a prison for the psyche. This finding addresses the debate on GOC's role in sustainable development and environmental awareness research. While GOC is crucial, it is not the only factor influencing the relationship between GHRM and GI, albeit it is important to consider when planning for GI in companies. Employees also have a key role in shaping this culture through knowledge and involvement in sustainable practices, which could also be achieved through GHRM.

Although our research gives insights into the connection between GHRM, GOC, and GI, it has some limitations that open up doors for future studies. To have a better understanding of these complex relationships, it is necessary to replicate the study across different sectors, include additional variables such as green leadership, conduct comparative analyses across organizational levels, and employ a longitudinal approach. These efforts will help organizations foster a culture that stimulates sustainable innovation and environmental responsibility. The study had more participation from male managers (84%) than female managers do; hence, the results could be affected by this variable. Therefore, further studies could be replicated with better representation of female managers.

Appendix I. The research instrument

Green organizational culture	
GOC1	In our enterprise, the environmental dimension is considered one of the top organizational priorities.
GOC2	Our mission statement includes concerns for environmental protection.
GOC3	Our top management has a clear vision of a green organizational culture.
GOC4	Our green priorities are well communicated among the employees.
GOC5	In our enterprise, there is punishment for noncompliance with environmental management issues.
GOC6	Our enterprise's top management actively participates in environmental management issues.
Green innovation	
GI7	Our enterprise chooses materials that produce the least amount of pollution for conducting product development or design.
GI8	Our enterprise uses the fewest amount of materials/resources to make the products.

GI10	Our enterprise chooses the materials of the product that consume the least amount of energy, water, and other resources for conducting the product development or design.
GI12	The green processes used by our enterprise help to reduce hazardous substances or waste.
GI13	The green processes used by our enterprise help to recycle waste and pollution that allow them to be treated and re-used.
GI14	The green processes used by our enterprise help to reduce the consumption of water, electricity, coal, or oil.
Green Human Resources Management	
GHR15	My enterprise provides adequate training to promote environmental management as a core organizational value.
GHR16	My enterprise considers how well an employee is doing at being eco-friendly as part of their performance appraisals.
GHR17	My enterprise relates to employees' eco-friendly behaviour to rewards and compensation.
GHR18	My enterprise considers personal identity environmental management fit in recruitment and selection
GHR19	Employees fully understand the extent of corporate environment policy
GHR20	My enterprise encourages employees to provide suggestions for environmental improvement

Note: Rows with grey background are excluded during the final structural model

Author contributions

Conceptualization, AEES, HG, IZ, and NA; methodology, AEES and HG; software, HG; validation, AEES and HG; formal analysis, HG; investigation, HG, IZ and NA; resources, HG; data curation, HG and IZ; writing—original draft preparation, AEES, IZ, HG, and NA; writing—review and editing, AEES and HG; visualization, AEES; supervision, HG; project administration, AEES; funding acquisition, AEES and IZ. All authors have read and agreed to the published version of the manuscript.

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Conflict of interest

The authors declare no conflict of interest.

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