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Exploring the antecedents of green human resource management: A path dependence perspective

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ABSTRACT

Green HRM (GHRM) delineates organizations' efforts to address environmental concerns. However, the current research has not thoroughly investigated the antecedents of GHRM. Moreover, the internal structure of GHRM remains unclear, further limiting our understanding of firms' different approaches to GHRM adoption. Using a sample of Spanish firms, our first study revealed GHRM to be a two-dimensional construct, with one bundle of practices emphasizing employer branding and another bundle emphasizing employee green performance. In our second study, we draw upon path dependence theory to examine the relationship between the use of high-performance work systems (HPWS) and GHRM adoption using a sample of Spanish plants in highly polluting sectors. We further examine how a plant's green strategy and industry emissions serve as contingencies influencing the relative adoption emphasis on the two GHRM bundles. Our findings suggest that the adoption of GHRM is influenced by HPWS coupled with their strategic and institutional context.

1. Introduction

An emerging conversation in management scholarship focuses on the potential role of HRM in the resolution of environmental issues. This has led to a developing research stream focusing on green HRM (Jackson, Renwick, Jabbour, & Muller-Camen, 2011; Jackson & Seo, 2010). Both theory and empirical evidence suggest that a set of targeted, reinforcing GHRM practices can not only contribute to organizational green performance (Jackson & Seo, 2010; Ren et al., 2018; Renwick et al., 2016; Renwick et al., 2013) but also build employer brand and facilitate other HR outcomes (Ogbeibu et al., 2022; Renwick et al., 2013).

Despite the benefits organizations could potentially derive from GHRM, there is a notable disparity in the extent to which organizations adopt these practices. This underscores the importance of investigating the underlying motivations driving GHRM adoption. To date, the most in-depth exploration of the antecedents of GHRM is a conceptual piece from Ren et al. (2018), who observed that "there are few studies that explicitly consider the antecedents of GHRM" (p. 785). Moreover, there is a lack of consensus on the GHRM internal structure, which hampers empirical examination of the factors that influence the adoption of different GHRM approaches. For instance, some scholars conceive GHRM as a one-dimensional construct (e.g., O'Donohue and Torugsa, 2016; Song et al., 2020), while others suggest two, three or even more dimensions (e.g., Guerci and Carollo, 2016; Ogbeibu et al., 2023; Jabbour et al., 2010; Zibarras & Coan, 2015).

To provide a better understanding of the antecedents of GHRM adoption, we conduct two studies in this paper. In our first study, we examine the internal structure of GHRM in a sample of Spanish firms. The results of this initial study suggest a two-dimensional GHRM construct, with one dimension signifying a relative emphasis on employer branding (branding-oriented GHRM) and another dimension emphasizing employee green performance (performance-oriented GHRM). Building on this two-dimension construct, we use path dependence theory (Schreyögg & Sydow, 2011; Sydow et al., 2009) as a framework to explore the association between an organization's prior general HR experience and GHRM adoption.

Specifically, scholars suggest that GHRM is a construct distinct from other strategic HR constructs (Tang et al., 2018), such as high-performance work systems (HPWS), a core concept in the strategic HRM (SHRM) literature. While HPWS alludes to a bundle of HR practices designed to enhance employee and firm performance (Posthuma et al., 2013), GHRM is a set of green-oriented HR practices, designed to

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align employee attention and behavior with the particular organizational goal of improving green outcomes (Ogbeibu et al., 2020 & 2023). Therefore, in light of the learning effects in path dependence theory (Sydow et al., 2009), we suggest that organizations that already have HPWS in place will be more likely to adopt GHRM in general. Furthermore, by referring to the complementarity and adaptive expectation effects delineated in path dependence theory (Sydow et al., 2009), we argue that organizations' proactive green strategy and industry emissions will moderate the relationship between HPWS and GHRM adoption. We test our hypotheses by combining plant-level archival and survey data from highly polluting sectors in Spain. The full theoretical model is shown in Fig. 1.

In so doing, we contribute to the GHRM literature in multiple aspects. Foremost, we seek to propose a model that sheds light on the underlying motivations steering organizations toward GHRM adoption. Compared with the rich discussion on GHRM outcomes, extant research on the antecedents of GHRM is relatively scarce (Ren et al., 2018). Drawing upon path dependence theory (Schreyögg & Sydow, 2011), we offer an explanation as to why organizations with extensive prior experience in general HR systems (i.e., HPWS) are more inclined to transition to a more specialized system of green HR practices (i.e., GHRM). Second, we aspire to take a more nuanced approach to GHRM adoption by investigating internal (i.e., proactive environmental strategies) and external (i.e., industry emissions intensity) contingencies that may moderate the relative emphasis on two types of GHRM adopted by organizations that have experience utilizing HPWS. Previous GHRM research highlights the conceptual differences between GHRM and HPWS (e.g., Jackson et al., 2011; Jackson & Seo, 2010; Tang et al., 2018), but our work pioneers an in-depth exploration of the theoretical linkage between these two constructs. The third contribution we aim to make is to provide additional evidence on the dimensionality of GHRM. While many GHRM studies have been conducted in developing countries, our research suggests that organizations in the context of developed countries, such as Spain, may have distinct motivations and approaches in adopting GHRM compared to those in developing countries. Thus, by highlighting national context in GHRM adoption, our study provides insights for both research and practice.

In the following sections, we first compare GHRM measures in the extant literature. We next present our empirical results regarding the GHRM internal structure. Building on a review of the GHRM literature, we then develop our research questions and hypotheses relating to the antecedents of GHRM adoption. Finally, we present our results and findings, followed by a discussion on the implications for theory and practice.

2. Dimensionality of GHRM

Developing a psychometrically sound measure of GHRM and understanding its internal structure remain important foundational work for the nascent GHRM field. Currently, researchers lack agreement on the dimensions of the GHRM construct and the number of items used for each dimension (Ren et al., 2018). According to a recent GHRM review (Pham et al., 2020), about 28 % of existing research viewed GHRM as a single-factor construct without providing any further explanation (e.g., O'Donohue and Torugsa, 2016). Other research has viewed GHRM as multidimensional, varying from two (Jabbour et al., 2010) to five (Zibarras & Coan, 2015) dimensions. A number of GHRM measures have been developed by adapting HPWS measures, with the assumption that GHRM would share a similar factor structure with HPWS measures (Renwick et al., 2013). Specifically, several GHRM measures have adopted a similar AMO-like model (e.g., Guerci and Carollo, 2016; Ogbeibu et al., 2020) by separating GHRM into green hiring and selection, green training and involvement, and green performance management and compensation. Companies, however, may take different approaches in customizing their GHRM to their specific contexts.

In terms of empirical scale development, Dumont et al. (2017), Shen et al. (2018), and Tang et al. (2018) developed their GHRM measures using multiple samples to cross-validate the construct. However, the findings remain inconsistent. While Dumont et al. (2017) and Shen et al. (2018) found GHRM to be a one-factor construct, the findings from Tang et al. (2018) suggested that GHRM is comprised of five dimensions, including green recruitment and selection, green training, green performance management, green pay and rewards, and green involvement. Furthermore, all three studies mentioned above were conducted in the same country context (China) without additional evidence from other nations. Consistent with these studies, recent literature reviews have highlighted that a significant percentage of GHRM work has been conducted in developing countries (68.9 % in Pham et al., 2020 and 54.3 % in Yong et al., 2020), with limited work elsewhere. However, developed and developing countries often vary greatly in terms of their policies,

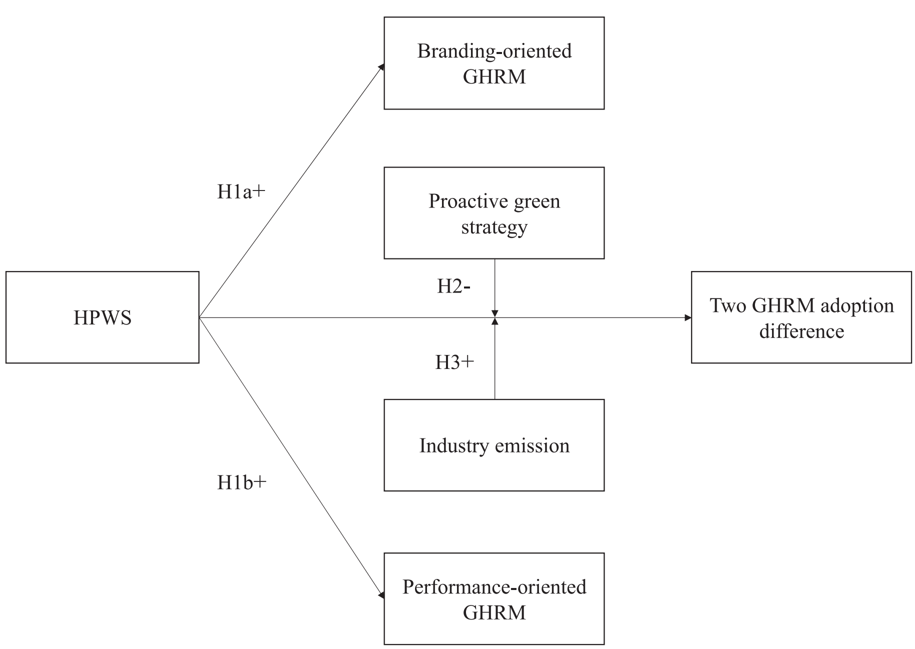

Fig. 1. Theoretical Model.

regulations, and culture surrounding corporate social responsibility and environmental protection. These differences may directly and indirectly influence the propensity to adopt GHRM and the specific GHRM approaches companies take. In the developed country context, the European Union (EU) has stringent policies on pollution control and emissions reduction (e.g., Parliament, 2014). For example, since 2007, all EU companies operating in moderately or highly polluting sectors are required to register their emissions in the Pollutant Release and Transfer Register (PRTR). These emissions are monitored by third parties and are required to be publicly available. This fact alone may influence business operations and perspectives on the need to utilize GHRM. As such, we believe studies focusing on GHRM in a context such as the EU would be very informative. To this end, we drew data from a sample of Spanish firms to examine the internal structure of the GHRM construct.

3. Examination of the GHRM internal structure

3.1. Procedure and sample

First, we reviewed the extant GHRM literature and identified GHRM measurement items used by researchers. We found that Tang et al. (2018) included the most comprehensive set of GHRM practices and thus used their measure as a starting point.

We chose Spain as our research context because we believe it is appropriate for our study purposes: Spain is a developed country within the EU where labor regulations, labor unions, and collective agreements are homogeneous across regions. The study of firms located in one country (Spain) with common institutions, social norms, and so on minimizes alternative explanations for our results. Moreover, Spain is among the 27 EU countries that have harmonized environmental and labor regulations and institutions. As such, Spain provides a reasonable basis for generalizing results to other EU countries in this regard. In addition, the Spanish context allows us to combine archival data for pollution emissions with other economic and corporate data as well as HRM data obtained through our interviews.

Our GHRM measure items are shown in Table 1. For each GHRM practice, we used a seven-point Likert scale ranging from 1, "completely disagree," to 7, "completely agree." Because our English language survey needed to be conducted in Spanish, translation and back-translation procedures (Brislin, 1970) were conducted to ensure the equivalence of questions and scales in both language contexts.

We chose to conduct phone interviews in the Spanish ceramic tile product manufacturing industry. This industry is appropriate because firms within it entail significant consumption of fossil fuels resulting in CO_2 emissions and other pollutants that may harm human health and local ecosystems (e.g., sulphur, fluorine and chlorine compounds; Monfort et al., 2008). In addition, these firms are geographically proximate, which minimizes potential exogenous influences. We identified firms with 10 or more employees, resulting in a population of 320 firms. The interviews were directed to the general managers because they have knowledge of the environmental perspectives and HRM strategies and capabilities of their respective organizations. After three waves of phone calls, we obtained 120 interviews, a response rate of 37.5 %. On average, the companies surveyed had 97 employees, had been in business for 17.5 years, and reported a turnover (revenue) of 14.3 million euros.

3.2. Analyses

We first conducted an exploratory factor analysis (EFA) with all 13 GHRM items using principal component analysis with oblique rotation. Results are reported in Table 1. The Kaiser-Meyer-Olkin (KMO) value was 0.84, and the Chi-square value of the Bartlett test was 960.74 ($p < 0.05$). These results indicated that our data were adequate to conduct EFA. Two factors with eigenvalues greater than one were extracted, which jointly explained 63.34 % of the total variance. The scree plot also showed a clear two-factor structure. Factor loadings of all items were higher than 0.60, and no item had significant cross-loadings on any factor.

Table 1
Results of Exploratory Factor Analysis.

Items of GHRM	Factor 1	Factor 2
Green recruitment and selection		
1. We use green employer branding to attract green employees.	**0.766**	−0.155
2. Our firm recruits employees who have green awareness.	**0.745**	0.07
Green training		
3. We develop training programs in environment management to increase environmental awareness, skills and expertise of employees.	**0.803**	−0.032
4. We develop training programs in environmental management to increase environmental awareness, skills and expertise of managers.	**0.777**	0.151
5. We have integrated training to create the emotional involvement of employees in environment management.	**0.781**	−0.258
Green performance management		
6. Our firm sets green targets, goals and responsibilities for managers and employees.	−0.096	**0.794**
7. In our firm, managers are set objectives on achieving green outcomes included in appraisals.	0.014	**0.814**
Green pay and reward		
8. There are economic incentives related to the achievement of environmental objectives.	0.14	**0.623**
9. Our firm has recognition-based rewards in environment management for staff (public recognition, awards, paid vacations, time off, gift certificates).	−0.08	**0.827**
Green involvement		
10. In our firm, there are a number of formal or informal communication channels to spread green culture in our company.	**0.777**	0.048
11. In our firm, employees are involved in quality improvement and problem-solving on green issues.	**0.801**	0.078
12. We offer practices for employees to participate in environment management, such as newsletters, suggestion schemes, problem-solving groups, low-carbon champions and green action teams.	**0.886**	−0.049
13. Our company emphasizes a culture of environmental protection.	**0.812**	0.171
Cumulative variance explained (%)	46.21 %	63.34 %
Sum of squares (eigenvalue)	6.01	2.23

Note. N = 120 using the sample of Spanish ceramic tile product manufacturing firms.

Nine GHRM practice items related to staffing, training, and involvement and communication loaded on factor 1. The Cronbach's alpha of this set of GHRM practices is 0.93. These practices indicate firms' intentions to promote a "green brand" among its current and potential employees (i.e., recruits). By highlighting green values in recruitment, offering green-oriented training, and giving employees opportunities to address green issues, firms can build a positive employer image among incumbent and potential employees. In doing so, employees are likely to feel a sense of purpose in their jobs, and thus organizations would benefit through increased employee motivation, retention, and attraction. Research has indicated that job candidates are more likely to be attracted to organizations with a better environmental reputation (Aiman-Smith et al., 2001), that is, a stronger green brand, which can be built through the use of practices such as those found in our first factor.

Indeed, research evidence suggests that green branding shapes the adoption of green HR practices. In a survey exploring the primary reasons for organizations to adopt HR initiatives to address environmental sustainability (Dilchert and Ones, 2012), 89 % of survey respondents reported that *creating a positive employer brand that attracts top talent* was a major motivating factor; 85 % of respondents indicated that *improving employee retention* was another major reason. Hence, companies may use

GHRM practices to attract top talent, increase employee retention, and increase employee overall motivation and involvement in corporate goals. It is also worth noting that promoting a green brand through these practices requires a relatively limited financial investment – an additional reason why these types of GHRM practices are less challenging to adopt. We labeled this factor as "*branding-oriented GHRM.*"

Shown in Table 1, the four GHRM practice items loading on our second factor all relate to green-behavior-based employee performance evaluation and compensation. The Cronbach's alpha of these items is 0.76. These HR practices directly link financial resources (i.e., compensation) to employees' green behaviors and performance. Because they require a more direct commitment of resources with performance management and rewards contingent on green outcomes, emphasizing these practices represents more of a performance focus. As such, we labeled it as "*performance-oriented GHRM.*"

We subsequently conducted a confirmatory factor analysis (CFA) and continued to examine this two-factor construct. We evaluated a number of fit indices: Chi-square statistic, comparative fit index (CFI), Tucker-Lewis Index (TLI), standardized root mean square residual (SRMR), and the root mean square error of approximation (RMSEA). We compared our two-factor model of GHRM with a one-factor model (i.e., combining branding-oriented GHRM and performance-oriented GHRM practices into a single factor) and a three-factor model (i.e., separating the branding-oriented GHRM into ability-enhancing bundle and opportunity-enhancing bundle, Renwick et al., 2013). Results indicated that the one-factor model fit worse, while no statistical difference was shown between the two-factor model and the three-factor model ($\Delta\chi^2 = 3.04$, $p > 0.05$). The two-factor model is preferred because it is more statistically parsimonious. To maintain an appropriate ratio of indicators to sample size (Bentler & Chou, 1987), we used a parceling technique, which is a common and well-established procedure employed in structural equation modelling (SEM, Kline, 2015; Landis et al., 2000). For the two-factor model, the CFI was 0.99, the TLI was 0.98, the SRMR was 0.05, and RMSEA was 0.06, suggesting good fit. In summary, two dimensions of GHRM—branding-oriented GHRM and performance-oriented GHRM—emerge from the sample in the Spanish context.

4. Hypotheses development

GHRM scholars have mainly focused on the performance outcomes of GHRM but are much less devoted to exploring the antecedents of GHRM (Yong et al., 2020). The most influential theoretical work is from Ren et al. (2018), who developed a conceptual framework summarizing the potential influence on GHRM adoption from the external environment and internal organizations. Empirically, Guerci et al. (2016a) and Vázquez-Brust et al. (2022) explained the influence of stakeholder pressures on the adoption of GHRM. They found that GHRM mediates the relationship between stakeholder pressure and environmental protection practices. On the other hand, Obeidat et al. (2018) found that both top management support and internal environmental orientation positively affect green HRM adoption. In addition, managers' green transformational leadership (Cahyadi et al., 2022), HR professionals' strategic HR competency (Yong & Mohd-Yusoff, 2016), and employees' green human capital and green relational capital (Yong et al., 2019) are found to relate to the adoption of GHRM practices. Taken together, research in investigating the antecedents of GHRM is still limited, especially regarding an organization's own experience in HRM.

4.1. Path dependence perspective on GHRM adoption

Although rarely invoked in the HR literature (cf. Chen et al., 2016; Zhu et al., 2012), a path dependence perspective offers insights into how a firm's experience with HPWS utilization might positively influence its adoption of GHRM. Path dependence theory suggests that "history matters" in the sense that prior decision-making and developments within an organization (or sector) will influence current and future decisions (Schreyögg & Sydow, 2011). For organizations that have experience in establishing and implementing HPWS, they do not need to adopt GHRM systems *tabula rasa.* The development process and accumulated learning behind the implementation of HPWS provide a foundation upon which they can adopt and customize HR practices to address green outcomes.

According to path dependence theory, a range of internal and external contingencies may alter the path that organizations take in implementing more of a branding-oriented GHRM versus a performance-oriented GHRM.[1] Guided by complementarity effects and adaptive expectation effects in path dependence theory (Sydow et al., 2009), we propose that organizations' proactive green strategy and their current industry emissions as two main factors can affect GHRM adoption decisions.

Our discussion and study below focus on the plant level. As indicated in Hart's (1995) natural-resource-based view, the key for firms to leverage success from a focus on environmental management is to effectively implement an environmental strategy at the *plant* level. At the plant level, employees can have a direct impact on environmental outputs. Thus, exploring conditions under which plants develop environment-oriented employee practices is important for investigating GHRM adoption.

4.2. The association between HPWS and GHRM

The learning effect in path dependence theory suggests that organizations lean on their prior experience-based learning due to accumulated skills and decreasing costs (Sydow et al., 2009). As such, developing an effective GHRM system depends on organizations' experience with generic HR systems (Pham et al., 2020; Renwick et al., 2013; Yong et al., 2020). If plants have already accumulated knowledge and skills associated with developing HPWS, they are likely to use these capabilities as a basis to customize HR systems to deliver green messaging and outcomes. With respect to branding-oriented GHRM, this would entail adjusting criteria and/or content in recruitment, training, or participation rather than creating these practices from scratch. For example, when plants have effective channels and tools for employee recruitment, it would be less challenging for managers to integrate green messages and requirements into existing job postings (Guerci et al., 2016b). Similarly, when plants possess effective methods of training and employee development, the provision of green training (Usman et al., 2022) can be similarly effective by following these established protocols. Moreover, using existing communication channels, such as company newsletters or staff meetings, plants can tailor these practices to have more of a green orientation to encourage participation and engagement towards these efforts (Dumont et al., 2017).

The logic is similar for performance-oriented GHRM practice adoption. Plants that have implemented HPWS typically have sophisticated performance management and reward systems to develop and motivate employee performance. Plants can efficiently build off this expertise to affect employees' green behaviors by integrating eco-friendly performance criteria and rewards that prioritize environmental concerns, such as ecological accidents, ecological obligations, and mitigation of a firm's carbon footprint (Jackson et al., 2011).

Hence, with pre-established expertise on a broad set of HR practices designed to increase employee abilities, motivation, and opportunities to contribute, plants will have capabilities allowing them to adopt GHRM practices more easily (Renwick et al., 2013). As such, it should be

[1] The adoption of a branding versus performance-orientated GHRM system is clearly not an "either/or" choice. In reality, firms often employ both types of practices within their green HR focus. However, our arguments and empirical investigation focus on the *relative* emphasis on one of these two approaches to reflect firms' varying focuses in different contexts; it is a matter of degree, not a dichotomous choice between the two.

a positive association between HPWS and the adoption of both branding and performance-oriented GHRM practices.

Hypothesis 1a: The use of HPWS is positively associated with the adoption of branding-oriented GHRM.

Hypothesis 1b: The use of HPWS is positively associated with the adoption of performance-oriented GHRM.

4.3. Combined effects of HPWS and proactive green strategy on relative GHRM system adoption

While HPWS utilization may help engender the adoption of a GHRM system, a path-dependence perspective suggests that additional contextual factors may affect decisions about relative emphasis on adoption of branding-oriented practices versus performance-oriented GHRM practices. As the two types of GHRM serve different organizational purposes, a GHRM system with particular emphasis is likely influenced by unique internal and external contingency factors (Ren et al., 2018; Singh et al., 2022). One important internal contingency factor we focus on is plant-level green strategy.

Plants with a proactive green strategy aim to prevent and avoid (rather than merely ameliorate) pollution and thus tend to proactively invest in pollution prevention. Their proactive decisions often include innovating processes and anticipating regulatory changes (Hart, 1995; Henriques & Sadorsky, 1999). In contrast, plants with reactive environmental strategies tend to respond to changes in environmental regulations via defensive investments in “end-of-pipe” pollution control measures; they tend towards after-the-fact compliance with regulations and industry standards (Hart, 1995; Russo & Fouts, 1997).

Based on the complementarity effects described in path-dependence theory (Sydow et al., 2009), when the adoption of a resource or capability supplements an organization’s existing resources to create additional surplus (i.e., complementarity), these resources will be more attractive and become more dominant. As such, plants will be more likely to utilize their general HR experience to adopt more GHRM practices that facilitate the execution of their proactive green strategy (Singh et al., 2022). A proactive green strategy with a concomitant focus on preventing (rather than merely ameliorating) environmental impacts requires a significant managerial focus on environmental performance (Sharma and Aragón Correa, 2003). Performance-oriented GHRM is specifically designed to improve environmental performance by directing employee behaviors. Accordingly, since the use of performance-oriented GHRM such as extensive environmental performance goal setting, and/or financial incentives and employee recognition programs can complement plant environmental goals (Lasrado & Zakaria, 2020), environmentally proactive plants will be more likely to place a greater emphasis on actual environmental performance than on employer branding outcomes.

Moreover, environmental proactivity is often associated with significant investments in pollution prevention and requires significant changes in organizational processes and operations (Aragon-Correa and Sharma, 2003). While individuals can vary in their interest and beliefs in environmental protection (Aragón-Correa, 1998), green performance-related incentives can reward both managers and employees for making environmentally friendly adaptions and reduce their resistance to altering work procedures and behaviors for pollution reduction (Lasrado & Zakaria, 2020). In addition, setting green goals for managers and employees and rewarding environmental achievements towards these goals can be instrumental in ensuring that these investments are properly executed and translated into actual environmental performance. In other words, performance-oriented GHRM facilitates the execution of environmental proactive strategies (Zhao et al., 2020).

We recognize that green-oriented organizations may also use HPWS to adopt more branding-oriented GHRM practices as a way to raise workforce environmental cognition and environmental capabilities (Renwick et al., 2013). However, branding-oriented GHRM serves a more limited role in achieving the strategic goal of those organizations compared to performance-oriented GHRM. Previous literature differentiates between substantive and symbolic implementation of environmental practices and standards (e.g., Delmas & Montes-Sancho, 2010). Plants without a proactive green strategy may implement branding-oriented GHRM only in a symbolic way since these practices do not involve operational changes with significant resource investment designed to improve their environmental performance. In contrast, plants with a proactive green strategy are likely to implement performance-oriented GHRM more substantially relative to branding-oriented GHRM. This leads to hypothesis 2:

Hypothesis 2: Proactive green strategy moderates the relationship between HPWS and GHRM adoption emphasis, such that under a high level of proactive green strategy, HPWS use will be more associated with the emphasis of performance-oriented GHRM relative to branding-oriented GHRM.

4.4. Combined effects of HPWS and industry emission on relative GHRM system adoption

The degree to which plants use their HPWS experience to build more of a branding-oriented GHRM or performance-oriented GHRM is not only influenced by internal factors (e.g., proactive green strategy) but also by external factors. Adaptive expectation effects from path dependence theory (Sydow et al., 2009) suggest that organizations are social institutions, and their actions are contingent on the expectations of others. Thus, organizations are willing to adopt some practices due to a desire to conform to the expectations of others. This argument is consistent with institutional theory (e.g., DiMaggio & Powell, 1983), which proposes that organizations imitate what other organizations do in the same field in order to increase legitimacy, but not necessarily to improve performance. In our context, a primary set of institutional comparators for a given plant are industry emissions.

Given the relatively high emissions in the plants constituting our sample, we propose that the relative emission levels within a plant’s particular sector will affect decisions regarding GHRM adoption. Plants in higher emission sectors could experience stronger social pressures from stakeholders. For example, employees may feel uncomfortable working for a highly polluting employer. This discomfort can partly stem from discussions with others about their environmentally harmful workplace. In response to these social pressures, plants in high emission sectors will tend to take symbolic action that makes them appear responsible to improve plant image (Singh et al., 2022; Vázquez-Brust et al., 2022). For another example, plants may include language with an emphasis on their commitment to sustainability and environmental responsibility in recruiting job postings. By prioritizing environmental protection in recruitment efforts, plants may be perceived as more socially responsible and attuned to the values of their stakeholders (Guerci et al., 2016a). Similarly, involving employees in the resolution of environmental issues through newsletters, suggestion schemes, problem-solving groups, low-carbon champions or green action teams can facilitate collaboration between employees and their employers to improve environmental outcomes (Renwick et al., 2013).

Taken together, these branding-oriented GHRM practices can help improve the organizational legitimacy of polluting plants in the eyes of their employees and other stakeholders. While performance-oriented GRHM practices can also promote green behaviors and performance, the effect of those HR practices is less observable by external stakeholders, and the associated implementation cost could be high. As such, plants in industries with high emissions are more likely to use their HPWS expertise to emphasize branding-oriented GHRM relative to performance-oriented GHRM. This leads to hypothesis 3:

Hypothesis 3: Industry emission moderates the relationship between HPWS and GHRM adoption emphasis, such that under a high level of industry emissions, HPWS use will be more associated with the emphasis of branding-oriented GHRM relative to performance-oriented GHRM.

5. Method

5.1. Data collection and sample

To test our hypotheses, we chose sectors that are subject to environmental regulations and in which organizations need to be engaged in environmental management. Sectors such as energy and chemicals are not only under strict pollutant regulations that push them to take actions to improve green performance but are also in need of adopting green practices to mitigate social concerns and improve their green image. We believe that organizations in these highly polluting sectors are more likely to adopt the two GHRM systems that we have identified. As such, we commenced another data collection from Spanish plants in early December 2019. Using plant-level samples in Spain offered some advantages: We were able to use the European Pollutant Release and Transfer Register (E-PRTR) database as the sample frame to generate a representative survey pool. This database provides European-wide facility-by-facility data on pollutant releases and transfers covered by Regulation (EC) No 166/2006 beginning in 2004. The plant establishments in our sample are from the following industries: energy, chemicals, waste and wastewater management, paper and wood processing, minerals, and metal.

There were 702 plants in the above sectors according to 2017 E-PRTR records, serving as our overall population for survey interviews. The same translation and back-translation procedures (Brislin, 1970) were followed in the survey process to ensure language equivalence. To maximize our sample size, we continued to reach out to all 702 plants in three-wave phone calls unless the contact information was missing or we were turned down. One plant-level manager in each plant was randomly chosen as the respondent for the survey. We received valid responses from 105 plants. The overall response rate was 14.96 %, which is comparable to firm/plant-level HRM research (cf. Becker & Huselid, 1998). Specifically, in our sample, 22.86 % of the plants were in the mineral sector, 13.33 % of plants were in the energy sector, 6.67 % of the plants were in the chemical sector, 2.96 % were in the paper and wood production processing sector, 8.57 % were in the production and processing of metals sector, and 45.71 % were in the waste and wastewater management sector. T-tests showed no significant difference in terms of sector composition between the initial population in E-PRTR and the final sample.

Given our relatively small sample size, we executed a post-hoc power analysis to ensure that our study sample size has enough statistical power to detect true effects. Prior studies have shown that the correlations between these two types of GHRM systems exceed 0.50 (e.g., Gong et al., 2009). We chose an effect size of 0.25 as a more conservative estimate. The power analysis was executed by using G*power software (Faul et al., 2009). The outcomes show that more than 78 observations will satisfy this effect size at the power level of 0.80. Thus, our sample size is appropriate for estimating true effects suggested by our hypotheses.

5.2. Measures

Green HR practices (GHRM) were measured following the results obtained from the first study. As plants are more resource constrained in comparison to firms, plants are more likely to vary in the use of HR practices for different employee groups. Consistent with the SHRM literature (Guthrie, 2001), these groups were comprised of production, maintenance, service, and clerical employees (Group A) and executives, managers, supervisors, and professional/technical employees (Group B). We asked plant managers to report the proportion of employees covered by each green HR practice from 2018 to 2019 on a scale ranging from zero to 100 % (Guthrie, 2001). Using the number of employees in each group, a weighted average for each green HR practice was computed.

To validate the two-factor structure of GHRM construct in this sample, we ran the EFA following the same procedure as in our first study. We removed the item "We use green employer branding to attract green employees" that loaded independently on a third factor. In this case, two factors with eigenvalues greater than one were generated, and 51.04 % of the total variance was explained. Overall, the two-factor structure has good fit ($\chi^2 = 21.05$, df = 13, CFI = 0.97, TLI = 0.96, SRMR = 0.05, RMSEA = 0.07). Moreover, according to the CFA results, the two-factor model of GHRM was significantly better than the one-factor model ($\Delta\chi^2 = 12.92$, $p < 0.05$) but had no significant difference from the three-factor model ($\Delta\chi^2 = 0.52$, $p > 0.05$). The Cronbach's alpha of the measure of branding-oriented GHRM is 0.75 and the Cronbach's alpha of the measure of performance-oriented GHRM is 0.74.

To measure the relative emphasis between the two sets of GHRM practices, we subtracted the computed value for performance-oriented GHRM from the value for branding-oriented GHRM, such that positive values suggest a greater emphasis on the latter (i.e., branding GHRM) and negative values suggest greater use of the former (i.e., performance GHRM).

High-performance work system (HPWS) was comprised of 18 items from an existing scale (Guthrie, 2001). Similar to our measure of GHRM, plant managers were asked to report the proportion of employees in each group covered by these HR practices from 2018 to 2019. An overall score of HPWS used a weighted average of two employee groups. Cronbach's alpha is 0.79.

Proactive green strategy was based on the previous measure with 8 items (e.g., Aragón-Correa, 1998). An example item is "conducting environmental quality audits regularly." Plant managers responded on a 7-point Likert scale ranging from 1 = "We have not addressed this factor and have no plan to do so in the near future" to 7 = "We are the leaders on this in our sector." Cronbach's alpha is 0.85.

Industry emission was measured by using the two-year average (2018 and 2019) emission records of all 702 plants in the E-PRTR database, which contains each plant's reported quantity of pollutants released through air or water each year (kg/year). Referring to Russo and Harrison (2005), we computed the Toxics Release Inventory (TRI) to represent each plant's emission, wherein

$$TRI = ln\left[1 + \sum (E_i/RQ_i)\right].$$

E_i is emissions of chemical i to air, land, and water if emissions are above the reporting threshold[2] and 0 otherwise; RQ_i is the reportable quantity for chemical i; and i is an index denoting each of the chemicals that are tracked by the TRI. For each plant in our survey, the industry emission is the averaged TRI scores of all other plants in the same sector.

Control variables include region, sector, plant ownership, plant size, plant age, prior emissions, and job tenure of plant managers. Prior research suggests that these variables may affect the adoption of HRM practices in organizations (Guerci et al., 2016a; Martínez-del-Río et al., 2012). *Region*3 was measured by whether plants are located in coastal areas, which are more economically dynamic and more multicultural than non-coastal districts (coastal area = 1). *Sector* was measured by using five dummies ($Sector^a$ = Mineral sector; $Sector^b$ = Energy sector; $Sector^c$ = Chemical sector; $Sector^d$ = Paper and wood production and processing sector; $Sector^e$ = Production and processing of metals sector) with the wastewater management sector as the reference group (45.71 % of sampled plants were in this sector). *Plant ownership* was measured by whether plants are affiliated with parent firms of other plants in the

[2] The reporting threshold of each toxic pollutant refers to *Guidance Document for the implementation of the European PRTR* published by the Economic Commission for Europe in 2006.

sample (Affiliated with a parent firm of another plant = 1). *Plant size* was measured by the number of employees in the plant. *Plant age* was measured by the years since establishment. *Prior emission* was measured by each plant's TRI score using the two-year average (2017 and 2018) emission records in the E-PRTR database. To measure *Job tenure of plant managers*, plant managers were asked, "How many years have you been in your current job?".

5.3. Tests for potential common method bias

In order to minimize the common method bias issue in this study both methodologically and statistically (Podsakoff, 2003), we first used established scales from the literature to reduce ambiguous wording and descriptions in the study design process. We also used different types of instructions between our constructs and randomized the order of our independent and dependent variables to reduce the retrieval cues prompted by the question context.

Second, in the data collection process, we obtained all responses anonymously to reduce evaluation apprehension. Moreover, at the end of each interview, we asked each plant manager to provide contact information for another member in their plant management team. 25 plants provided a second response from another plant-level manager, which accounted for 23.80 % of the plants in the final sample. We used the intraclass correlation coefficient (ICC1) value to evaluate measurement reliability (Bliese, 2000; James, 1982). Specifically, the ICC1 value of proactive green strategy was 0.47; the ICC1 value of HPWS was 0.74; the ICC1 value of branding-oriented GHRM was 0.58; and the ICC1 value of performance-oriented GHRM was 0.40. While we were unable to secure a second source of respondents for all plants, these statistical results show the reliability of our measures and reduce concerns about single-source bias.

Third, we examined common method bias in our analysis using Harman's single-factor test (Podsakoff et al., 2003). It was conducted on all items in measures of HPWS, proactive green strategy, and GHRM by using unrotated factor solution in EFA. The results revealed 12 factors with eigenvalues greater than 1 accounting for 84.23 % of the total variance. The first unrotated factor captured only 24.07 % of the variance. In a subsequent CFA test, a one-factor model combining all constructs was the worst fit to our data compared to other measurement models. These test results give us more confidence that common method bias is an unlikely concern.

5.4. Measurement validation analyses

To establish construct validity of our four latent variables (i.e., branding-oriented GHRM, performance-oriented GHRM, proactive green strategy, and HPWS), we used CFA to compare our full measurement model with a series of alternative nested models, and we employed the parceling technique (Kline, 2015; Landis et al., 2000). The CFA results are reported in Table 2. As shown, the statistics in our full measurement model met the satisfactory fit threshold, and it also had the best fit to our data. Moreover, the chi-square difference test (Anderson & Gerbing, 1988) suggested that our measurement model was statistically different from any alternative model, showing good discriminant validity of our constructs.

Furthermore, we used the Heterotrait-Monotrait (HTMT) ratio of correlation to further assess the discriminant validity of our constructs4. The HTMT-based approach is recognized as an advanced method to assess discriminant validity in variance-based SEM research (Henseler et al., 2015). Recently, researchers have applied this method to assess discriminant validity in covariance-based SEM studies (cf. Hosen et al., 2021). We calculated HTMT values by following the procedure from Henseler et al. (2015). The HTMT value below 0.85 is deemed strictly acceptable. The results are presented in Table 3. As shown, none of the values exceeds the threshold. These results indicate that our latent measures have good discriminant validity.

Table 2
Results of Measurement Model Comparisons.

Models	χ^2(df)	CFI	TLI	RMSEA	SRMR	$\Delta\chi^2$
Full measurement model	73.76 (48)*	0.95	0.93	0.06	0.06	
Model A	95.62 (51)***	0.91	0.89	0.08	0.07	21.86***
Model B	103.94 (53)***	0.90	0.87	0.09	0.07	30.17***
Model C	213.66 (53)***	0.68	0.60	0.15	0.12	139.90***
Model D	223.07 (54)***	0.66	0.59	0.15	0.11	149.30***

Note. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. N = 105 using the sample of Spanish plants.
Model A: branding-oriented GHRM and performance-oriented GHRM combined into a single factor.
Model B: branding-oriented GHRM, performance-oriented GHRM, and HPWS combined into a single factor.
Model C: branding-oriented GHRM, performance-oriented GHRM, and proactive green strategy combined into a single factor.
Model D: all factors combined into a single factor.

Table 3
HTMT Values Between Constructs.

	Constructs	1	2	3
1	Branding-oriented GHRM			
2	Performance-oriented GHRM	0.71		
3	HPWS	0.51	0.46	
4	Proactive green strategy	0.60	0.49	0.16

Given that we are using some objective variables such as industry emission, we used path analyses to test our hypotheses. Path analyses are an extension of regression methods with more efficient estimates. Specifically, it is a multivariate regression technique that can simultaneously specify relationships between independent variables and dependent variables. In doing so, we were able to estimate all hypothesized relationships related to both types of GHRM simultaneously. To avoid multicollinearity, mean centering was used for all interaction items (Aiken et al., 1991) before adding them to the model.

6. Results

Means, standard deviations, and correlations of variables are displayed in Table 4. As shown in the table, the mean of branding-oriented GHRM was 74.68 (SD = 26.47), while the mean of performance-oriented GHRM was only 31.87 (SD = 28.05), indicating that plants generally were much more likely to emphasize branding-oriented GHRM relative to performance-oriented GHRM in our sample ($t = 10.35$, $p < 0.05$).

Hypothesis 1a and hypothesis 1b predict positive associations between HPWS and both branding-oriented GHRM and performance-oriented GHRM. Results are displayed in Table 5. We specified two models in path analyses. Model 1 includes control variables and the proactive green strategy to simultaneously predict branding-oriented GHRM and performance-oriented GHRM. Building upon Model 1, the HPWS variable was added in Model 2. The standard estimate of HPWS on branding-oriented GHRM ($\beta = 0.45$, $p < 0.001$) was significant, as was the estimate of HPWS on performance-oriented GHRM ($\beta = 0.48$, $p < 0.001$). Therefore, hypothesis 1a and hypothesis 1b were both supported.

Hypothesis 2 specifies the moderating effect of a proactive green strategy on the relationship between HPWS and the relative emphasis on

[3] We would like to thank one of our anonymous reviewers for pointing this out.

Table 4
Descriptive Statistics and Correlations.

	Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Sector[a]	0.23	0.42	–															
2	Sector[b]	0.13	0.34	−0.21*	–														
3	Sector[c]	0.07	0.25	−0.15	−0.1	–													
4	Sector[d]	0.03	0.17	−0.09	−0.07	−0.05	–												
5	Sector[e]	0.09	0.28	−0.17	−0.12	−0.08	−0.05	–											
6	Region	0.69	0.47	−0.12	0.02	0.02	0.12	−0.01	–										
7	Plant ownership	0.25	0.43	0.16	−0.03	−0.15	−0.10	−0.18	−0.13	–									
8	Job tenure	10.28	7.75	0.04	−0.10	−0.01	−0.18	−0.02	0.03	0.09	–								
9	Plant size	117.01	167.34	0.05	0.02	0.43***	0.13	0.12	−0.11	−0.1	−0.1	–							
10	Plant age	27.89	25.58	0.13	−0.05	0.25*	0.28**	0.11	−0.06	−0.13	−0.04	0.29**	–						
11	Green strategy	5.91	1.17	0.16	−0.14	0.05	0	0.05	0.04	0.08	0.02	−0.01	0.06	–					
12	HPWS	53.99	21.02	0.20*	−0.01	0.19	0.14	−0.07	0.04	0	−0.30**	0.19	0.17	0.27**	–				
13	Prior emission	2.32	1.19	−0.12	0.01	−0.09	−0.05	−0.24*	0.13	0.06	−0.04	0	−0.04	−0.11	0.06	–			
14	Industry emission	2.34	0.40	−0.82***	0.22*	−0.08	−0.08	−0.31**	0.08	−0.02	0.04	−0.27**	−0.31**	−0.19*	−0.25**	0.25*	–		
15	Branding-oriented GHRM	74.68	26.47	0.10	−0.06	0.2	0.15	0.11	0.11	0.06	−0.03	−0.03	0.18	0.52***	0.49***	0.02	−0.24*	–	
16	Performance-oriented GHRM	31.87	28.05	0.13	−0.09	0.04	0.1	0.06	−0.07	−0.17	−0.1	0.08	0.13	0.43***	0.49***	−0.13	−0.18	0.57***	–

Note. N = 105 using the sample of Spanish plants. Sector[a] = Mineral sector; Sector[b] = Energy sector; Sector[c] = Chemical sector; Sector[d] = Paper and wood production and processing sector; Sector[e] = Production and processing of metals sector. * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Table 5
Results on the Relationships between HPWS and GHRMs.

Variable	Model 1		Model 2	
	Branding-oriented GHRM Coef. (s.e.)	Performance-oriented GHRM Coef. (s.e.)	Branding-oriented GHRM Coef. (s.e.)	Performance-oriented GHRM Coef. (s.e.)
Intercept	0.55 (27.63)	−0.70 (23.84)	−0.08 (22.60)	−1.42* (19.12)
Sector[a]	0.23* (6.70)	0.07 (9.30)	0.09 (5.88)	−0.06 (7.59)
Sector[b]	0.16 (7.75)	−0.03 (6.30)	0.09 (7.65)	−0.07(6.20)
Sector[c]	0.31** (10.09)	−0.04 (12.31)	0.15 (10.17)	−0.19† (11.09)
Sector[d]	0.16* (13.30)	0.05 (12.16)	0.09 (12.52)	−0.02 (11.60)
Sector[e]	0.26* (9.70)	−0.001 (12.49)	0.25* (10.97)	0.003 (11.76)
Region	0.01 (6.54)	−0.13 (6.23)	−0.01 (6.30)	−0.15† (5.43)
Plant ownership	0.05 (6.29)	−0.25** (6.22)	−0.001 (5.85)	−0.25** (5.33)
Job tenure	−0.05 (0.34)	−0.07(0.43)	0.07 (0.38)	0.05 (0.43)
Plant size	−0.17 (3.26)	0.07 (3.08)	−0.15 (3.16)	0.08 (2.68)
Plant age	0.02 (2.56)	−0.01 (3.28)	0.02 (2.39)	0.03 (2.66)
Prior emission	0.19 (2.51)	−0.04 (2.16)	0.13 (2.16)	−0.09 (2.02)
Proactive green strategy	0.41** (3.51)	0.40*** (2.38)	0.33*** (2.85)	0.30*** (2.03)
HPWS			0.45*** (0.16)	0.48*** (0.11)

Note. N = 105 using the sample of Spanish plants. Coef. = standardized coefficients. s.e. = standard error. Sector[a] = Mineral sector; Sector[b] = Energy sector; Sector[c] = Chemical sector; Sector[d] = Paper and wood production and processing sector; Sector[e] = Production and processing of metals sector. † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

performance-oriented vis-à-vis branding-oriented GHRM adoption. Specifically, we hypothesized that a stronger proactive green strategy would induce plants to draw upon their HPWS experience to place a greater emphasis on performance-oriented GHRM. We first added controls, the proactive green strategy, and HPWS in Model 3 and then added the interaction term between HPWS and a proactive green strategy in Model 4. According to results in Table 6, this interaction term was significant and negative (β = -0.39, $p < 0.001$). In our final model (Model 7) which included all variables in the hypotheses, the interaction term between HPWS and a proactive green strategy was also significant (β = -0.31, $p < 0.01$). Thus, hypothesis 2 was supported.

The moderating effect of proactive green strategy is further illustrated in Fig. 2 using simple slopes. Specifically, it shows that when a plant has a stronger proactive green strategy emphasis (i.e., 1 SD +), one unit increase of HPWS utilization is associated with 0.39 unit greater use of performance-oriented GHRM relative to branding-oriented GHRM. However, when an emphasis on a proactive green strategy is weaker (i.e., 1SD −), one unit increase of HPWS utilization is associated with 0.33 unit greater emphasis on branding-oriented GHRM practices. Transforming to a practical interpretation, it means that in comparison to plants with a weak proactive green strategy, plants with a strong proactive green strategy would use 18 % more performance-oriented GHRM practices relative to branding-oriented GHRM practices in association with one unit increase of HPWS utilization.

Hypothesis 3 predicts a moderating effect of industry emissions on the relationship between HPWS and relative emphasis on the two sets of GHRM practices. To test this hypothesis, the industry emissions construct was first added in Model 5 and then its interaction was added

Table 6
Moderating Effect of Proactive Green Strategy and Industry Emission on the Relationships Between HPWS and Two GHRM Adoption Difference.

Variable	Model 3 Coef. (s.e.)	Model 4 Coef. (s.e.)	Model 5 Coef. (s.e.)	Model 6 Coef. (s.e.)	Model 7 Coef. (s.e.)
Intercept	1.51 (24.74)	2.16** (9.53)	1.85 (28.38)	2.09* (24.81)	2.30* (24.60)
Sector[a]	0.23† (9.22)	0.19 (9.53)	–	–	–
Sector[b]	0.25* (8.62)	0.28** (8.38)	–	–	–
Sector[c]	0.39* (14.87)	0.37** (12.91)	–	–	–
Sector[d]	0.13† (13.64)	0.16* (14.10)	–	–	–
Sector[e]	0.31* (12.39)	0.24† (13.00)	–	–	–
Region	0.17 (6.98)	0.14 (6.32)	0.21† (6.73)	0.19† (5.97)	0.18† (5.55)
Plant ownership	0.31* (7.86)	0.34** (6.61)	0.20 (8.02)	0.26* (6.62)	0.28** (5.92)
Job tenure	−0.07 (0.49)	−0.11 (0.48)	−0.05 (0.52)	−0.11 (0.44)	−0.13 (0.44)
Plant size	−0.30* (3.11)	−0.17 (3.30)	−0.21 (3.16)	−0.11 (3.07)	−0.03 (3.14)
Plant age	0.04 (3.79)	0.00 (3.38)	0.13 (3.66)	0.08 (3.34)	0.08 (3.21)
Prior emission	0.26* (2.74)	0.26** (2.24)	0.17 (2.58)	0.21† (2.37)	0.20* (2.07)
Proactive green strategy	0.02 (3.25)	−0.13 (2.31)	0.01 (3.01)	−0.06 (2.94)	−0.16 (2.26)
HPWS	−0.16 (0.19)	−0.15 (0.15)	−0.09 (0.19)	−0.04 (0.16)	−0.03 (0.13)
HPWS × Proactive green strategy		−0.39*** (0.10)			−0.31** (0.11)
Industry emission			−0.20 (5.60)	−0.23† (5.25)	−0.17 (5.70)
HPWS × Industry emission				0.39** (0.23)	0.29* (0.21)

Note. N = 105 using the sample of Spanish plants. Coef. = standardized coefficients. s.e. = standard error. Sector[a] = Mineral sector; Sector[b] = Energy sector; Sector[c] = Chemical sector; Sector[d] = Paper and wood production and processing sector; Sector[e] = Production and processing of metals sector. † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

in Model 6 and Model 7. Not surprisingly, the dummy industry sector variable was highly correlated with industry emissions ($r = 0.78$, $p < 0.001$). To avoid multicollinearity, we excluded "sector" from Models 5 to 7. Based on the results in Table 6, this interaction ($\beta = 0.39$, $p < 0.01$ in Model 6, $\beta = 0.29$, $p < 0.05$ in Model 7) was significant and positive. Thus, hypothesis 3 is supported. The significant interactive effect is shown in Fig. 3. Specifically, when a plant's industry emission is high (i.e., 1 SD +), one unit increase of HPWS leads to 0.09 unit stronger emphasis on branding-oriented GHRM as opposed to performance-oriented GHRM; whereas when emissions are low (i.e., 1 SD −), one unit increase of HPWS is associated with 0.15 unit more emphasis on performance-oriented GHRM. In practical terms, it suggests that in comparison to plants with low industry emissions, plants with high industry emissions would use 40 % more branding-oriented GHRM practices relative to performance-oriented GHRM practices in association with one unit increase of HPWS utilization.

7. Supplemental analysis

To further illustrate the relative adoption of two types of GHRM practices, we conducted supplemental analyses. Specifically, we posited that performance-oriented GHRM focusing on green incentives and rewards may be associated with the performance of emission reduction, whereas branding-oriented GHRM may not have such a performance effect. To test such arguments, the same emission calculation as in our main analyses was conducted by using plants' three-year emission records (2017, 2018, and 2019) in the E-PRTR database. The two sets of GHRM practices (performance and branding GHRM practices) as well as other controls were included to predict plant emissions. Due to missing values in our variables, the sample size was reduced to 70 plants for this analysis. Our path analysis results suggested a negative effect for performance-oriented GHRM on plants' emissions ($\beta = -0.39$, $p < 0.01$), while branding-oriented GHRM had no such effect ($\beta = 0.19$, $p = 0.14$). These results provide additional support for our argument that the two types of GHRM practices are adopted with different intended purposes.

8. Discussion

This paper aims to address why and how organizations adopt GHRM practices. First, our study found that in the Spanish context, GHRM is comprised of two dimensions: performance-oriented GHRM practices and branding-oriented GHRM practices. Specifically, *branding-oriented GHRM practices* (i.e., practices related to recruitment, training, and involvement and communication) reflect organizations' purpose to promote green branding both internally and externally. In contrast, *performance-oriented GHRM practices* that involve performance management and rewards are designed to encourage employee green behaviors. We further found that the use of HPWS is positively associated with both types of GHRM adoption, but the difference in a plant's emphasizing one or the other is shaped by its internal green strategy and the external factor of industry emissions.

While there is an inherent theoretical connection between GHRM

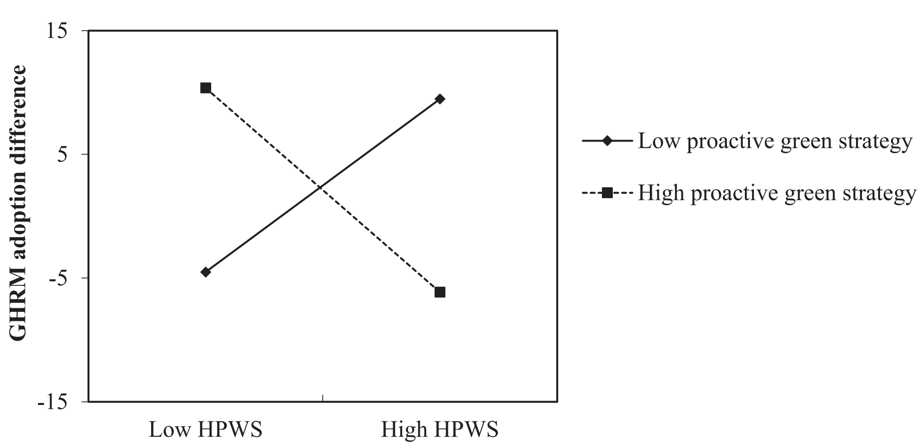

Fig. 2. Interactive Effect of HPWS and Proactive Green Strategy on Adoption Difference of Two Types of GHRM.

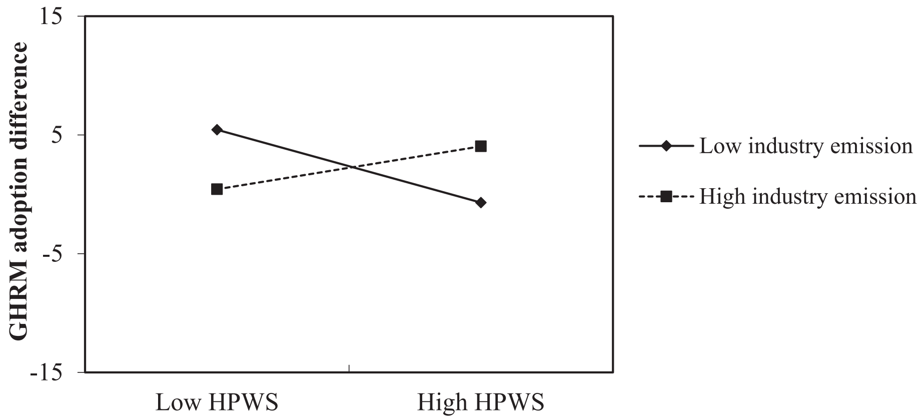

Fig. 3. Interactive Effect of HPWS and Industry Emission on Adoption Difference of Two Types of GHRM.

and strategic HRM (e.g., HPWS), such a connection has not been well examined in previous research. In fact, the majority of GHRM research emphasizes on distinguishing GHRM from HPWS (e.g., Ogbeibu et al., 2023; Ren et al., 2022; 2023). Guided by path dependence theory, we provide a sound theoretical framework to extend the understanding of the connection between GHRM adoption and HPWS. More specifically, by highlighting organizations' prior HR experience in facilitating GHRM adoption, our study responds to recent calls to delve more deeply into examining GHRM antecedents (Pham et al., 2020; Ren et al., 2018).

Moreover, our study sheds light on the underlying mechanisms about why organizations emphasize one type of GHRM adoption over another. We found that plants with higher levels of environmental proactivity tend to apply their HPWS expertise to build more performance-oriented GHRM practices relative to branding-oriented GHRM practices. It suggests that plants that make environmental issues a core part of their strategy focus on GHRM practices that enhance environmental performance (Aftab et al., 2023). Tailoring performance criteria and financial incentives to reward employee green behaviors requires financial support and buy-in from top management, which is shaped by organizational green strategy goals.

However, organizations may be motivated to adopt GHRM practices to simply impress internal and external stakeholders. Our findings that plants with high industry emissions tend to adopt more branding-oriented GHRM practices suggest that plants regard these practices as a means to improve their image in the eyes of their employees and other stakeholders. Employees may feel uncomfortable or demotivated if they work for a highly polluting employer. Using branding-oriented GHRM practices can make organizations appear responsible and legitimate (Singh et al., 2022; Vázquez-Brust et al., 2022). The findings from these contingencies illustrate organizations' distinct motivations in emphasizing different types of GHRM adoption.

Our study further advances the GHRM research by investigating GHRM adoption in the context of Spain, which extends implications to a more general context of developed countries. As the current GHRM research is predominated by data from developing countries (e.g., Aftab et al., 2023; Luu, 2023; Tang et al., 2018), our findings suggest that national context may matter. More specifically, our unique findings of a two-dimension GHRM construct suggest that organizations in developed countries may have different motives for adopting GHRM. Furthermore, the significant effects from contingency conditions such as firm green strategy and industry emissions reflect that organizations' efforts in balancing green performance management and impression management in developed countries. Such a balanced measure sheds light on national context as a factor that shapes a firm's approach to GHRM adoption.

8.1. Practical implications

Our paper suggests important practical implications for managers and business leaders. Managers worldwide are increasingly impacted by social pressures to consider environmental issues in their decision-making (Ogbeibu et al., 2021a; Ogbeibu et al., 2021b; Ren et al., 2022; York, 2009). However, these issues could have different focuses in varied contexts. Different from managers in developing countries where environmental theme is more of an emerging topic, for those in developed country setting, managers may have a more urgent need to integrate an environmental focus into their business operations. This, in turn, may require them to balance between economic performance and environmental performance (e.g., Hahn et al., 2010). The two-dimension GHRM revealed in our study suggests managerial responses to these tensions in the Spanish context.

The relative emphasis on two different GHRM approaches in Spain further suggests different practices that managers can take to achieve distinct firm green goals in different contexts. Organizations that approach environmental issues as an important cornerstone of their strategy (York, 2009) will pursue the approach in emphasis on adopting performance-oriented GHRM practices (e.g., Aragon-Correa, 1998). However, organizations with a belief that a stronger consideration of environmental issues will impose additional costs at the expense of financial performance may not pursue such an approach. In this regard, managers lean towards emphasizing branding-oriented GHRM practices. Especially in the sectors with high levels of pollution, organizations rely more heavily on employer branding-oriented GHRM practices to build a "green brand" and gain legitimacy as being environmentally friendly in response to stakeholder pressures. While our findings may also be applicable to organizations in developing countries, these two GHRM approaches are likely more common in developed countries where policies and regulations towards environment management are established and detailed.

8.2. Limitations and future directions

While our research enhances our understanding of the GHRM internal structure and the antecedents of GHRM adoption, it is important to note the limitations inherent to our study. First, we conducted our study in Spain without validating our results in other national contexts. It would be better if other national samples (e.g., other EU countries) could be collected and compared. It would also be interesting to see if the antecedents and contingencies that we identified in this research would be held in other national settings. This seems particularly important given that prior work has identified a different GHRM construct structure in developing countries (e.g., Tang et al., 2018). Future research should continue to investigate whether our two-dimensional GHRM structure is consistent across different contexts. Moreover, some of our controls were not found to have a significant relationship with the outcomes. It might be related to the Spanish context wherein we conducted the current survey. Discussing the confounding effects of control variables is beyond the scope of this research, but we encourage future researchers to do more investigation in this regard in different contexts.

Second, it is important to note that our study data was collected at the plant level. It would be informative to examine how firm-level green strategy translates into plant-level GHRM and how firm-level GHRM policies and practices affect plant-level GHRM adoption. Third, the sample in our research is relatively small and relies mainly upon a single source–the plant manager. There have been discussions on the validity of using single sources for obtaining information on HR practices (Gerhart et al., 2000). With this caution, we were able to obtain a second response from 25 plants to cross-validate our measures. Despite this empirical reassurance, it would be ideal to have multiple respondents in future research.

Fourth, future research should continue to investigate other antecedents and contingencies. While we focus on a proactive green strategy and industry emissions as contingencies in the HPWS-GHRM relationship, other internal and external factors may also play significant roles (cf. Ren et al., 2018). For example, Sharma (2000) discussed how managers' perceptions of the legitimacy of environmental issues might influence their interpretation of environmental issues as opportunities or threats. Bansal and Roth (2000) also proposed that managers' personal ecological values can shape their understanding of environmental issues and following decisions and actions. We did not directly examine the influence of top managers on GHRM adoption, but consistent with path dependence theory, this might be a fertile research domain (cf. Obeidat et al., 2018).

9. Conclusion

This paper seeks to understand the antecedents driving organizations to incorporate GHRM. Conducting two studies in Spain, we first found two distinct dimensions of GHRM with one centered on employer branding and another centered on green performance. Second, informed by path dependence theory, we found a positive association between HPWS and GHRM adoption. Further, proactive green strategy and industry emissions are found to shape the emphasis on the adoption of two types of GHRM practices.

10. Declarations

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Color printing: We do not need color to be used for any figures in print.

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CRediT authorship contribution statement

Mengwei Li: Writing – original draft, Software, Project administration, Methodology, Formal analysis, Data curation, Conceptualization. **Javier Martínez-del-Río:** Writing – review & editing, Supervision, Resources, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization. **Pingshu Li:** Writing – review & editing, Supervision, Software, Methodology, Conceptualization. **James P. Guthrie:** Writing – review & editing, Supervision, Resources, Investigation, Funding acquisition, Conceptualization.

Data availability

Data will be made available on request.

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