

RESEARCH ARTICLE

Human resource management and sustainability: Bridging the 2030 agenda

Irene Campos-García  | Sara Alonso-Muñoz  | Rocío González-Sánchez  |
María-Sonia Medina-Salgado 

Department of Business Administration (ADO),
Applied Economics II and Fundamentals of
Economic Analysis, Rey-Juan-Carlos
University, Madrid, Spain

Correspondence

Irene Campos-García, Department of Business
Administration (ADO), Applied Economics II
and Fundamentals of Economic Analysis,
Rey-Juan-Carlos University, Madrid, Spain.
Email: irene.campos@urjc.es

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Abstract

The scientific literature related to human resource management (HRM) and sustainability has increased since 2015, coinciding with the establishment of the 2030 Agenda for Sustainable Development. This article combines a bibliometric approach, using VOSviewer and SciMat software, with a systematic literature review to assess and identify the scientific production in this domain. During the period studied (1996–2023), the results reveal the role of HR in achieving corporate sustainability but also the responsibility of companies to apply sustainable principles to HRM practices. Based on the findings and the less developed issues related to the SDGs and HRM a model of research proposals is provided, focusing on mental health (SDG 3), gender equality (SDG 5), collaboration towards climate action and responsible production and consumption (SDGs 12 & 13), and more emphasis on SDG 1 regarding the social sustainability of organisations.

KEYWORDS

2030 agenda, co-word analysis, human resources management, research proposition model, science mapping, sustainability, sustainable development goals

1 | INTRODUCTION

The social dimension was added to the environmental and economic dimensions to which the concept of ‘sustainability’ was initially associated in the 1970s. The well-known Brundtland Report published in 1987 by the World Commission on Environment and Development defined the principle of sustainable development and placed one of the focal points on the development of human resources (HR) to improve economic activities and contribute to the sustainability of organisations and society. Since then, interest in analysing the link between sustainability and HR has grown based on a dual vision. First, with their knowledge, ways of working, skills, values and attitudes, HR can play a fundamental role in business sustainability –what people can do for organisations–. On the one hand, employees can contribute to building and maintenance of a long-term competitive advantage

(Ehnert, 2014). On the other hand, as the literature on organisational citizenship behaviour (OCB) recognises, the discretionary actions assumed by members of an organisation can favour the internationalisation of sustainability practices in daily routines and, therefore, improve the sustainability performance of the company (Paillé et al., 2014; Testa et al., 2018). Second, by applying sustainability principles to human resource management (HRM) practices (recruitment, development, regeneration, among others), companies can influence the well-being, durability and retention of their workforce (Mariappanadar, 2003) –what organisations can do for people–. Both views have been integrated into a new HRM approach, however, several research have addressed this approach from different perspectives, constructs and models (Kramar, 2014). This has led to conceptual divergences, paradoxes and unresolved dilemmas (Ehnert, 2009; Macke & Genari, 2019), which undermine the

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coherence and robustness of this body of literature. The need to clarify the principles, elements, attributes, instruments and processes of sustainable HRM is addressed.

Since the United Nations (UN) presented the 2030 Agenda for Sustainable Development in 2015, the concern in advancing, clarifying and adding knowledge in this field, has intensified notably, leading to an increase in scientific production. The 17 Sustainable Development Goals (SDGs) are defined to achieve the implementation and integration of new green and sustainable strategies and techniques (Chams & García-Blandón, 2019). HR have a specific role in SDGs 3, health and well-being; 5, gender equality; 8, decent work and economic growth; 9, infrastructure, 10, reducing inequality; 12, responsible consumption and production; 13, climate action; and 17, implementing and revitalising global partnerships (Chams & García-Blandón, 2019; United Nations Department of Public Information, 2017). On the one hand, SDGs 9, 12, 13 and 17 are closely linked to the contribution of human resources to achieving sustainable industrialisation (9), the efficient use of natural resources and the ecological management of products and waste (12), mitigation of climate change and reduction of its effects (13), and transfer of knowledge, expertise and technology in order to move towards sustainable development (17) –what people can do for organisations–. On the other hand, SDGs 3, 5, 8 and 10 reflect the responsibility of companies to contribute to the well-being of their employees and to the management of health risks (3), to achieve the full participation of women and equal opportunities at all hierarchical levels (5), to promote employment and optimal working conditions (8) and to favour the social and economic inclusion of people (10) –what organisations can do for people–. Thus, various studies have focused on the development of new paradigms within the sustainable HRM system, such as green HRM (Ahmad, 2015; Jyoti, 2019) or common good HRM (Aust et al., 2020). Other studies emphasised the impact of sustainable HRM practices on different outcome indicators (López-Cabrales & Valle-Cabrera, 2020; Wilkham, 2019). Nevertheless, Shirmohammadi et al. (2021) have suggested that research should be broadened to better understand its nature and maintain its own identity as an academic discipline. In short, there is a need to reflect on both the consolidated lines of research and an orientation for the establishment of an agenda to guide future steps. An analysis of the ‘state of the art’ would allow us to know whether the academy is supporting the decision making of HR managers to comply with the guidelines of the 2030 Agenda and the new models and trends in sustainability.

Based on a bibliometric study and a systematic literature review, the aim of this paper is to identify and evaluate the evolution of scientific production related to sustainability and HR, to assess the state of the art, to define trends and to identify gaps and opportunities for research in this area. Specifically, the following research questions are proposed: (1) What is the evolution of the conceptual network development in the literature on sustainability in HR? (2) What are the central themes and patterns within the research topic and the SDGs? and (3) What is the future research agenda according to the main concerns boarded about the field? To this end, publications appearing in the Web of Science database between 1996 and 2023 were collected and analysed using the VOSviewer and SciMat software. To date and

to our knowledge there are previous publications related to sustainable HRM. Santana and López-Cabrales (2019) use a bibliometric research methodology and, despite using the Web of Science as database and SciMat as software, the period analysed and the number of articles included in their study is more reduced. Macke and Genari (2019) conduct a systematic review of the literature using a different methodology and data, as well as a shorter period with fewer articles. Ultimately, Shah et al. (2023) focus on ecological HRM, exploring environmental issues. The search for these topics took place in December 2021. However, to study the correlation between sustainable HRM and its contribution to the SDGs, the focus needs to extend, encompassing sustainability's three pillars – environmental, social, and economic.

Therefore, this paper makes a significant contribution to the previous three reviews. First, it uses a mixed methodology and a longer study period, a more holistic view to improve the understanding of the stage this field of study is in. A longer study period is particularly relevant given the outbreak of the Covid-19 pandemic, which has highlighted the crucial role of human resources in many cases in achieving business sustainability and, at the same time, the responsibility of companies to contribute to the well-being and sustainability of their employees. Second, it is an opportunity to determine the attention given to HR within the 2030 Agenda and the influence of the SDGs achievement in this field, something that was completely overlooked in the three review papers. Third, this article includes publications up to year 2023. Fourth, using the term ‘sustainability’ within HRM, this paper contemplates the three pillars of sustainable development: economic, social and environmental, following the Triple Bottom Line (López-Cabrales & Valle-Cabrera, 2020). Our analysis focuses on how human resources can generate a positive economic, social and environmental impacts (Docherty et al., 2009; Ehnert et al., 2016; Gollan, 2000; López-Cabrales & Valle-Cabrera, 2020). In comparison to other works such as Shah et al. (2023) that specifically focus on ‘green’ related concepts with HRM, –targeted on the promotion of environmentally friendly practices in organisations (Chaudhary, 2020; Shah et al., 2023)–, our study ensures that all pillars of sustainability are included. Thus, comparatively with previous reviews focus on ‘green’ HRM, aspects as a whole. Fifth and lastly, research avenues for future opportunities in this field are suggested. For this reason, this work deepens and broadens the state of the art and contributes by adding a reflection on how the 2030 Agenda has affected the scientific production and the coherence of the studied literature, which allows us to suggest where efforts should be directed to strengthen HRM theories.

The paper is structured as follows. The section 2 reviews the main theoretical arguments supporting the literature on sustainability and HR. The section 3 describes the method used to answer the research questions and the section 4 describes the results. The discussion and conclusions are presented in the following sections.

2 | THEORETICAL BACKGROUND

The link between sustainability and HRM emerged in the late 20th and early 21st century. This emerging phase was inspired by the ‘Map

of the HRM Territory' – also known as the Harvard model of HRM – which summarises the causes and consequences of HRM policies (Beer et al., 1984). During this period, authors, such as Gollan (2000) and Mariappanadar (2003) emphasised the relevance of sustainability in HRM. The contribution focuses both on the sustainable development of companies –macro level– and on promoting the sustainability of the HR system itself and of employees –meso and micro level– (Ehnert & Harry, 2012). Based on these arguments, three different approaches have emerged depending on the explanation or reason for paying attention to HR from a sustainability perspective: because it is socially responsible (*Sustainable Work Systems*), because it is economically rational (*Sustainable Management of HR*), or both (*Sustainable HRM*).

Sustainable Work Systems is an approach linked to the literature on corporate social responsibility (CSR). Sustainability in work systems involves the regeneration of human, material and natural resources and the assumption of responsibility by companies for the negative impacts that these systems cause (Docherty et al., 2009). Specifically in relation to HR, this approach considers that the development and regeneration of HR must be undertaken for reasons of social responsibility. Consequently, companies should take responsibility for the negative consequences of some work systems on the physical and mental health and well-being of employees (e.g., stress, fatigue, pressure, work rhythm and mistrust in work relationships), as this can also condition people's determined efforts to support the dynamics of sustainability at economic and environmental levels (Docherty et al., 2009). Arguments are mainly drawn from stakeholder theory (Donaldson & Preston, 1995) and work stress theories (Askenazy et al., 2006; Kira, 2003).

On the other hand, the *Sustainable Management of HR* approach justifies sustainability from an economic perspective, arguing that it is economically rational to act in a sustainable way and, in this case, to invest in the survival, development and regeneration of HR because it is a scarce resource. Thus, authors, such as Gollan (2000) emphasise that organisations implement policies or actions aimed at deploying and retaining skilled and motivated HR (as a source of sustainable competitive advantage) with the aim of renewing wealth and adding social, economic and environmental value (in the form of quality, efficiency, innovation and profits) to the organisation itself. The main theoretical underpinning of this approach is the resource-based view (Wright et al., 1994; Wright et al., 2001).

Motivated by both social responsibility and economic rationality, the *Sustainable HRM* approach seeks to achieve and exploit competitive advantage through the use of socially and economically efficient hire-develop-retain-retire policies over the long term, which can have a positive impact on employees' employability, working conditions and well-being (Ehnert, 2009). To create social, economic and environmental value, attention must be paid to the impact of sustainable HRM practices both inside and outside the organisation (Ehnert et al., 2016; López-Cabrales & Valle-Cabrera, 2020). However, the literature on sustainable HRM is changing, as many of the previous studies framed in this approach do not follow the same direction and show different points of view. Thus, it is easy to find many

inaccuracies in the terms used, dilemmas depending on the orientation towards the short or long term, tensions and paradoxes in the face of the coexistence of different types of outcomes, contradictory but interrelated demands and unaddressed links (Kramar, 2014; Mariappanadar, 2003).

In summary, the different approaches in the sustainability and HR literature differ in their rationale for sustainability, although they all share a common focus on human capital development and management to generate a positive impact on the three pillars of sustainability –human resources can contribute to the economic dimension by acting as a possible and valuable source of competitive advantage, to the environmental dimension through practices that favour environmental preservation and long-term reduction of negative externalities, and to the social dimension by adopting behaviours oriented towards society's overall development and progress (well-being, equality, justice, etc.). However, as Kramar (2014, p. 1075) warns, this literature remains 'fragmented, diverse and fraught with difficulties' years later.

3 | METHODOLOGY

A mixed methodology is used, as is shown in Figure 1. First, a bibliometric approach analysis is conducted to synthesise the research findings of the field for the years 1996 up to June 2023 using VOSviewer and SciMat software. Second, a systematic literature review of the most influential articles in the period of years between 2016 and 2023 was conducted to better recognise the current research trend topics. Furthermore, a research agenda for future scientific literature opportunities is proposed.

In the first phase, documents were retrieved from the Web of Science database to obtain our sample for the bibliometric overview and further analysis of the field. This database was selected based on the high-quality papers that contains, as well as the information retrieved in terms of keywords and references cited in order to conduct a bibliometric analysis (Birkle et al., 2020). Three different combinations of terms were used to obtain the best results. The first search was ('human resources' AND 'sustainability') OR 'sustainable human resources' by topic, including title, abstract and author keywords, with a sample of 1423 papers. Second, it was refined using the Social Science Citation Index, yielding a sample of 606. Third, the search was sorted to include only articles, excluding conference proceedings and books, giving a total sample of 556 articles. Documents up to June 2023 were included.

In the second phase, the final sample was double-checked by all the authors to eliminate possible inconsistencies. The extracted sample was 'cleaned' to exclude terms related to countries (India, Vietnam, China, and Indonesia) and techniques or methods (qualitative studies, systematic literature review, structural equations) to focus on HRM and sustainable concepts and their evolution more in-depth. In addition, plurals were grouped together –for example, strategy and strategies-, as well as abbreviations –for example, harm with HRM-.

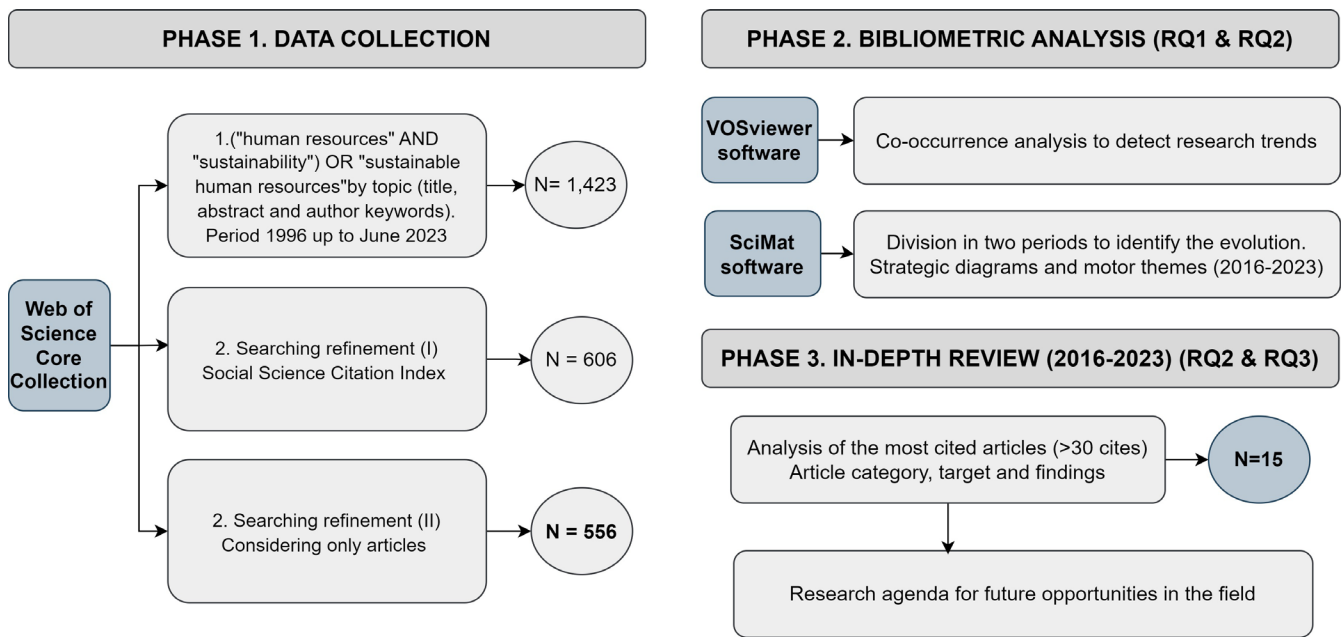


FIGURE 1 Methodological process.

The VOSviewer and SciMat software were used complementary to identify the research trends of this field. The VOSviewer tool (van Eck & Altman, 2010) presents a scientific map of the research topics by analysing the co-occurrence of keywords and their relationships to detect research hotspots in the whole period under study. Whilst the SciMat software was used to display an evolution, map and strategic diagrams about this field dividing the published papers into two-time periods (1996–2015 and 2016–2023) to identify the development of this research domain. This division was selected coinciding with the 2030 Agenda by the United Nations (2015).

In the third phase, based on the results obtained by the SciMat software, the most cited articles -those with more than 30 citations- ($N = 15$) of the second period (2016–2023, coinciding with the application of SDGs) are studied in-depth to understand the current state of the art and the motor topics, focusing on their main contributions to shed light on the related literature. Then, based on this analysis, a research agenda on the future research directions and opportunities in the field is proposed.

4 | RESULTS

4.1 | Descriptive results

Figure 2 shows the evolution of the number of publications in the field of sustainability and HR from 1996 to June 2023. An increase in the number of publications is observed from 2015 onwards, coinciding with the United Nations 2030 Agenda for Sustainable Development with its 17 SDGs (United Nations, 2015). There is a one-off spike in 2021, due to an increase in research focusing on the 'green'

approach to more sustainable workplaces and improving the well-being and mental health of workers after one of the most traumatic crises of recent decades caused by Covid-19 pandemic. To achieve a better understanding of the selection of time periods in the SciMat analysis, the milestones for the change in the trend of the number of papers published have been included in Figure 2.

4.2 | Thematic organisation of the field

The co-occurrence analysis technique is a word-pairs that locates the relationship from a set of documents, identifying the linkage between different topics represented by the keywords (Choi et al., 2011). This is an appropriate technique to understand the conceptual structure (Zupic & Cater, 2014) and to determine the central terms and patterns in this field. The co-occurrence analysis and the visualisation of the nodes and clusters and their links are carried out using the VOSviewer software. The size of the spheres depends on the weight of the keyword (van Eck & Altman, 2010). Out of a total of 2978 terms - considering a minimum of 12 occurrences of a keyword - 49 met the threshold in the VOSviewer analysis using counting and normalisation methods as well as a thesaurus to eliminate duplicates and plurals - for example, human resources and human resources-.

The keywords are grouped into four clusters, which are classified by colours in Figure 3. The red cluster, which is larger in terms of the number of nodes, is related to the challenges of implementing new HR systems, training and policies according to sustainable themes, which is related to SDGs 3, 5 and 8. The blue branch connects the green HRM commitments considering environmental management and behaviour -associated to SDGs 3, 5, 8, 12 and 13-. Corporate

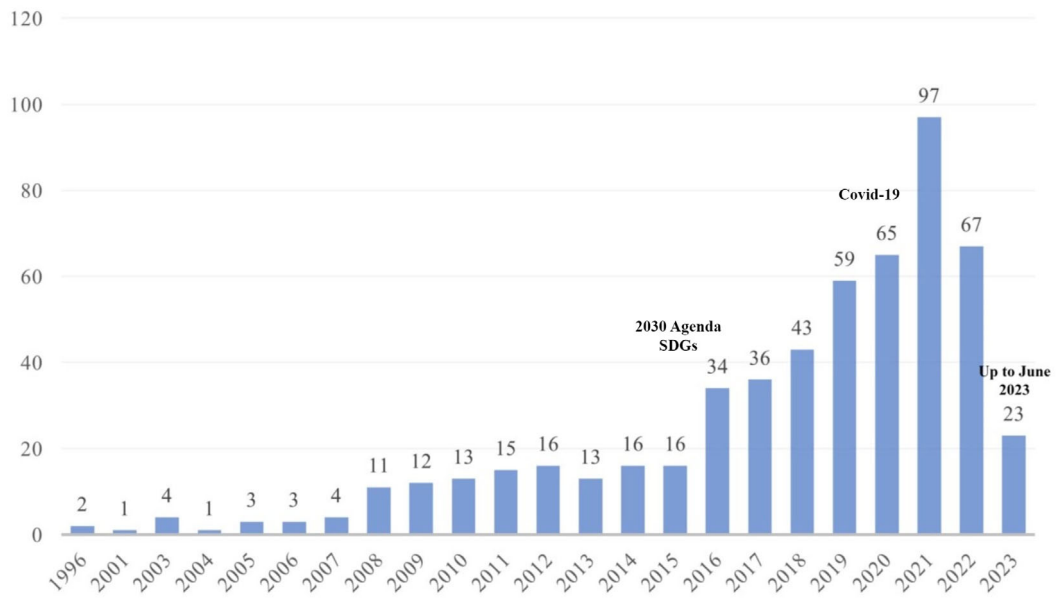


FIGURE 2 Historical evolution in the field.

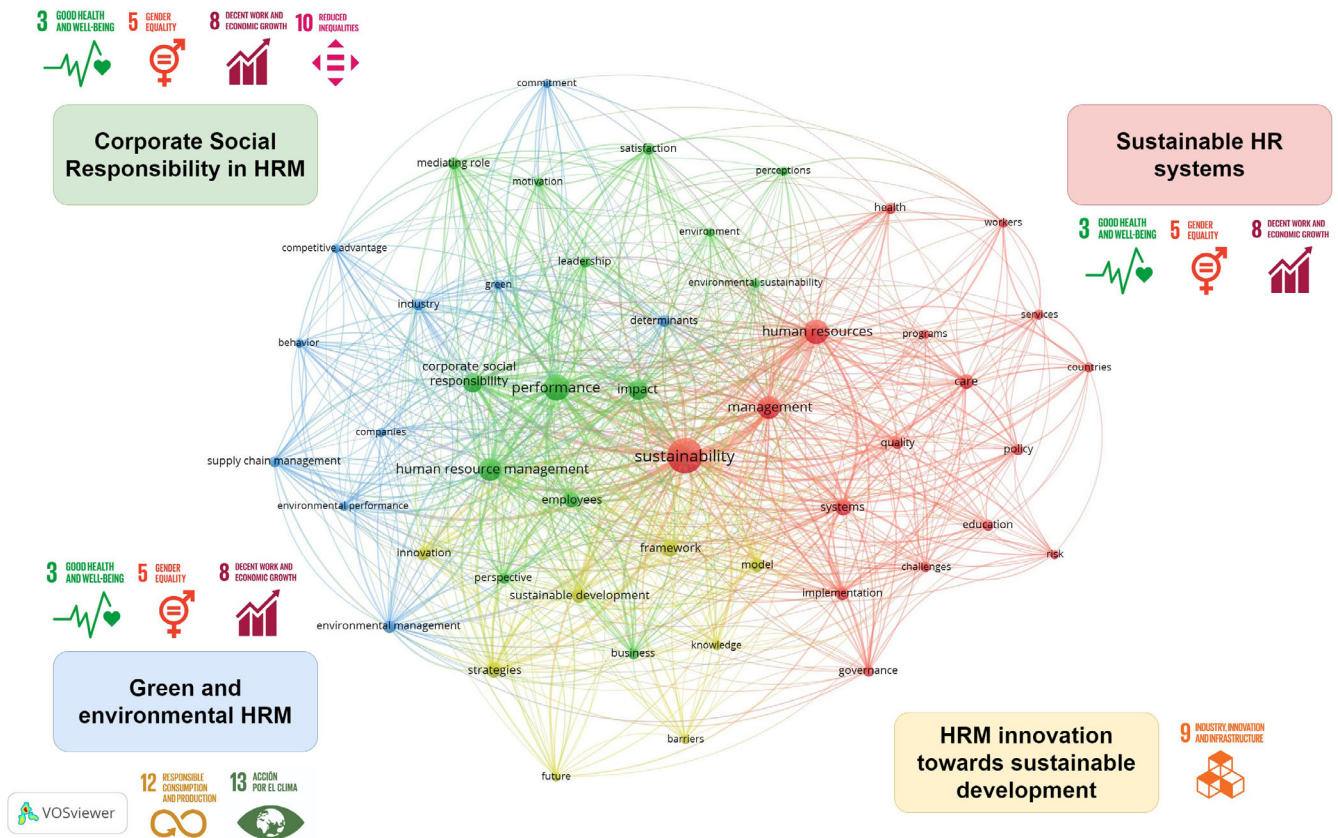


FIGURE 3 Co-occurrence analysis by VOSviewer.

social responsibility and environmental sustainability are the main issues in the green cluster according to HRM: job satisfaction, motivation and leadership -linked to SDGs 3, 5, 8 and 10-. Finally, the yellow

cluster focuses on HRM innovation strategies -highly linked to SDG 9- according to a sustainable development framework (Zaidi & Jamshed, 2021).

4.3 | Strategic diagrams and motor themes

The science mapping software tool SciMat (Cobo et al., 2012) is useful for completing the conceptual domains provided by VOSviewer and detecting their thematic evolution. It also facilitates the construction and visualisation of a two-dimensional diagram based on Callon et al. (1991) centrality and density indicators. This is valuable for identifying research themes based on their degree of development or internal cohesion (density) and their relationship with other themes in the research area (centrality).

The set of documents could be divided by SciMat into several periods to track the longitudinal framework (Cobo et al., 2012) in order to gain a better understanding of the thematic evolution of research. The year 2015 is the cutting point for our study based on the appearance of the United Nations 2030 Agenda (2015) -which is considered a milestone towards sustainability (Bornemann & Weiland, 2021)-. In addition, it is contemplated the increase in the number of articles as a result of the launch of the SDGs (see Figure 2, subsection 4.1). Thus, the sample was divided into two periods. Period 1, from 1996 to 2015, before the 2030 Agenda, with 143 articles, and Period 2, from 2016 to 2023, with 413 articles, after the 2030 Agenda has been formulated.

The evolution map (Figure 4) shows the main thematic nodes of each period, identified by the spheres whose volume is related to the number of papers published on this topic or keyword. From a longitudinal perspective, the graph appears unbalanced due to the proliferation of papers in the second period. The 'HRM' of the first period develops the core concept of 'sustainability' and 'environmental management' of human resources. Following the sustainable approach, this theme evolves towards the study of 'work' as a core element for the fulfilment of the SDGs, referring to safe workplaces and the defence of labour rights -linked to SDG 8- (Gismera et al., 2019). Issues such as gender -connected to the SDG 5- or environmental behaviour -connected to the SDG 12- are addressed (e.g., Mi et al., 2020). In the first period, papers focused more on classical and general topics, such as 'human resources' or 'supply chain management' (Subramanian & Gunasekaran, 2015). In the second period, there is more emphasis on human resources for health -related to SDG 3- (Dupuis-Blanchard & Thériault, 2023), education -related to SDG 4- (e.g., Najafpour et al., 2023) or the implementation mechanisms (e.g., García-Alcaraz et al., 2018). Also, 'job satisfaction' (Meyerding & Lehberger, 2018) gains new relevance within this sustainability approach and in light of SDG 8.

In the early years, papers were more focused on supply chain management in terms of the importance of employee responsibility at all stages (Xia et al., 2015). While in the recent years, more emphasis is presented on 'environmental management', especially in green HRM -in relation to SDG 9 (Jyoti, 2019; Zaidi & Jamshed, 2021)-. This is related to the move towards green practices in supply chain management following the TBL -economic, social and environmental- (Zaid et al., 2018).

Finally, we can see how new themes have emerged in recent years, such as 'resilience' (SDG 1), 'diversity' (SDG 5), 'talent' or



FIGURE 4 The evolution map by SciMat.

'social sustainability' (SDGs 1 to 5 and 16), most of which are closely linked to the 2030 Agenda, but not to other themes prior to 2015.

Figure 5 shows the strategy diagram proposed by Callon et al. (1991) for the second period (2016–2023) and its relationships to the SDGs. This diagram shows four quadrants in which the thematic nodes are located. Clockwise, the developed and mainstream themes (motor themes), the less developed but common research themes (basic themes), the emerging or disappearing themes, and the highly developed but isolated themes from the relevant literature. It provides a visualisation of the most cohesive and transversal topics (internal strength) of sustainability and HR research in the recent period. This tool serves as a starting point for understanding the driving themes of current research are.

In the last study period (2), themes related to quality, perspective, implementation and work stand out as themes that support research.

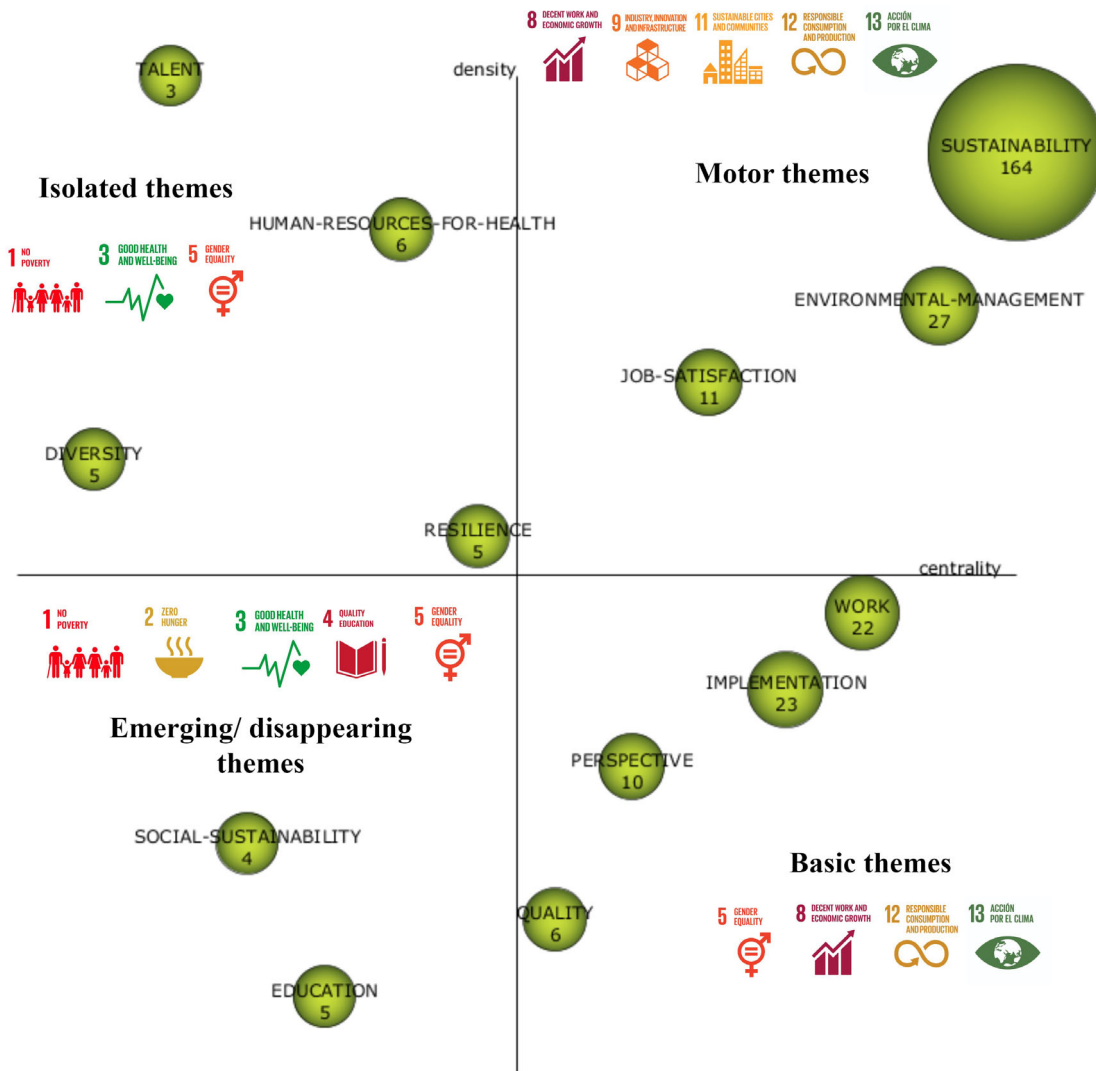


FIGURE 5 Strategic diagram by SciMat.

Although the themes of implementation and work are somewhat more developed, their high centrality makes them a focus of research attention because they are essential to understanding the relationship between human resources and sustainability. Talent and human resources for health are much-studied topics in the literature and although relevant to the sustainability approach, they are isolated. Diversity is still poorly explored in this body of knowledge and is linked to other issues. The concept of resilience shows that it could become a motor theme.

In the *motor themes* quadrant, two mainstreams have a strong association. In the sustainability cluster (Figure A1 in the Appendix), HRM, performance, impact and CSR are prominent. Issues related to leadership, innovation and supply chain management are also considered in relation to sustainability and HR (Zaid et al., 2018). The environmental management cluster -related to SDGs 11, 12 and 13- includes interesting relationships, such as the one observed between green human resource management, behaviour, strategy and

organisational culture in organisations, or the one between green human resource management and companies in developing countries (e.g., Kodua et al., 2022). For the job satisfaction group, which is highly relevant to SDG 8, the strongest links are between employee motivation and leadership style. The relationship between productivity, environment and sustainable HRM is also relevant. Human resource management to achieve sustainable growth, job-creating and innovative industries and companies -related to SDG 9- (Alhmoudi et al., 2022), able to reduce environmental impacts and integrate sustainability in their reporting cycles, are some of the objectives captured in these themes.

Looking at the *basic themes'* quadrant (see Figure A2 in the Appendix), implementation and work are the broadest and most transversal themes in this literature. These include key concepts from human resources research. In the case of the work group -related to SDG 8- concepts such as values, gender -SDG 5-, environmentally friendly behaviour -SDGs 12 and 13- or the workplace stand out



(Monteiro et al., 2022). The implementation group is related to the main challenges, new designs and systems towards sustainable development, as well as the drivers and barriers to be faced in the adoption of sustainable issues in HRM (Melissen et al., 2016). Other classic topics in the HRM literature, such as competitive advantage, environmental sustainability or small and medium-sized enterprises (SMEs), are covered in the perspective cluster.

In the lower left quadrant (Figure A3 in the appendix) are the *emerging or disappearing themes*. These appear to be residual research topics that need to be further explored. Social sustainability (SDGs 1, 2, 4 and 5) is currently associated with commitment and indicator systems such as the Balance Scorecard (Benkova et al., 2020). Education (SDG 4), on the other hand, is associated with policies and knowledge that focus on sustainable practices through incentives or remote work, and with the workforce to achieve well-being (SDG 3) by avoiding excessive turnover (Vetrakova et al., 2019).

Finally, in the quadrant of *more developed and isolated* clusters (Figure A4 in the appendix), topics such as human resources for health -linked to SDG 3- or resilience -strongly linked to SDG 1: increasing resilience to environmental, economic and social disasters- including issues such as climate change, risk and adaptation (Zhou et al., 2016), which can be independent fields from other disciplines, but also linked to human resources and sustainability. Other issues to highlight are talent or diversity in the context of gender equality -SDG 5-

4.4 | In-depth review

The cutting edge for the SciMat periods division has been made according to the UN 2030 Agenda in 2015. This cut is based on the increase in the number of articles related to sustainability and HR (see Figure 2) since this milestone. Accordingly, the in-depth review is focusing on this period, also to understand the current literature based on the most cited articles.

Citation analysis measures the influence of an article based on its high number of citations (Zupic & Cater, 2014). This technique provides information about the research field according to the relationship between the papers (Donthu et al., 2021). It is widely used to identify research trends in bibliometric analysis (Chen, 2006). Those papers with a higher number of total citations are considered more influence -as an indicator of their impact in the literature- (Zupic & Cater, 2014). This analysis considers the most recent articles -years 2016–2023, the second period of SciMat- with the highest number of citations (>30) and citations per year (C/Y) to balance the year of publication impact. Table 1 shows the results of the systematic review of the literature focus on those with more than 30 total number of citations ($N = 15$ papers) from this period to identify research patterns.

The in-depth review that was carried out focused mainly on three aspects related to the dominant themes, the type of work and the methods used, and the theoretical arguments applied. First, the review shows the predominance of a main thematic line. Most studies focus on the role of employees in contributing to sustainability -what people can do for organisations-. These researches analyse different HR

practices and their impact on aspects related to economic, social and/or environmental sustainability. That is, how companies manage their employees in order to influence one or more dimensions of sustainability. Specifically, these studies address both HR practices in general and green HRM or sustainable HRM in particular, in order to focus on the influence of these practices on economic indicators (Bilan et al., 2019; Di Vaio & Varriale, 2018; Hosseininia & Ramezani, 2016; O'Donohue & Torugsa, 2016), social (Angeli & Jaiswal, 2016) and/or environmental (Masri & Jaaron, 2017; Raza & Khan, 2022; Tariq et al., 2016) nature or, at the same time, on the triple bottom line of sustainability performance (Thakur & Mangla, 2019; Tooranloo et al., 2017; Zaid et al., 2018). As such, all of these works mainly revolve around SDGs 9 (infrastructure), 12 (sustainable production) and 13 (climate action). However, in this thematic line on how employees can play a key role in corporate sustainability, the work of Melissen et al. (2016) can also be included. But in contrast to the previous papers, which present HRM practices as factors that can be controlled by organisations, this paper highlights the importance of other factors related to employees that cannot be controlled by organisations (e.g., attitudes such as commitment or willingness) for the implementation of sustainability-oriented initiatives.

Regarding what organisations can do for people, only the study by Burbano Burbano (2016) highlights the role of companies in the working conditions and well-being of their employees, which can contribute (or not) to the sustainability of the workforce and have an economic and/or psychological impact on employees due to its implications in terms of purchasing power, social status and professional value. In line with other previous research that emphasises how the employers' purpose, mission and policies can affect the employees' behaviour, decisions, preferences and working conditions (Anderson et al., 2014; Bode et al., 2015; Michaelson et al., 2014), Burbano (2016) examines the influence of companies adopting greater social responsibility on workers' wage demands, who may be willing to exchange some monetary benefits for non-monetary compensation. This theme is directly related to SDGs 3 (health) and 8 (decent work).

The two-remaining works outside of what people and organisations can do for each other deal with the promotion of CSR policies related to human resources (Kiliç, 2016) or the barriers to sustainable HRM (Gardas et al., 2019).

Second, in terms of the type of work and the methods used, it is worth noting the predominance of empirical over theoretical research. In the first case, although there is diversity in the methods used, several studies apply partial least squares structural equation modelling (PLS-SEM) and fuzzy analytic hierarchy process (AHP), fuzzy total interpretative structural modelling (TISM) and DEMATEL method (Gardas et al., 2019; Thakur & Mangla, 2019; Tooranloo et al., 2017). In general, in causal methods, the most used dependent variables are those related to economic, environmental and/or social performance (Masri & Jaaron, 2017; O'Donohue & Torugsa, 2016; Raza & Khan, 2022; Tooranloo et al., 2017; Zaid et al., 2018), while the most common independent variables are the different HRM practices (recruitment and selection, training and development, performance

TABLE 1 Edge of research in sustainability and HRM (years 2016 and 2023).

TC	C/Y	Reference	Background	Journal	Article category	Objective	Findings
121	24,20	Zaid et al. (2018)	Resource-Based View Theory	<i>Journal of Cleaner Production</i>	E (PLS-SEM: 121 Palestinian firms from the most pollutant manufacturing sectors)	Investigate the link between green human resource management and green supply chain management practices (i.e., external and internal practices) and their impact on the triple bottom line of sustainability performance (i.e., environmental, social and economic performance).	Green HRM practices have a direct effect on sustainable performance, with green supply chain management practices mediating this effect. In particular, internal green supply chain management practices positively mediate between green HRM practices and sustainable performance, whereas external green supply chain management practices only mediate the relationship between GHRM bundle practices and the environmental dimension of sustainable performance.
116	19,33	Masri and Jaaron (2017)	-	<i>Journal of Cleaner Production</i>	E (Pearson's correlation coefficient: 110 Palestinian firms from the 3 manufacturing sectors)	Measuring the impact of green HRM practices in manufacturing organisations on environmental performance in the Palestinian context.	The overall mean score for the implementation of GHRM practices is 2.72 on a scale of 5. There is a statistically positive and significant relationship between the six green HRM practices (green recruitment and selection, green training and development, green performance management and appraisal, green reward and compensation, green employee empowerment and participation, and green management of organisational culture) and environmental performance, green reward and compensation, green employee empowerment and participation, and green management of organisational culture) and environmental performance.

(Continues)



TABLE 1 (Continued)

TC	C/Y	Reference	Background	Journal	Article category	Objective	Findings
89	12,71	Burbano (2016)	Social Identity Theory	Organisation Science	E (OLS regressions: 434 AMT workers and 79 Elance workers living in the United States)	Examine the impact of employers' social responsibility on workers' wage demands through randomised field experiments in two online labour marketplaces (Amazon Mechanical Turk and Elance).	There is a clear preference for social responsibility in the workplace. Workers value purpose and meaning at work, and are willing to give up monetary benefits for non-monetary benefits. There is heterogeneity in workers' preferences for non-pecuniary benefits by type of worker.
80	11,43	O'Donohue and Torugsa (2016)	Absorptive Capacity Theory and Resource-Based View	The International Journal of Human Resource Management	E (SEM: 158 small firms in the Australian machinery and equipment-manufacturing sector)	To analyse the moderating effect of green HRM on the relationship between proactive environmental management and firm financial performance.	Green HRM positively moderates the relationship between proactive environmental management and financial performance, such that high levels of Green HRM increase the financial benefits of proactive environmental management compared to low levels of Green HRM.
58	14,50	Bilan et al. (2019)	-	Sustainability	E (Vector error correlation model: Total energy consumption from 20 countries.)	Analyse the relationship between GDP and renewable energy sources and CO ₂ emissions. Differentiate between EU members and candidates.	The results highlight the positive long-term relationship between human resources, renewable energy sources and economic growth in the EU.
49	9,80	Di Vaio and Varriale (2018)	-	Sustainability	T (literature review 157 articles from WoS database)	Measure the development of green seaports towards environmental sustainability and their competitiveness from a management innovation perspective.	Guidance, education and training of seaport personnel towards more environmentally friendly attitudes and behaviour play an active and key role in port strategies.
45	6,43	Tariq et al. (2016)	Ability-motivation-opportunity theory	Quality and Quantity	T (systematic literature review. 104 papers from WoS)	Introduce the concept of 'green employee empowerment' in human resource management.	Employee motivation plays a mediating role in the environmental performance of employees following green human resource routines.
39	9,75	Thakur and Mangla (2019)	-	Journal of Cleaner Production	-	Analyse the change management required to implement	Human, operational and technological issues in

TABLE 1 (Continued)

TC	C/Y	Reference	Background	Journal	Article category	Objective	Findings
37	6,17	Tooranloo et al. (2017)	Sustainability and sustainable development	Journal Of Cleaner Production	CS (Fuzzy AHP- DEMATEL: 5 Indian household appliances firms)	sustainability in the Indian home appliance sector from a TBL (social, economic and environmental) approach.	operations management (with a focus on human resources education and training programmes) are fundamental to achieving the SDGs in manufacturing supply chains. Most of the environmental factors are identified as causes of sustainable HRM. While most of the economic and social factors are identified as consequences of sustainable HRM.
32	4,57	Melissen et al. (2016)	-	International Journal of Hospitality Management	T (Conceptual analysis)	To theorise the causal relationship between the type of ownership in the hotel industry and the implementation of sustainability initiatives.	The adoption of sustainable practices depends on the willingness of the actors involved in the owner/operator relationship. Particular attention should be paid to the human capital dimension, in addition to the operational and technical dimension.
31	4,43	Kiliç (2016)	Legitimacy theory and Stakeholder theory	International Journal of Bank Marketing	E (nonparametric Kruskal-Wallis test: websites of each of the 25 Turkish banks)	Analyse the extent to which banks report online on their corporate social responsibility (CSR) practices, including the human resources sub-dimension.	In their online CSR communications, Turkish banks provide information on training, compensation and benefits and, to a lesser extent, employee morale.
31	7,75	Gardas et al. (2019)	Talent management and sustainable human resource management	Journal of Cleaner Production	E (Fuzzy TISM and DEMATEL: 15 barriers to TM)	Exploring the barriers to sustainable HRM, with a focus on the oil and gas sector.	The main barriers are 'the growth and dynamism of the industry' and 'the lack of training programmes'.
31	4,43	Angeli and Jaiswal (2016)	Business models innovation	Organisation and Environment	CS (multiple case study methodology: six Indian health care organisational cases)	Develops research on business model innovation for more equitable healthcare that contributes to poverty alleviation.	Successful business models are based on attention to human resources for health in combination with other factors such as co-creation of patient needs or innovation in medical

(Continues)

TABLE 1 (Continued)

TC	C/Y	Reference	Background	Journal	Article category	Objective	Findings
31	4,43	Hosseiniia and Ramezani (2016)	Sustainable entrepreneurship and organisational design	<i>Sustainability</i>	E (descriptive statistics and inferential analysis: 130 participants and 12 owner-managers from the Iranian food industry)	Identifying the social and environmental factors influencing sustainable entrepreneurship (SE) in small and medium-sized enterprises (SMEs).	The recruitment of experienced staff has a significant impact on the development of sustainable entrepreneurship in food SMEs.
30	30,00	Raza and Khan (2022)	Green human resources management	<i>International Journal of Contemporary Hospitality Management</i>	E (PLS-SEM: 329 Pakistani white-collar employees)	To analyse the impact of green human resource management practices on the environmental performance of hotels. To this end, the moderating role of environmental knowledge and ecological values at the individual level was considered.	Green employee values strengthen the link between affective engagement and environmental performance in the hotel industry.

Note: Detail of the method and the sample in parentheses.

Abbreviations: CS, case study; E, empirical research; T, theoretical research.

management and appraisal, and rewards and compensation, basically). However, some studies consider such practices or some employee behaviours and values to explain their moderating or mediating effect (O'Donohue & Torugsa, 2016; Raza & Khan, 2022). In terms of the samples used, there is some dispersion, although there is a notable abundance of those consisting of companies and employees in Middle Eastern countries (Angeli & Jaiswal, 2016; Hosseininia & Ramezani, 2016; Kiliç, 2016; Masri & Jaaron, 2017; Raza & Khan, 2022; Thakur & Mangla, 2019; Tooranloo et al., 2017; Zaid et al., 2018) and mainly belong to the manufacturing sector (Masri & Jaaron, 2017; O'Donohue & Torugsa, 2016; Raza & Khan, 2022; Thakur & Mangla, 2019; Tooranloo et al., 2017; Zaid et al., 2018).

Third, looking at the theoretical arguments used, the wide range of approaches used to link HRM and sustainability is striking, although it is true that the resource-based view theory is the theoretical approach shared by more than one paper. The resource-based view (RBV) theory is proposed by O'Donohue and Torugsa (2016) and Zaid et al. (2018) to explain why employees are a strategic resource for achieving sustainable performance. Other strategic management paradigms have been used. For instance, the Sustainable Development Theory has been used by Tooranloo et al. (2017) to highlight the role of companies in achieving their goals without compromising the ability of future generations. The principles of sustainable entrepreneurship and organisational design have been used by Hosseininia and Ramezani (2016) to highlight how organisational structure and human resources are highly relevant factors in achieving sustainable returns. The Business Models Innovation (BMI) approach used by Angeli & Jaiswal, 2016 focuses attention on redesigning the way companies conduct their activities, including HR practices, and introducing social aspects into the profit equation in addition to economic ones. Legacy theory and stakeholder theory have been used by Kiliç (2016) to emphasise the importance of incorporating ethics and responsibility in corporate governance, in order to create a positive attitude in society towards a company and its activities. On the other hand, from the field of human resources, Tariq et al. (2016), Gardas et al. (2019) and Raza and Khan (2022) use different approaches (Ability, Motivation and Opportunity (AMO) Theory, Talent Management, Sustainable HRM or Green HRM) to explore how employees, with their skills and motivations, can contribute to business sustainability. Finally, from the field of social psychology, Burbano (2016) presents arguments from behavioural economics and social identity to talk about prosocial behaviour at work and the preference to work for socially responsible employers.

5 | DISCUSSION AND FUTURE RESEARCH. THE SDGS AS A BASELINE

Scientific production in the field of sustainability and HR has increased since 2015, probably due to the framework of the UN 2030 Agenda. The objective of sustainable resource management is to implement the so-called 'green movement' in companies, preserving environmental resources while achieving business growth and performance (Chams & García-Blandón, 2019). Based on the results

obtained from the bibliometric clusterisation and the strategic diagrams and driving themes, it can be affirmed that the lines of research associated with the different clusters are closely related to the objectives of the different sustainability goals. However, neither the weight nor the development of the different objectives is homogeneous.

The four clusters can be divided according to (1) the object of sustainability (the aspects related to workers -green cluster- and the environment -blue cluster- or (2) the processes (at the operational level -red cluster- or at the strategic policy level -yellow cluster-) that enable the implementation of sustainable actions for both objectives. From a temporal point of view, the beginning of the research in this thematic area focused on HR as a core and transversal theme and started to work on the role of people in making organisations and supply chains more environmentally sustainable -SDG 12- (Jabbour & Santos, 2008). In the second period (2016–2023), with the growth of publications, these themes lead to a greater dispersion of topics, with the central themes of this literature being grouped especially in HRM and environmental management for the topics more specifically related to green HR -SDG 9- (Ahmad, 2015).

Based on the analysis and subsequent discussion, the following research proposals (Figure 6) are presented to improve compliance with certain less developed SDGs. This research agenda is suggested as a guideline for future research in this field, providing opportunities for governments, scholars and human resource practitioners. The SDGs most present in the clusters analysed are 3, 5 and 8. However, SDG 3 has been addressed from emerging themes such as education (Vetrakova et al., 2019) or with isolated themes such as health research in human resources (Najafpour et al., 2023). Aspects related to the physical and mental health of workers have received particular interest from 2021 onwards, coinciding with the impact of the Covid 19 pandemic on this health. However, there is still a long way to go in this area of research. In this respect, the Proposition 1 is stated:

Proposition 1. The development of worker welfare requires the establishment of links with other issues in the coming years.

Although SDG 5 -gender equality- has been researched from the base and driver themes, with significant representation in three of the clusters, it should be noted the new research trends related to talent and diversity in isolation and education in an emerging form, as opposed to motor themes with job satisfaction (Meyerding & Lehberger, 2018). However, research must consider new areas of research for the development of gender equality and the breaking of gender stereotypes about its qualities and applications (Costa et al., 2017). The current turbulent and highly changing environment can be a source of opportunities or challenges for the gender perspective. The Proposition 2 is defined:

Proposition 2. To develop the gender perspective on sustainability in human resources, building on existing links with other isolated issues such as talent management and resilience.

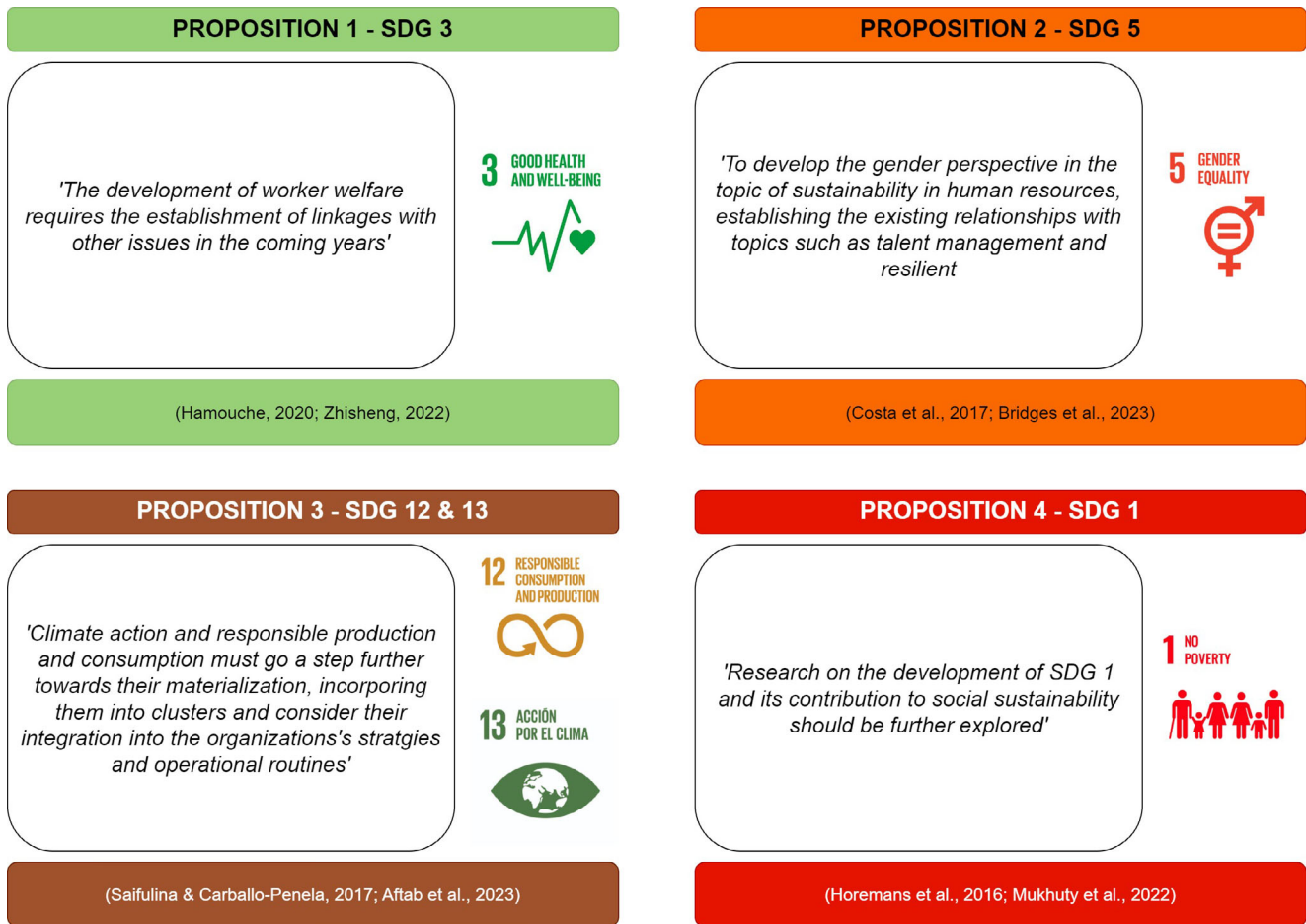


FIGURE 6 Research proposition model.

Increasing employee awareness of sustainability-related issues, such as those represented by SDGs 12 -responsible consumption and production- and 13 -climate action- are presented as core and driving themes and are included in the cluster analysing green HR through employee behaviour (Sabokro et al., 2021). The move towards more sustainable operations must go hand in hand with the necessary cooperation of employees:

Proposition 3. Climate action and responsible production and consumption need to be taken a step further towards their materialisation by being incorporated into clusters that consider their integration into the organisation's strategies and operational routines.

Finally, SDG 1 is not represented in the clusters obtained and has recently been considered in relation to addressing environments in crisis and responding to unequal environments through new business models (Angeli & Jaiswal, 2016). In the context of sustainable HRM and SDG 1, job opportunities and inclusive employment are key to contributing to 'poverty reduction'. To achieve this goal, it is necessary to consider not only the contribution of companies to the reduction of poverty in the environment, but also in the organisation itself.

The current loss of purchasing power, accentuated by a prolonged period of inflation, is increasing the overall rate of in-work poverty (Horemans et al., 2016). It is a question of interpreting the contribution of employment to the fight against poverty, where the classical conceptualisation of poverty gives way to a less visible form of poverty, characterised by people who are in work but whose income is insufficient to meet their payment obligations and the cost of living. Research on the relationship between human resources and poverty should therefore focus on the differences between underemployment, unemployment, and reemployment (Thompson & Dahling, 2019). Ensuring decent wages and investing in training to improve job opportunities and career progression for workers is therefore crucial but should be seen as an adaptation of practices when it comes to relocating an employee or tackling long-term unemployment, which often has a significant impact on poverty in societies. This research requires a multidisciplinary approach, using economic, legal and social perspectives. Developments in economic practices and labour law undoubtedly contribute significantly to this employment framework, but social research should not be neglected. For example, there are important psychological issues (Thompson & Dahling, 2019) such as people's 'mental health'. In this way, relationships are established with Proposition 1 by considering that the SDGs will not be achieved

independently of each other, thus establishing interrelationships between them.

Proposition 4. Research on the development of SDG 1 and its contribution to social sustainability should be further explored.

6 | CONCLUSIONS

First, to address the initial research question, this work has identified the evolution of the conceptual network and the state of the literature on sustainability in HR, with particular attention to SDGs. Although it is true that this literature is in an emerging phase until 2015, the 2030 Agenda marks a before and after. From then on, there is a marked increase in scientific production and progress towards a growth phase. The rapid proliferation of studies in recent years has taken place mainly in the fields of economics and health. However, the vagueness and looseness in the use of the word sustainability is still evident. The maturity phase will be reached when research succeeds in bringing greater coherence and solidity to this field of knowledge.

Second, regarding the second research question, this study identifies the central themes and patterns within the research topic. Sustainable HR systems, corporate social responsibility in HRM, green and environmental HRM, and HRM innovations to achieve SDGs are the most strongly related topics in the whole research period –1996–2023- (VOSviewer). Concerning the SciMat analysis, two time periods (1996–2015, 2016–2023) were retrieved to construct the evolution of this research field. For the last period –2016–2023-, the strategy diagram suggests that: (1) job satisfaction (SDG 8) and environmental management-sustainability (SDGs 9, 11, 12 and 13) stand out as motor themes; (2) work quality and implementation (SDGs 5 and 8) and perspective are basic themes; (3) social sustainability and education (SDGs 1–5) are configured as emerging-disappearing themes; (4) human resources for health, diversity, talent and resilience (SDGs 1, 3 and 5) are isolated themes.

Third, as suggested by the third research question, the results obtained have provided an opportunity to propose a research agenda to add more knowledge to the phenomenon studied, to improve the understanding of issues that have been insufficiently studied by the current state of the art, or to fill the gaps identified. Some of the proposals are aimed at developing SDG targets with emerging research topics. Future research could focus on: (1) *the development of SDG 3 by establishing linkages* with other themes in the coming years; (2) *research on social sustainability from a gender perspective (SDG 5) needs to continue with new approaches*, considering emerging issues such as talent; (3) SDGs 12 and 13 require research to enable their implementation at strategic and operational levels; and (4) to address the current BANI (Brittle, Anxious, Non-linear and Incomprehensible) environment that exacerbates poverty problems, *SDG 1 needs to be developed through research that links sustainability in HR with managing this environment*. The fragility of economic and social systems can lead to their unexpected breakdown, which fosters inequalities.

In terms of theoretical contributions, this paper uses two complementary software to shed light on the research trend identification: (1) VOSviewer to cluster and map the literature of the whole period (1996–2023); (2) SciMat to provide an understanding of the evolution of this field, dividing the research into two periods and focusing the analysis in the second phase to detect motor, basic, emerging/disappearing and isolated themes. The results of this paper show the relationship of the cluster to the achievement of the SDGs. The valuable insights into the conceptual blocks of sustainability, SDGs achievement and HR could inspire further research. Moreover, the proposed research lines contribute to the order and cohesion of research in this area, facilitating the theoretical and empirical progress of future studies.

This paper also presents practical contributions for human resource academics and human resource managers. This research could motivate the investigation of how HRM practices, such as training and recruitment, can align with SDGs and promote sustainable behaviours among employees (Dar et al., 2021). More empirical research can be addressed regarding what organisations can do for people. On the one hand, it can be focused on employee's well-being at workplaces. How the role of culture and sustainable institutions affect in terms of HRM towards SDGs (Aust et al., 2020) could be addressed. These variables could be identified through successful case studies comparing different regions and organisations. On the other hand, regarding regulation, HR scholars may endorse governments giving advice on integrating SDGs. An example of this could be examining how initiatives such as teleworking impact well-being (Beckel & Fisher, 2022), while simultaneously reducing greenhouse gas emissions, aligned with social and environmental issues, respectively. Research on sustainable HRM to track initiatives and participation in well-being and health programmes or employees' diversity could be used to monitor SDGs achievement.

The association between the SDGs and HRM implies an opportunity for companies by facilitating the alignment of employees with social and sustainability objectives, which can attract talent based on their sustainability behaviours (Sarkar et al., 2023). Building on this relationship and targeted on what people can do for organisations, sustainable practices implemented by employees could mitigate environmental impacts, such as reducing waste and minimising energy consumption (Bilderback, 2023), what improves the sustainability performance of organisations (Paillé et al., 2014; Testa et al., 2018). With a focus on what organisations can do for people, this alignment could encourage human resource managers to develop training programmes, incorporating educational plans in organisations focused on achieving the SDGs (Di Vaio & Varriale, 2018; Thakur & Mangla, 2019). Thereby increasing employee productivity and satisfaction. Organisations' pursuit of the SDGs, particularly SDG 5, could improve equality, diversity and inclusion (United Nations, 2015). Furthermore, engagement with the SDGs and CSR could enhance both customer loyalty and corporate reputation (Bilderback, 2023) as well as positively impact on employer branding (Yasin et al., 2022) – considering what organisations can do for people and vice versa.

The research avenues based on the SDGs of the 2030 Agenda provides guidance on the contributions that academia can offer to



companies for more useful studies to achieve these goals, which implies meaningful implications for practitioners. In addition, there is a need for more government regulations and support in this regard -in relation to SDGs 3, 8, 16 and 17- (Amrutha & Geetha, 2020).

Although the VOSviewer provided a broad overview of the conceptual building blocks of the literature on HR and sustainability, specified thanks to the SciMat analysis of the last years, one of the main limitations has to do with the method and the procedure. In terms of data collection, only the WoS database and English-language articles were included. Thus, articles from other databases such as Google Scholar or Scopus and other languages -Chinese, Portuguese or Spanish- were not considered. The co-occurrence analysis performed is inevitably subjective in explaining the results obtained by VOSviewer. In this regard, only the focus on keyword relationships was taken into account. Many articles have 'sustainability' as a keyword, but do not focus on it -or do so in a very tangential way- which has led to the extraction of a large number of documents that are not really related to the topic under study. This somehow highlights that the term 'sustainability' is sometimes misused or used very lightly in the literature.

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ORCID

Irene Campos-García  <https://orcid.org/0000-0003-2227-7820>

Sara Alonso-Muñoz  <https://orcid.org/0000-0001-8991-5781>

Rocío González-Sánchez  <https://orcid.org/0000-0002-5460-6652>

María-Sonia Medina-Salgado  <https://orcid.org/0000-0003-3500-1241>

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APPENDIX A

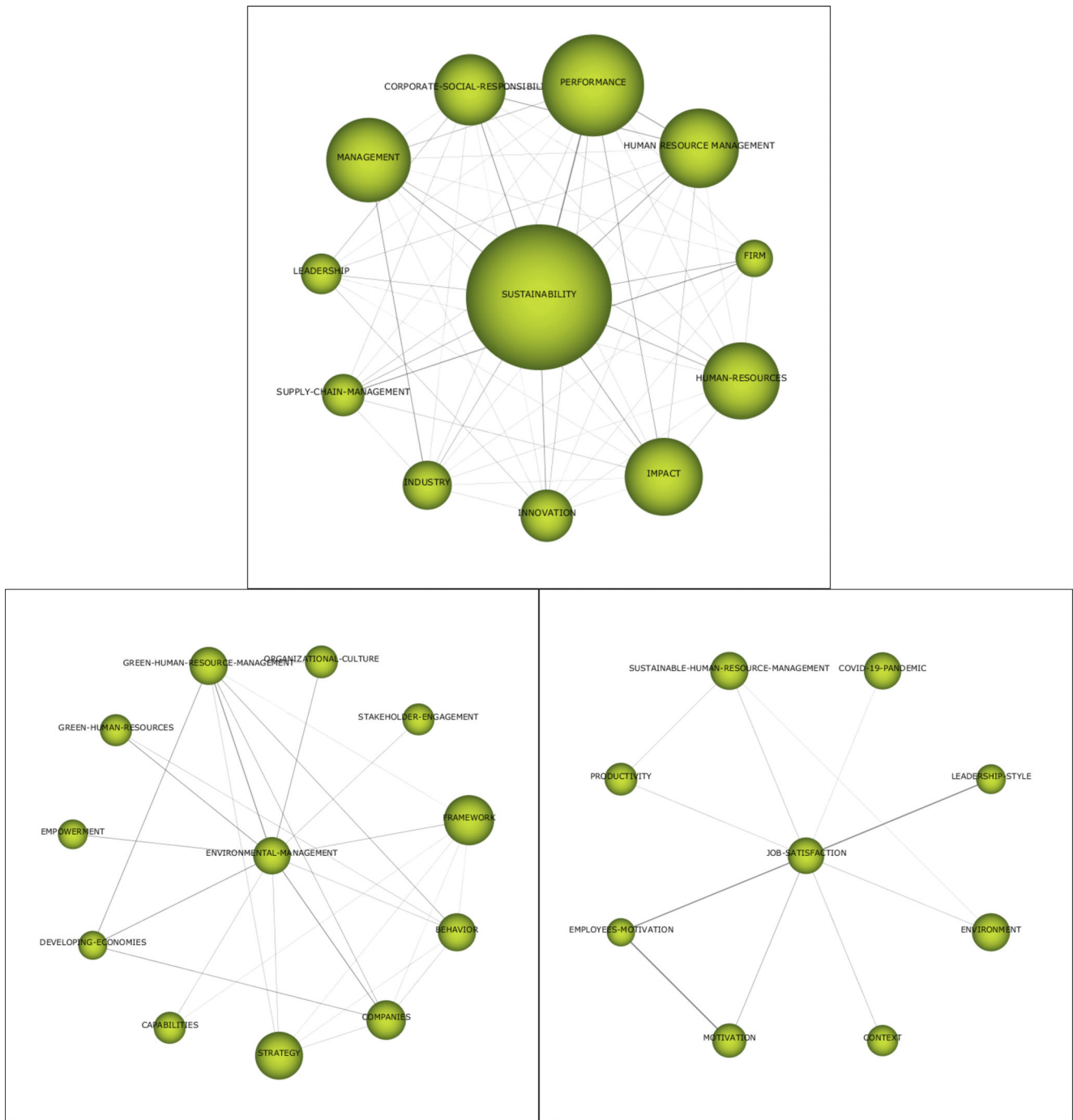


FIGURE A1 Motor themes by SciMat software.

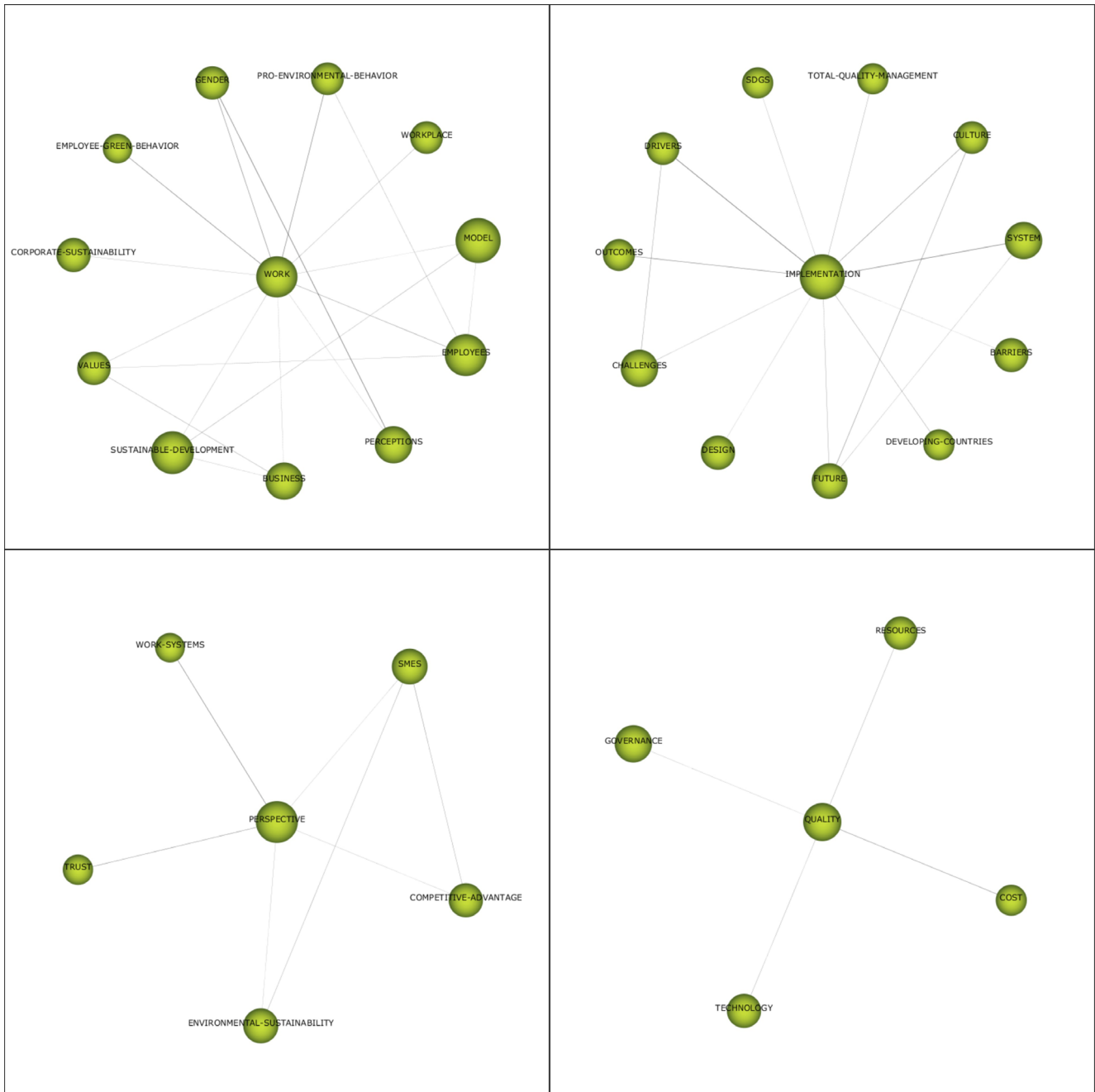


FIGURE A2 Basic themes by SciMat software.

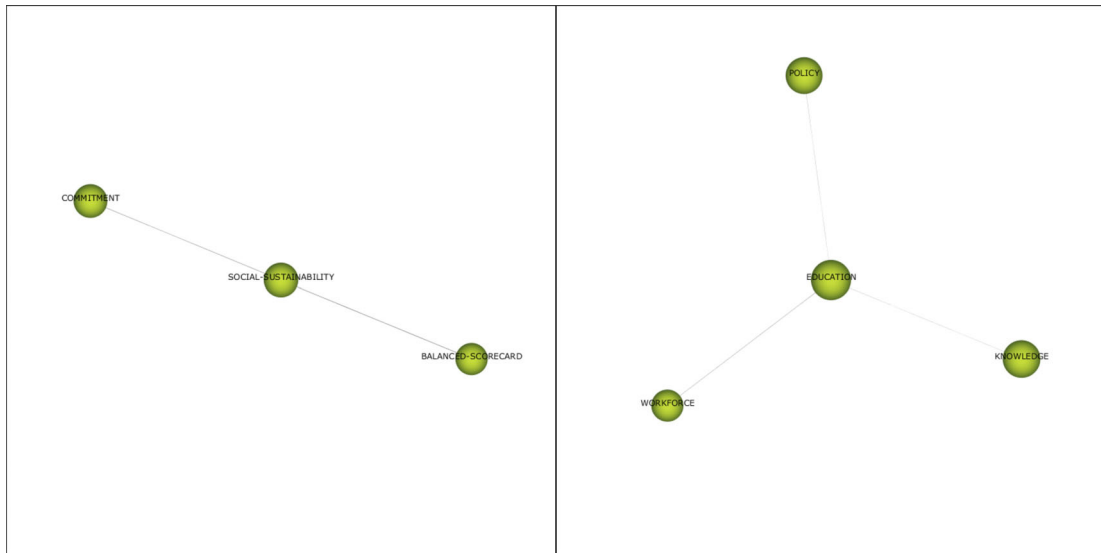


FIGURE A3 Emerging and disappearing themes by SciMat software.

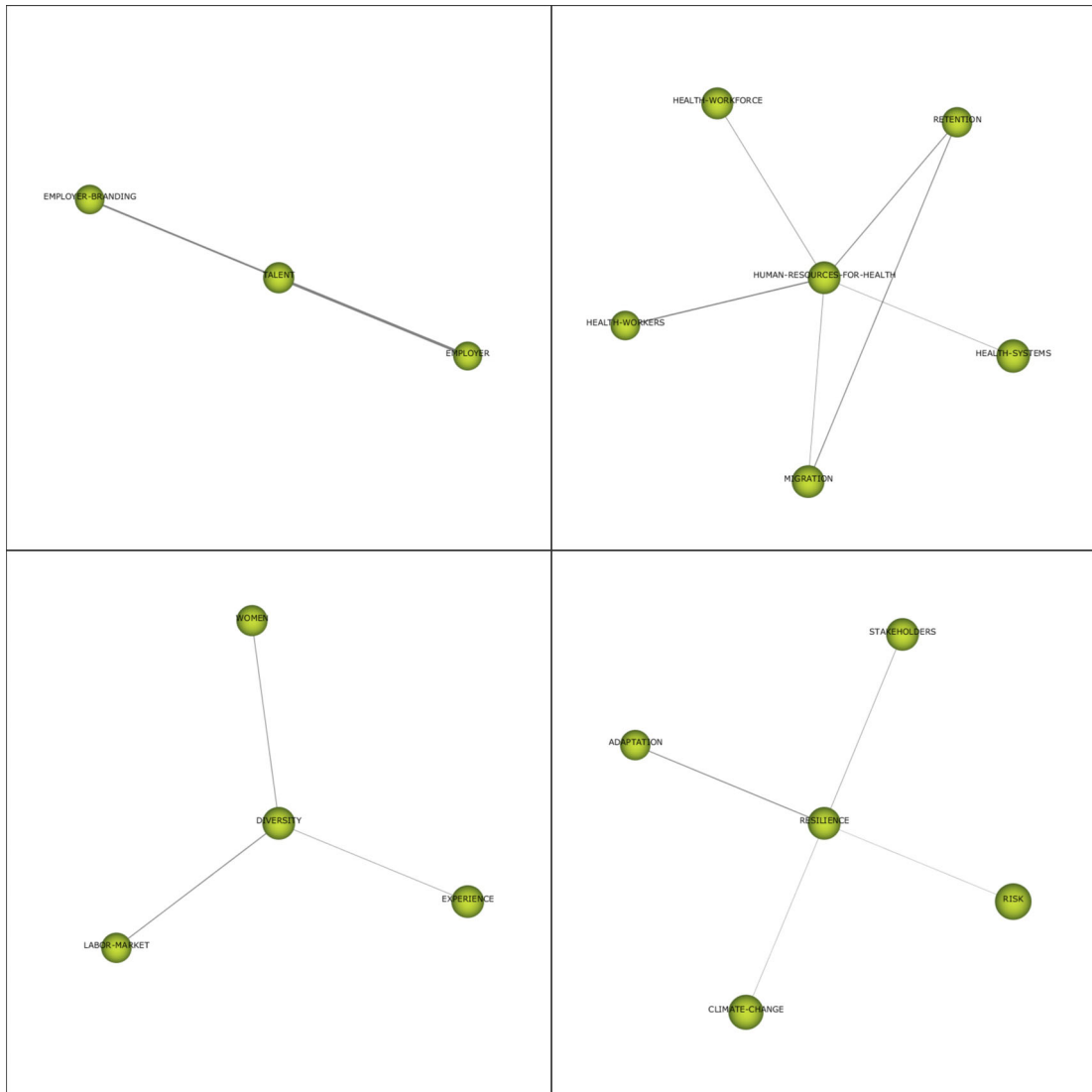


FIGURE A4 Isolated themes by SciMat software.