

NOMINAL GROUP TECHNIQUE: THE ROLE OF HUMAN RESOURCE MANAGEMENT IN DRIVING GREEN INNOVATION IN SICHUAN PROVINCE UNIVERSITIES, CHINA

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Abstract: Green innovation in Human Resource Management (HRM) in universities refers to the integration of sustainable practices in recruitment, training, and employee engagement to foster environmental responsibility and enhance organizational performance. Gaps in implementing green innovation in HRM in universities in Sichuan Province include a lack of awareness, insufficient training, and limited resources to adopt sustainable HR practices. The solution lies in providing comprehensive sustainability training, promoting awareness through workshops, and securing funding for green initiatives to support HRM practices. The main aim of this study is to evaluate the role of Human Resource Management (HRM) in driving green innovation initiatives in universities in Sichuan province, China based on expert views. This research employs the Nominal Group Technique (NGT) as a data collection method, with nine (9) experts participating as respondents. During a 3-hour NGT discussion session, a list of 16 human resource roles was finalized. These roles were then prioritized and ranked according to the individual votes of the experts. The second role in the discussion received the highest priority, while the 13th role ranked eighth, and the final role, the 16th, received the lowest priority. The study's findings indicate that the priority and ranking of the roles shifted from the initial list provided prior to the discussion session. These priorities and rankings offer insights into the role of human resources in driving green innovation at universities in Sichuan Province, China. The roles identified through expert opinions can serve as a guideline for implementing green innovation to further enhance human resource services at the university level.

Keywords: Green innovation; Human resource management (HRM); Sustainable practices; Environmental responsibility; Nominal group technique (NGT)

1 INTRODUCTION

Green innovation in universities, when driven by Human Resource Management (HRM), involves developing and supporting practices that prioritize environmental sustainability and promote eco-friendly initiatives throughout the institution[1]. This effort is integral to preparing students, faculty, and staff to respond to global environmental challenges and contribute meaningfully to a more sustainable future [2].

1.1 Role of HRM

HRM in universities plays a pivotal role in instilling a sustainability-oriented culture by embedding environmental awareness into institutional values and everyday practices[3]. This is accomplished through workshops, awareness campaigns, and training programs tailored for faculty, staff, and students[4]. HRM ensures that sustainable behavior is normalized across all university operations, from teaching methods to administrative tasks, creating an institution-wide ethos that prioritizes environmental consciousness[5]. By promoting a culture that values green initiatives, HRM helps transform universities into hubs of sustainable thought and practice[6].

The role of HRM extends to the recruitment of staff and faculty members with expertise and commitment to environmental sustainability[7]. In order to drive green innovation, HRM departments focus on attracting individuals whose skills, experience, and research areas align with sustainable development and green technologies [8]. By assembling a diverse and skilled team, HRM ensures the university has the human capital needed to lead and support green projects, whether it be in research, teaching, or operational roles

HRM invests in developing the green skills of existing faculty and staff through continuous professional development programs [9]. These initiatives may involve providing access to training on sustainable practices, such as green research methodologies, eco-friendly technologies, and environmentally conscious teaching strategies. By enhancing employees' knowledge and skills in sustainability, HRM empowers them to incorporate green practices into their work, thereby strengthening the university's contribution to environmental goals[10].

To support and incentivize green behaviors, HRM develops and implements Green HRM policies that reflect sustainability goals[11]. For example, performance management systems may include metrics that reward contributions to environmental initiatives, while other policies might promote practices such as eco-friendly commuting options, waste reduction, and energy-saving office behaviors. By aligning incentives with green objectives, HRM encourages staff to adopt environmentally friendly habits[12].

Green innovation often thrives through collaboration across multiple disciplines and sectors. HRM in universities plays a key role in facilitating collaborative initiatives by forming partnerships with environmental organizations, industry, and governmental agencies [13]. HRM also supports interdisciplinary projects among faculty and researchers, fostering a collective approach to sustainability that extends beyond academic boundaries [14]. This collaborative approach not only accelerates innovation but also broadens the university's impact on society's environmental efforts.

HRM ensures that a university's green initiatives align with broader regional, national, and international sustainability goals. This alignment is particularly relevant in regions such as Guangdong Province in China, where regional green development is a priority [15]. By working in tandem with external sustainability policies, HRM strengthens the university's commitment to combating global environmental challenges and enhances its role as a leader in green innovation [16].

A crucial part of HRM's role in green innovation involves supporting green research and development initiatives. HRM facilitates research endeavors by providing resources, creating funding opportunities, and offering incentives for faculty and researchers engaged in sustainability-related projects. This support not only drives advancements in green technologies and practices but also positions universities as leaders in environmental innovation.

Universities serve as examples of sustainable living through their campus operations [15]. HRM leads efforts to implement green operational practices such as energy-efficient infrastructure, waste reduction initiatives, and eco-friendly purchasing policies [17]. By creating a campus environment that prioritizes sustainability, HRM encourages students, staff, and the broader community to adopt greener lifestyles.

By driving these initiatives, HRM transforms universities into centers of green innovation and environmental stewardship. The impact extends beyond institutional boundaries, inspiring society to embrace sustainable development and reinforcing universities' role as leaders in the fight against climate change and environmental degradation.

1.2 Essential as Research

This study is essential because it addresses a critical gap in understanding how green innovation can be effectively integrated into Human Resource Management (HRM) practices within the unique context of universities in Sichuan Province, China. While previous research has explored sustainability initiatives in higher education and the role of HRM in promoting green practices, there remains a lack of focused studies examining the intersection of these fields, particularly in regions like Sichuan, where universities face distinct cultural, economic, and policy-related challenges. This void in the literature limits our ability to develop tailored strategies for fostering green innovation in such contexts. By leveraging the Nominal Group Technique (NGT) to identify the roles HRM can play in advancing sustainability, this study contributes novel insights that are both practical and region-specific. It moves beyond general discussions of green HRM by providing actionable strategies designed to align with the goals and constraints of universities in Sichuan. Furthermore, the study highlights the barriers to implementation, such as resource limitations, institutional resistance, and lack of awareness, which are often overlooked in broader analyses.

This research is particularly timely as universities in China face increasing pressure to align with national sustainability goals. By addressing this pressing need, the study offers a roadmap for integrating green HRM practices into university operations, benefiting not only institutional performance but also regional and national sustainability efforts. It fills a critical void in the literature by combining empirical findings with actionable recommendations, paving the way for further research and practical advancements in green HRM within higher education.

Focusing on Sichuan Province for this study is significant due to the region's unique blend of challenges and opportunities for green innovation. As one of China's largest and most populous provinces, Sichuan serves as a critical hub for education, economic development, and environmental conservation. The province's diverse ecosystem, which includes areas of significant ecological importance like the Sichuan Basin and the Tibetan Plateau, underscores the need for robust sustainability efforts to address environmental degradation, resource management, and climate adaptation. Universities in this region play a pivotal role as they are positioned to lead innovation and influence broader societal practices through education, research, and collaboration.

However, Sichuan faces distinct challenges that make the implementation of green HRM practices particularly complex. Many universities in the region are constrained by limited financial resources and must prioritize traditional academic objectives, such as research output and teaching quality, over sustainability initiatives. These constraints are compounded by a lack of awareness and expertise in green HRM practices among HR professionals and faculty, which inhibits the development and implementation of sustainability-focused recruitment, training, and performance management systems.

Moreover, Sichuan's relatively slower economic development compared to China's eastern coastal regions presents both challenges and opportunities. On the one hand, limited financial and technological resources can hinder the adoption of green innovations. On the other hand, the emphasis on green development in China's national policies, coupled with the province's growing recognition of its ecological significance, provides a unique opportunity for Sichuan universities to align their strategic goals with sustainability efforts and become regional leaders in green innovation.

Sichuan's position as an educational and environmental nexus further amplifies the potential impact of this study. By addressing the barriers to green HRM practices in the region's universities, this research not only supports institutional sustainability but also contributes to regional and national environmental goals. The insights gained from Sichuan's context can also offer valuable lessons for other provinces with similar challenges, making this study both locally significant and broadly applicable.

2 PROBLEM STATEMENT

The integration of green innovation into Human Resource Management (HRM) in Sichuan Province universities faces significant obstacles [15]. Many universities continue to prioritize traditional academic objectives, such as research excellence and teaching quality, over environmental sustainability[14]. Although national policies increasingly emphasize green development, these objectives have yet to become a core component of many universities' strategic plans[18]. Without institutional commitment, HRM departments lack the necessary support to effectively promote and implement green initiatives[19].

One prominent challenge is the limited awareness and understanding of Green HRM practices among faculty and HR professionals[14]. Many universities remain unfamiliar with the concept and its potential to enhance sustainability [20]. This knowledge gap inhibits the integration of green objectives into key HRM functions, such as recruitment, training, and performance management. Additionally, HRM departments often lack resources and expertise to develop green skills among faculty and staff, essential for advancing sustainability-focused teaching and research[21].

The alignment of HRM systems with green objectives also poses a challenge. Recruitment processes often fail to prioritize hiring individuals with expertise in sustainability, and performance management systems rarely recognize contributions to environmental goals[22]. Without green performance metrics and incentives, staff motivation to participate in environmental initiatives remains low [23]. Furthermore, resistance to change rooted in traditional academic priorities and institutional culture presents a significant barrier[24].

Financial constraints further exacerbate these issues. Many universities lack funding for green technologies, environmental programs, and sustainable infrastructure[25]. Given the competitive nature of university funding in China, green innovation often struggles to gain financial prioritization[25]. Provincial policies may also fail to provide the necessary support and incentives for universities to align with national sustainability goals[26].

Collaboration with external partners, a key driver of green innovation, remains underdeveloped in Sichuan universities. Limited partnerships with industries, government, and environmental organizations restrict the potential for interdisciplinary sustainability projects[27]. Additionally, the lack of robust metrics to assess the effectiveness of green HRM practices complicates efforts to demonstrate their value and impact[28].

Recent data highlights these challenges. For example, only 37% of Sichuan universities have integrated formal green policies into their HRM practices, and fewer than 25% offer training or professional development programs targeting green skills[29]. Cross-departmental collaboration, rated as "low to moderate" by 68% of respondents, and the lack of incentives cited by over 70% of faculty, further underscore systemic barriers to green innovation[30].

Addressing the barriers to green Human Resource Management (HRM) in Sichuan universities can deliver substantial benefits to both the institutions themselves and regional sustainability goals. By integrating green HRM practices, such as sustainability-focused recruitment, training, and performance incentives, universities can enhance their reputation as innovative institutions. These changes can attract funding, partnerships, and talent while fostering a culture of environmental responsibility.

Beyond institutional benefits, these initiatives directly contribute to Sichuan's regional sustainability goals by equipping faculty, staff, and graduates with the skills necessary to address pressing environmental challenges. Universities can act as hubs of green innovation, driving research and developing solutions in areas like renewable energy and waste management. Their efforts align with the national push for a green economy, supporting the region's competitiveness while addressing local environmental concerns.

Moreover, universities play a critical role in fostering community engagement and cross-sector collaboration. Green HRM practices encourage partnerships with local governments, industries, and environmental organizations, amplifying the impact of sustainability projects. By inspiring a cultural shift towards green practices within their communities, universities can create a ripple effect, promoting sustainability across sectors.

Ultimately, addressing these barriers positions universities as key contributors to global sustainability efforts. They can serve as models for environmentally conscious education, shaping a generation of leaders who prioritize sustainability. These efforts not only enhance institutional performance but also drive long-term regional and societal benefits, aligning education with the urgent need for environmental stewardship.

2.1 Objectives

The main aim of this study is to evaluate the role of Human Resource Management (HRM) in driving green innovation initiatives in universities in Sichuan province, China based on expert views. Identifying the role of Human Resource Management (HRM) in driving green innovation in universities in Sichuan Province, China based on experts.

3 METHODOLOGY

The Nominal Group Technique (NGT) is a structured method used for group brainstorming and decision-making[31]. It ensures that everyone's ideas are heard and considered, minimizing the influence of dominant group members [32].

The Nominal Group Technique (NGT), introduced by Delbecq and Van de Ven in 1971, is a structured approach for small group discussions designed to achieve consensus [33]. Delbecq and Van de Ven emphasize that NGT facilitates reaching agreements through a systematic process. Similarly, Aizzat Mohd. Nasurdin, Intan Osman, and Zainal Ariffin Ahmad describe NGT as a decision-making tool involving face-to-face small group interactions.

According to Pokorny et al., NGT is especially effective for studies needing consensus and evaluation, as it often results in a high level of agreement[34]. Dang highlights that NGT is used to brainstorm and generate ideas on specific topics, providing an opportunity for participants to engage and share insights based on their experiences and knowledge, irrespective of their education level or rank, in structured, focused group discussions[35].

The Nominal Group Technique (NGT) process involves conducting focus group discussions [36]. NGT is a structured group brainstorming method that encourages inclusive participation and ensures all participants' contributions are valued[37]. The NGT process generally unfolds as follows:

1. Idea Generation: Participants independently and silently write down their ideas.
2. Idea Sharing: In a round-robin format, participants share their ideas without discussion or critique, and the facilitator records each idea.
3. Discussion: After all ideas are presented, the group discusses them for clarification and to evaluate their significance.
4. Ranking or Voting: Participants individually rank or vote on the ideas to prioritize them, with the collective results determining the group's overall priorities.

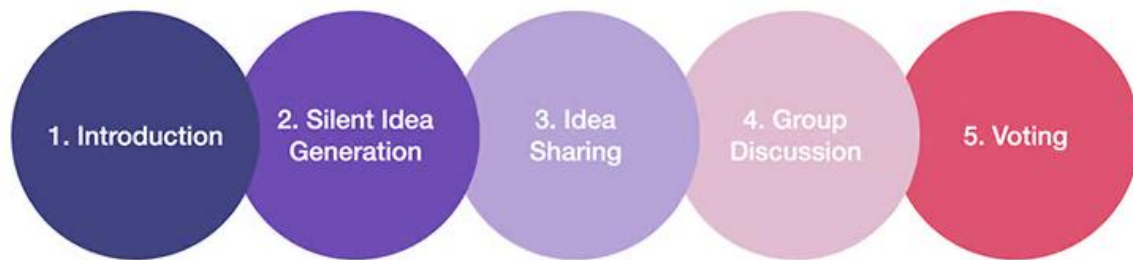


Figure 1 NGT Process

This technique is designed to prevent any one individual from dominating the discussion and encourages creative, diverse contributions from all participants[38]. This process begins with researchers presenting a list of roles that aim to drive green innovation in the human resources aspect of the university. This list, based on a combination of models and expert input, serves as a reference point during the workshop, while experts are invited to provide feedback on the proposed roles.

At the conclusion of the NGT process, only activities that achieve a high level of consensus are included in the final model. The NGT implementation is divided into several stages:

1. The moderator introduces the study objectives.
2. Experts generate their ideas.
3. Experts share their ideas.
4. Experts engage in discussions about the items, themes, and elements of the issue.
5. Experts vote on the proposed activities.

While the Nominal Group Technique (NGT) is a valuable tool for generating ideas and building consensus, it has certain limitations that should be acknowledged. One key limitation is the reliance on a small group of experts, which, while ensuring focused and in-depth discussions, may not fully represent the perspectives of all relevant stakeholders. This can lead to a narrow scope of insights, particularly if the group lacks diversity in terms of expertise, roles, or backgrounds. Additionally, the structured nature of NGT, while facilitating organization, might limit spontaneity and the exploration of ideas beyond the predefined session objectives.

Another limitation is the potential for dominant voices within the group to influence the outcomes, even in a controlled environment, which could result in less emphasis on alternative viewpoints. Time constraints during sessions may also limit the depth of discussion on complex issues, and the technique's reliance on face-to-face or synchronous interactions can make it challenging to include geographically dispersed participants. Lastly, the findings of NGT sessions are context-specific and may not be easily generalizable to broader populations or different institutional settings without further validation. Addressing these limitations in future research, such as incorporating broader stakeholder input or triangulating results with other methods, could enhance the robustness of the findings.

3.1 Sample

The appropriate number of participants for the Nominal Group Technique (NGT) can vary depending on the specific context and objectives of the session, but it is generally recommended to have between 5 to 15 participants [39]. For this study, the sample size for data collection using NGT consisted of 5 to 9 participants, aligning with the guidelines of Van de Ven and Delbecq (1971). Janes (2009) further suggests that an expert group should ideally include 6 to 10 members, as larger groups may reduce the quality of discussion[40]. Therefore, this study engaged 9 experts, which falls within the recommended range.

The selection of nine participants is justified based on established guidelines and the study's specific goals. As outlined by Van de Ven and Delbecq (1971) and Janes (2009), NGT sessions typically work best with 6 to 10 members. Larger groups may hinder effective interaction and lead to some opinions being overlooked. By choosing nine experts, this study ensured a balanced and focused discussion, while maintaining diversity of perspectives. This sample size fosters a

robust, meaningful exchange of ideas, enhancing the validity of the findings by enabling in-depth contributions from all participants. It ensures a comprehensive examination of the roles and strategies for driving green innovation in HRM at Sichuan universities.

The criteria for selecting suitable experts were based on several factors[41]:

1. An individual is considered skilled in their field if they have more than five years of experience [42].

Experts should form a heterogeneous group with diverse areas of expertise[43].

2. An individual is recognized as an expert when they possess high levels of knowledge and skills in a particular domain [44].

3. Experts must be willing to offer their perspectives based on their research experience[45].

4. Experts should be prepared to revise study findings as needed[46].

5. Experts must not dominate discussions and should be open to appreciating and considering the viewpoints of others.

The group of experts selected consists of two experts in the field of innovation and seven experts from the field of human resources where each expert has more than ten years of experience.

3.2 Instruments

The instrument used for the NGT process was a preliminary list developed based on prior research. This initial list underwent two rounds of face validity before it was finalized for discussion during the NGT session. At the conclusion of the NGT session, a questionnaire was created, incorporating the activity elements agreed upon during the session. This questionnaire utilized a 5-point Likert scale to collect individual feedback from each expert on each agreed-upon activity element.

4 FINDINGS

Validity tests were conducted to evaluate the elements gathered from previous research surveys. This verification process was carried out in two stages. Only face validity was tested, where the listed elements were presented to experts for assessment to determine their suitability as indicators for the role of human resources at the university level in Sichuan Province, China. During the first round, the researcher compiled a list of 25 roles, referred to as the alpha 1 list, and submitted it to two experts specializing in innovation and human resources for evaluation. Feedback from Expert 1 indicated that the alpha 1 list was overly extensive and contained repetitive items, suggesting a need to reduce the number of roles. Expert 2 echoed this feedback, noting that some elements were similar in nature. Based on this input, the researcher revised the list to create the alpha 2 list, reducing the number of roles from 25 to 16.

The revised alpha 2 list was then resubmitted to the same two experts for further evaluation. Following their feedback, the alpha 2 list was accepted, with minor corrections made to the wording of four roles. Once these corrections were completed, the alpha 2 list was designated as the initial list and used for discussion with nine selected experts during the NGT session.

The application of the modified Nominal Group Technique (NGT) highlights roles that can guide the advancement of green innovation among human resources at a university in Sichuan Province, China. At the conclusion of the NGT session, experts reviewed and reached a consensus on the final list of roles. Table 1 displays the ranking and prioritization of these roles based on individual expert votes. During the final phase of the NGT, the voting process ensured that all proposed learning activities were preserved, as experts had finalized their decisions. The aim was to rank each learning activity according to the experts' individual preferences, using a scale from 1 to 5.

The discussion session lasted three hours, beginning with the researcher explaining the study's purpose and objectives. Following this, a preliminary list containing 16 roles was distributed to the participating experts. The initial list of elements is presented as follows:

1. Incorporate green HRM practices in every assignment
2. Promoting a culture of sustainability in HRM
3. Offer professional development opportunities for green skills.
4. Create awareness and provide training on environmental issues.
5. Coordinate human resource policy with regional and national sustainability goals
6. Promote sustainable behavior among staff and students.
7. Recruit staff with expertise and commitment to green practices.
8. Implement green work design and green performance management.
9. Increasing green research and development (R&D)
10. Promote cross-departmental and inter-university collaboration on sustainability.
11. Support collaborative innovation
12. Facilitate partnerships with industry, government and non-profits.
13. Align incentives and career opportunities with green innovation efforts.
14. Ensure university initiatives are aligned with regional and national green development strategies.
15. Provide rewards and incentives for green projects and initiatives.
16. Prioritize funding and support for green R&D projects.

Table 1 Element Priority and Position

NO.	ITEMS	TOTAL	PRIORITY	POSITION
1.	Incorporate green HRM practices in every assignment	42	4	6
2.	Promoting a culture of sustainability in HRM	45	1	1
3.	Offer professional development opportunities for green skills.	43	3	5
4.	Create awareness and provide training on environmental issues.	45	1	2
5.	Coordinate human resource policy with regional and national sustainability goals	40	6	12
6.	Promote sustainable behavior among staff and students.	44	2	3
7.	Recruit staff with expertise and commitment to green practices.	44	2	4
8.	Implement green work design and green performance management.	42	4	7
9.	Increasing green research and development (R&D)	39	7	14
10.	Promote cross-departmental and inter-university collaboration on sustainability.	41	5	9
11.	Support collaborative innovation	41	5	10
12.	Facilitate partnerships with industry, government and non-profits.	41	5	11
13.	Align incentives and career opportunities with green innovation efforts.	38	8	16
14.	Ensure university initiatives are aligned with regional and national green development strategies.	40	6	13
15.	Provide rewards and incentives for green projects and initiatives.	42	4	8
16.	Prioritize funding and support for green R&D projects.	39	7	15

As shown in Table 1, the results of the NGT process identify 16 roles that serve as a guide for promoting green innovation in human resources within universities in Sichuan Province, China. The table also displays the ranking scores assigned by experts to each role. The lowest score given is four (4) for 'Disagree,' while the highest score is five (5) for 'Strongly Agree.' The cumulative scores determine the priority ranking of each role. Based on the priority and position values calculated in Table 1, the roles can be arranged as follows:

- 1.Promoting a culture of sustainability in HRM
- 2.Create awareness and provide training on environmental issues.
- 3.Promote sustainable behavior among staff and students.
- 4.Recruit staff with expertise and commitment to green practices.
- 5.Offer professional development opportunities for green skills.
- 6.Incorporate green HRM practices in every assignment
- 7.Implement green work design and green performance management.
- 8.Provide rewards and incentives for green projects and initiatives.
- 9.Promote cross-departmental and inter-university collaboration on sustainability.
- 10.Support collaborative innovation
- 11.Facilitate partnerships with industry, government and non-profits.
- 12.Coordinate human resources policy with regional and national sustainability goals
- 13.Ensure university initiatives are aligned with regional and national green development strategies.
- 14.Increasing green research and development (R&D)
- 15.Prioritize funding and support for green R&D projects.
- 16.Align incentives and career opportunities with green innovation efforts.

Figure 2 below show the summarization of the priority for each elements which determine the position of each element.

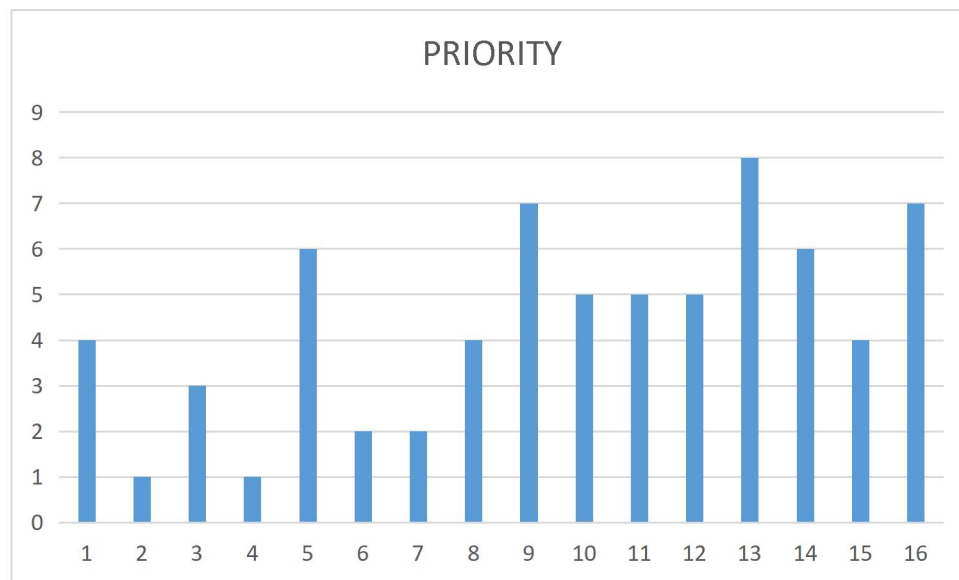


Figure 2 The Priority Value for Each Element

The findings from the study reflect various strategies through which Human Resource Management (HRM) can contribute to promoting sustainability and driving green innovation in the higher education sector. HRM plays a crucial role in shaping organizational culture. By embedding sustainability into the core values and practices, HRM helps create an environment that values environmental responsibility. This cultural shift influences both staff and students, fostering a more eco-conscious atmosphere within the university.

HRM departments are pivotal in organizing training programs and awareness campaigns about sustainability. Educating staff and students about environmental challenges and solutions helps integrate sustainable practices into everyday activities, contributing to green innovation. HRM can incentivize sustainable behaviors by integrating eco-friendly practices into work and study routines. This could include encouraging staff to adopt greener commuting options or fostering student initiatives that address environmental issues.

HRM can facilitate the recruitment of staff who are not only qualified in their field but also have a demonstrated commitment to sustainability. Hiring green champions ensures that the university has the knowledge and expertise necessary to lead green innovation efforts. HRM can encourage continuous professional development by offering training that focuses on green skills. This could include courses on energy efficiency, sustainable research practices, and green technologies, ensuring that staff are equipped to contribute to the university's sustainability goals.

Integrating green practices into all assignments, whether related to teaching, administration, or research, helps ensure that sustainability is a central focus in all university operations. This aligns employees' efforts with the broader institutional sustainability objectives. HRM can implement work designs that promote sustainability, such as flexible work arrangements to reduce commuting, or office designs that prioritize energy efficiency. Green performance management systems can evaluate staff contributions to environmental goals, incentivizing green behaviors.

HRM can create incentive programs that reward staff and students for participating in or leading green projects. This could include funding for sustainability-related research, bonuses for eco-friendly initiatives, or public recognition, further motivating individuals to engage in green innovation. HRM can foster collaboration by facilitating networks between different departments within the university and with other universities. Cross-departmental efforts and knowledge-sharing can lead to more impactful sustainability initiatives and joint green innovation projects.

HRM can support collaborative innovation by creating platforms for staff and students to engage in interdisciplinary projects. Collaboration encourages diverse perspectives and creative solutions to environmental challenges, fueling green innovation. By building relationships with external partners, HRM can provide opportunities for the university to participate in joint sustainability initiatives. These partnerships can help secure funding, provide expertise, and offer real-world applications for green innovations developed within the university.

HRM should align its policies with the broader sustainability objectives of the region and country. By synchronizing local university practices with national green development strategies, HRM can contribute to a larger collective impact on sustainability. HRM can help ensure that university-led sustainability efforts are aligned with broader green development goals at the regional and national levels. This can involve participating in policy discussions, adhering to regulations, and positioning the university as a leader in sustainable innovation.

HRM plays a role in facilitating and supporting green R&D within the university. This includes allocating resources, encouraging research on sustainability topics, and ensuring that staff have the tools and time to focus on green innovation. HRM can influence the allocation of funds towards green R&D projects. By prioritizing sustainability in research funding, the university can drive advancements in green technologies and innovations.

HRM can design career paths and performance incentives that reward staff contributions to green innovation. This could involve creating opportunities for advancement based on contributions to sustainability or offering green-specific career tracks.

These strategies collectively illustrate how HRM can significantly influence green innovation in universities by embedding sustainability in every aspect of university operations, from recruitment and training to research and development. By prioritizing these practices, universities in Sichuan Province can make meaningful contributions to China's green development goals and environmental sustainability.

The study highlights the pivotal role of Human Resource Management (HRM) in driving green innovation in Sichuan Province universities by embedding sustainability into university culture and operations. It emphasizes the importance of HRM in promoting a culture of sustainability, providing training on environmental issues, recruiting staff committed to green practices, and supporting cross-departmental and inter-university collaboration. HRM's role in aligning university practices with regional and national green policies, prioritizing funding for green R&D, and offering incentives for green projects is crucial for fostering long-term sustainable innovation. This study underscores HRM as a strategic partner in advancing sustainability and green development in higher education.

In the context of the study on HRM's role in driving green innovation in Sichuan Province universities, differences in expert opinions may arise from varying perspectives on the priority of certain HRM practices or their perceived effectiveness. Some experts might view roles like "recruiting staff with expertise and commitment to green practices" as essential, while others may see it as less critical compared to the development of a sustainability culture within the institution. For example, while recruitment of staff with green expertise can enhance the university's capacity for innovation, experts might argue that creating an institutional culture that supports sustainability from the outset is more fundamental to long-term change.

Similarly, roles such as "providing rewards and incentives for green projects" may be considered less critical by some experts, particularly if they believe intrinsic motivation (e.g., a genuine commitment to sustainability) is more effective than extrinsic rewards. On the other hand, experts who prioritize tangible outcomes and behaviors may place more emphasis on incentivizing green actions to drive immediate impact.

Such differences may stem from the diverse goals and priorities of the experts, with some focusing on structural changes, like policies and HRM systems, and others emphasizing behavioral shifts among staff and students. Additionally, cultural and contextual factors, such as the regional sustainability priorities or the specific challenges faced by Sichuan Province universities, may influence these differing opinions on the criticality of certain roles in HRM.

5 SUMMARY

The Nominal Group Technique (NGT) process was instrumental in helping researchers identify the key roles human resource management (HRM) can play in driving green innovation at the university level in Sichuan Province, China. Through this structured approach, experts engaged in an inclusive and comprehensive discussion, leading to a thorough examination of proposed roles. The collaborative nature of NGT ensured that each expert's perspective was considered, resulting in a well-rounded consensus. As a result, 16 essential roles for driving green innovation in HRM were unanimously agreed upon. While the experts maintained the core content of the roles, they suggested minor adjustments to improve clarity and coherence, enhancing their relevance and applicability. This process underscores the value of collective expert input in refining complex concepts for practical application.

The study's findings offer several strategies for implementing HRM practices that can drive green innovation in Sichuan universities. HRM can promote sustainability by integrating green values into operations and providing environmental training for staff and students. Recruitment practices can focus on attracting sustainability experts, and professional development opportunities can build green skills. Incentives and recognition can encourage sustainable behavior, while green work designs and performance management systems can incorporate sustainability into daily operations. Furthermore, HRM can foster cross-departmental collaboration and partnerships with industries, government, and non-profits to advance green initiatives. Aligning university practices with regional and national sustainability strategies, creating reward systems for green innovation, and aligning career opportunities with environmental goals can further motivate staff and students. By implementing these strategies, Sichuan universities can position themselves as leaders in green innovation, contributing to both local and global sustainability efforts while enhancing their institutional reputation.

Future research could explore areas such as the impact of green HRM practices on student engagement, the long-term effectiveness of these practices, and the barriers universities face in implementing green HRM strategies. A comparative analysis of universities and evaluations of green R&D projects could provide valuable insights into successful practices, while exploring the role of non-academic staff in promoting green innovation would offer a more holistic view. Examining cultural differences in sustainability implementation and the economic impact of green HRM could further balance sustainability goals with financial considerations. These areas would deepen the understanding of HRM's role in fostering sustainable change within higher education institutions.

However, a key limitation of the study is its reliance on expert opinions, which, though valuable, may not fully represent the broader perspectives of all stakeholders within universities, such as students, non-academic staff, or faculty not directly involved in green HRM practices. Expert views often reflect a strategic, top-down approach, potentially overlooking the day-to-day experiences and challenges faced by those at the operational level. Additionally, the study's focus on universities in Sichuan Province may limit the applicability of its findings to other regions or institutions with different cultural, economic, or policy contexts. Future research could address these limitations by incorporating a broader range of perspectives and examining green HRM practices in diverse settings.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

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