



What do we know about High Performance Work Systems? A bibliometric summary of 30 years of research

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Abstract

High performance work systems have coalesced into an influential body of discourse within human resource management. With the advent of knowledge-based work they have become more fragmented, sector-wise differentiated and critical to performance management. Measuring the impact of this research discipline and understanding its patterns is the need of the hour. A large corpus of 730 papers is quantitatively analysed to uncover insights on common research themes, differential influence of these themes and other similarity patterns in respect of authors, institutions, sources and countries that are anchored in the discourse. Bibliographic coupling, collaboration networks, keyword co-occurrence networks and topic modelling are some of the techniques employed. The three prominent research themes are: ‘Reconciling paradigm controversies’, ‘Impact of HPWS on employees’, and ‘HPWS and new workplace dynamics’. Extensive future research directions are suggested.

Keywords High-performance work system · Bibliometric · Performance · Strategy · Content analysis · Keyword co-occurrence network analysis · Citation analysis · Bibliographic coupling

1 Introduction

High-performance work systems have been around in practice for nearly five decades (Jewell et al. 2022). In this time period, the research domain on this topic has witnessed considerable paradigmatic upheavals. Universalists advocate that the precursors and consequents of these practices or systems are applicable everywhere, that context doesn’t matter and that objective measurement techniques should be used to capture these organisational phenomena (Chadwick and Flinchbaugh 2021). Contingency theorists, on the other hand, are positioned on the opposite side of the

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spectrum. They advocate that micro-level situational differences warrant that the particular HPWS there must be conceptualised as a unique system and should be composed of managerial practices that take such factors into account as: job descriptions, departmental resources, top management support, employee profiles and sectoral trends. As may be expected, other theories have also developed which blend the above two positions of positivism and interpretivism respectively, in different proportions (Das and Kodwani 2018). The multiplicity of theories have ensured that the corpus growth rate is high, but have also led to considerable fragmentation in the field. The second important and striking aspect of the HPWS research domain is the sheer abundance of employee behaviors and outcomes that they are able to directly or indirectly predict. These include positive outcomes such as commitment, citizenship behavior, retention, engagement, performance, productivity, pro-sociality, collaboration, well-being orientation and work-life balance, among others; but also negative ones, such as workplace bullying, stress and health issues (Vranjes et al. 2022; Guerci et al. 2022; Hauff et al. 2022). Because scholars have analysed each of the above behaviors and more through different theoretical lenses, this has also ensured that the methodological repertoire of this research domain keeps on increasing and becoming more sophisticated by the day. The last and most recent trend that has substantially impacted HPWS research is the macro level change in the economic and industrial composition of nations. Several countries, especially developed countries, have developed large knowledge dependent economies. Knowledge, in its various forms, from patents and big data, to digitalised employee routines and hyper-specialised jobs, are driving large changes in the way that HR practitioners may design and implement HPWS, in their organisations (Cheng and Hackett 2021). Encapsulating this immense, fragmented and unwieldy body of research is something that no study has attempted as yet; consequently, this is the critical gap that the present study aspires to fill.

Empirical findings in HPWS scholarship have served as secondary data in several meta-analyses (Combs et al. 2006; Subramony 2009) affording inferences of higher power. However, even while this consolidation of effect sizes has been accomplished by various scholars, there has as yet been no bibliographic summarization of this research. While a meta-analysis does help us to ascertain if a causal or correlational relationship is indeed according to theoretical predictions at an aggregate level; it does not provide a consolidated picture of all the complex research threads, theories and schools of thought that surround a topic, such as done by a bibliometric compilation (Koseoglu 2016; Block and Fisch 2020). In this study, we seek to address this critical bibliometric gap. The objective is that future scholars would be able to use this broad-based lens to further drill down into topics of their interest and generate new ideas for research in the process. To clearly delineate our agenda, we pose the following four research questions (RQs) for the HPWS discourse:

RQ1: What is the trend in publication in HPWS research?

RQ2: What is the intellectual structure of this research domain?

RQ3: What is the collaboration structure in this research domain?

RQ4: Which high frequency keywords represent the important ideas in this research?

RQ5: What are some of the most recent research directions with future potential?

Previous bibliometric studies have often used social networks of authors as a proxy for finding patterns in research themes. Recently, however Vogel et al. (2017) has suggested that this is not an effective way to infer similarity in themes as a particular author may work with his or her peers in a number of themes or disciplines and isolating their collaboration in one particular theme may be difficult. They recommend bibliographic coupling instead, as a more rigorous process. This method is the mainstay of our analysis. Additionally, though, an in-depth qualitative analysis is also conducted of the papers in each cluster as identified through the bibliographic coupling process. In this way, both breadth and depth of the HPWS research is appraised in the study. The organizations of the manuscript is as follows: Sect. 2, which follows this introduction, details the flow of the research design; Sect. 3 describes the findings, both qualitative and quantitative; and finally, Sect. 4 concludes the study with a discussion of implications and study limitations.

2 Method

The SCOPUS database was leveraged to search for relevant studies and delimit the sample for this review. Search strings used in the TITLE placeholder, to recover relevant papers were: “high performance work system” OR “HPWS” OR “high involvement work practices” OR “high performance work practices” OR “HPWP” OR “HPHRP” OR “high performance human resource practices”. There were several filters applied to delimit the literature. We placed the following constraints: language to be English, source to be journals, type of papers to be peer reviewed articles only. All these inclusion criteria constrained our search to 741 articles. Then, we manually scanned the titles and rejected 8 entries of inappropriate titles. An additional 4 articles were discarded because of reasons such as unstructured or inadequate meta-data. Complete metadata for the final sample of 730 articles and full copies of the same were subsequently downloaded for in-depth reading and analysis for identifying cluster themes. It is essential to cull the bibliometric sample from a single database so that the citation data is normalized across the entire pool of articles and may thereby enable comparability.

For analysis, MS Excel was employed for cleaning the data and for running preliminary descriptive statistics. We used two software: R (Biblioshiny) and VosViewer to further analyse the data and generate graphs. Bibliographic coupling is the primary technique used to assess similarity/relatedness and thereby detect patterns in the data. This technique was used to unravel the research themes, while social network analysis was used to visualize the collaboration patterns in the research. The quantitative modelling is complemented by a qualitative content analysis. In this second stage of the process, all the papers were manually downloaded and closely read to understand their themes and key research questions. The articles were coded for type of study (conceptual or empirical), type of empirical method used (qualitative versus quantitative, primary study versus meta-analysis), level of analysis (macro, meso or micro levels) theoretical perspective used, underlying theme and major future research

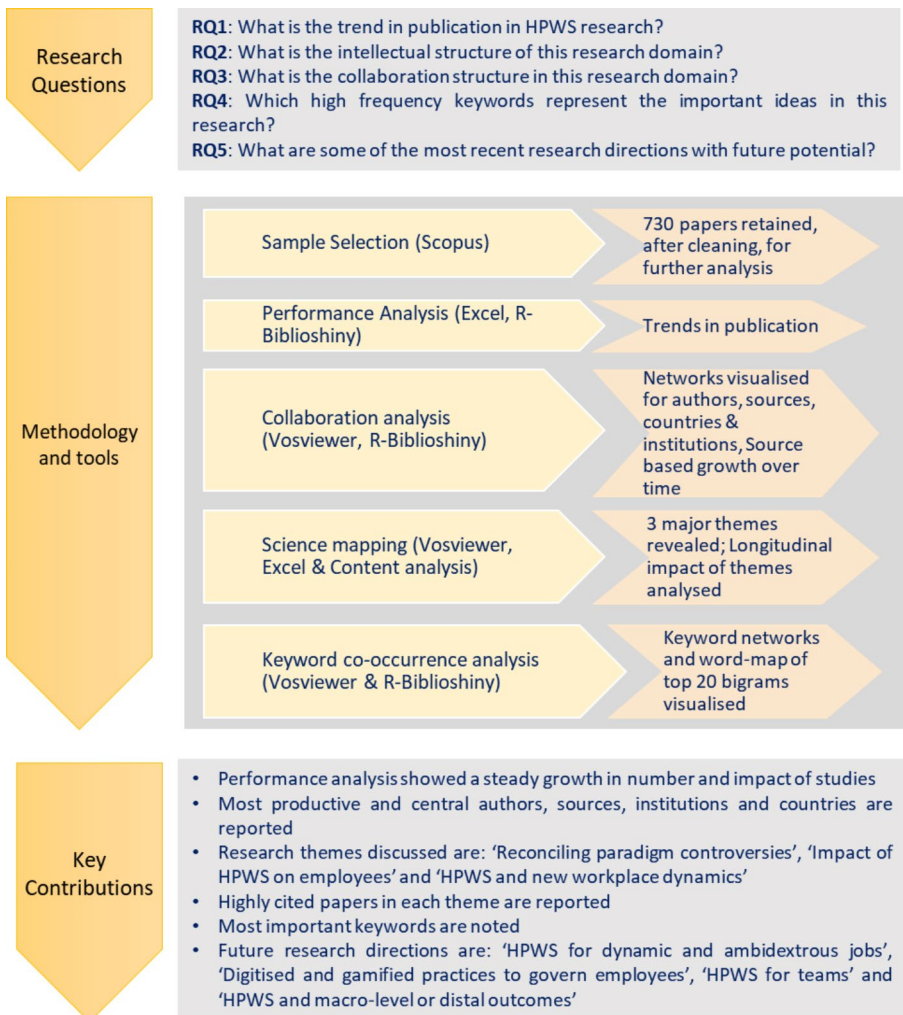


Fig. 1 Research Design

direction(s) suggested. A qual-quan mixed method approach serves to accomplish both breadth and depth of an appropriate degree. See Fig. 1 for a complete documentation of research questions vis-à-vis modelling techniques and outputs.

Compliance statements.

3 Findings

3.1 Descriptive features

The sample for this study extends across three decades, from the year 1992 to 2021. Figure 2 maps the longitudinal frequency of publication and testifies towards the

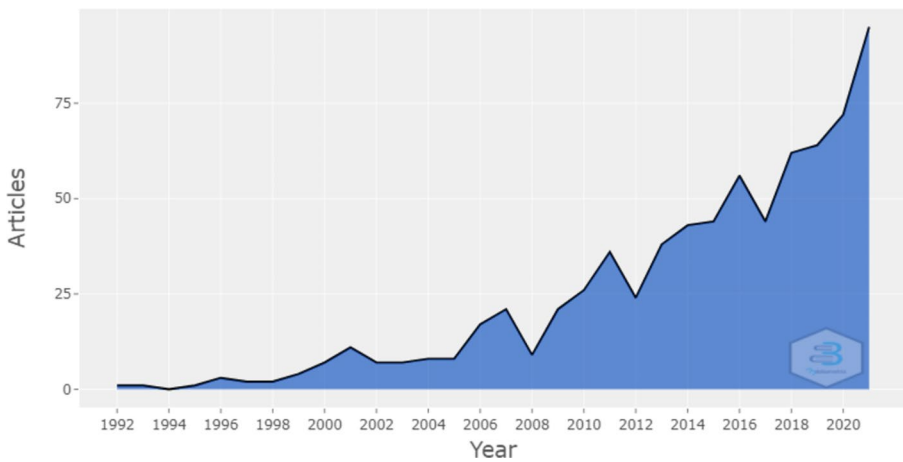


Fig. 2 Annual scientific production

steady and still-increasing scholarly interest in HPWS over this entire duration. One reason for this may be that jobs and industries have been changing at a fast pace owing to the internet revolution. Consequently, the need for newer managerial techniques to solve workforce issues keeps on enduring. Total citation count of the entire corpus is 30,339. The maximum number of papers were published in the year 2021. TC is the total citation or raw citation count provided by Scopus. However, this metric is not useful in comparing annual impact as it favourably biases older papers which have had more time to accumulate citations. We therefore look at C/Y or citations per year as a reference metric in this paper. A higher C/Y value indicates greater impact or influence in the scholars' community. The normalised impact value of the entire corpus is 3750.28. A large difference between the raw impact and normalised impact, such as seen here, indicates that a large proportion of papers were written in recent years.

3.2 Intellectual structure of HPWS research

As previously noted, bibliographic coupling is a more rigorous way of assessing similarity between and within themes, compared to social network analysis. Two documents may be said to be in the same group if they are referring to a common body of articles, books and other documents. This is the premise of bibliographic coupling (Kessler 1963) which we use in the present study to identify the major research themes in the HPWS discourse. Three themes have emerged as described below; see Table 1 for salient features of each theme as well the key concepts covered and top 10 papers; Fig. 3 is the visualization for the coupling model and Fig. 4 is the longitudinal evolution of research themes. Scholars suggest aver that there is no scientific mandate to deciding the duration of time slabs; however as a rule of thumb, one may consider making time divisions such that a reasonable sample size of papers may become available for extracting meaningful insights (Cobo et al. 2011). Keeping this in mind, constructed 3 roughly equal time periods (T1, T2 and T3) as follows: T1

Table 1 Research theme features

Research Theme (RT) #	1	2	3
Description	Reconciling paradigm controversies	Impact of HPWS on employees	HPWS and new workplace dynamics
Duration	1995–2021	2010–2021	2005–2021
n	263 (36.03%)	264 (36.16%)	125 (17.12%)
TC	16,524 (54.5%)	4431 (14.61%)	7079 (23.35%)
RTI	1283.42 (34.26%)	1267.56 (33.84%)	915.36 (24.44%)
RTI/n	4.88	4.80	7.32
Top 10 papers	Reference (Combs et al. 2006)	C/Y 79.20 (Karatepe 2013)	Reference 28.25 (Kehoe and Wright 2013)
	(Kogut and Zander 1992)	76.16 (Van De Voorde and Beijer 2015)	24.67 (Sun et al. 2007)
	(Guthrie 2001)	48.80 (Han et al. 2020)	23.00 (Posthuma et al. 2013)
	(Datta et al. 2005)	48.25 (Martinaityte et al. 2016)	22.50 (Subramony 2009)
	(Boxall and MacKy 2009)	40.25 (Zhong et al. 2016)	21.20 (Takeuchi et al. 2009)
	(Shin and Konrad 2014)	31.25 (Zaman 2020)	20.00 (Jensen et al. 2011)
	(Gittell et al. 2010)	30.82 (Margaret and Dundon 2016)	19.20 (Patel et al. 2013)
	(Ramsay et al. 2000)	23.62 (Kloutsiniotis and Mihail 2020)	18.00 (Chuang and Liao 2010)
	(Wood et al. 2012)	22.44 (Singh et al. 2020)	18.00 (Saridakis et al. 2017)
	(Boxall and Macky 2014)	20.00 (Teo et al. 2020)	18.00 (Caniëls and Veld 2016)
Representative Concepts	Work-life balance, Skills, Labour union, Manufacturing, Lean management, Quality, Job analysis, Personnel economics, Socio-technical systems, Strategic human resource management, Culture, Power, Case study	Hospitality industry, Service quality, Organizational citizenship behaviour, Creativity, Engagement, Wellbeing, China, Commitment, Innovative work behaviour, Emotions, Dark side, Leadership, Technology, Organizational learning	Organizational performance, Family firm, Mediation, Knowledge work, Professional service firms, MNC subsidiaries, Corporate entrepreneurship, Ambidexterity, Meta-analysis, Longitudinal, Decision-making

from 1992 to 2001, T2 from 2002 to 2011 and T3 from 2012 to 2021. The research theme impact (RTI) for each theme is computed by aggregating the normalised citation value for all papers in the theme. Additionally, for each theme, the RTI/n, that is the impact per paper of the theme, is also reported.

3.2.1 Research theme 1: Reconciling paradigm controversies

This cluster of studies forms the theoretical core of the discourse on HPWS. Covering 36.03% of the paper volume (n=263), it spans the longest duration among all the clusters (1995–2021) and has a average RTI per paper value of 4.88, which is the

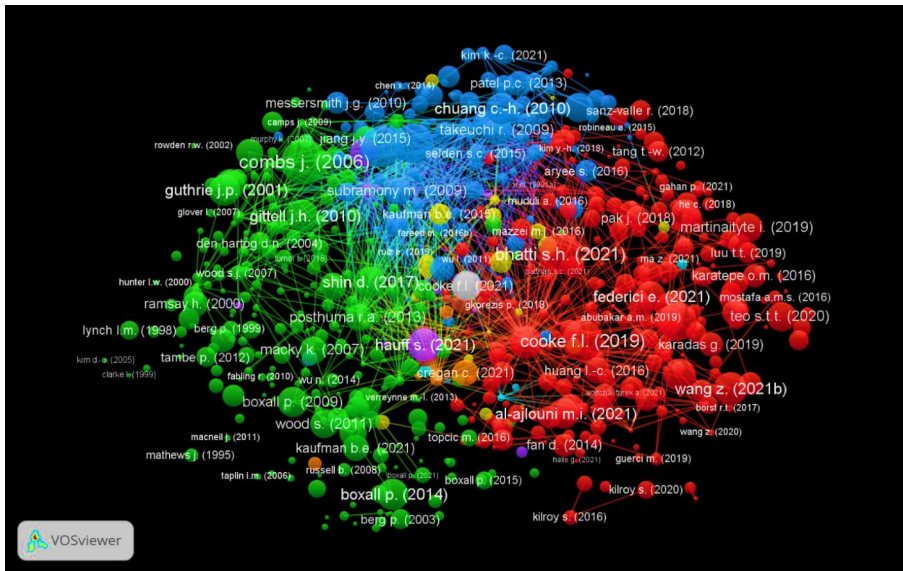


Fig. 3 Research themes

second highest among all themes. It deals extensively with how and where the HPWS paradigm should be positioned on the dual continuums of micro versus macro focus and positivist versus critical orientation. We discuss them in the context of three paradigmatic positionings adopted by various authors and documents: the industrial relations (IR) position, the strategic human relations management (SHRM) position and the socio-technical systems (STS) position. Not surprisingly, a large proportion of documents here are theoretical expositions. For example, Osterman (2011) discusses how HPWS and new personnel economics based thinking have caused a shift in the concept of institutional labour markets. Shin and Konrad (2014) have challenged the very basic premise of causal direction between HPWS to performance and have suggested that productivity should also be considered as an antecedent of HPWS.

Empirically, the papers in each of the paradigms mentioned above, are distinguishable not only by their philosophical assumptions but also their methodological approach and the types of concepts that they problematise. The second set of studies in this theme is concerned with how ‘skills’: materialise, develop, meet performance needs of organizations and become obsolete with time yielding way to new skill requirements. Skills are situated squarely in both IR and HRM domains because they significantly influence the bargaining power of employees vis-à-vis organizations. Using large scale data from the UK’s Workplace Employment Relations Survey 2004, Wood et al. (2012), notes that enriched job design may lead to increases on various performance indicators. Koski and Järvensivu (2010) on the other hand, dwell on how micropolitics may hamper the diffusion of HPWS oriented innovations owing to the shop floor games and micropolitics of skilled workers.

The third subset of studies is firmly entrenched in the premise that social processes and technology are constantly interacting at the workplace to create a symbiotic situation. This situation may only be managed properly if workforce practices factor in

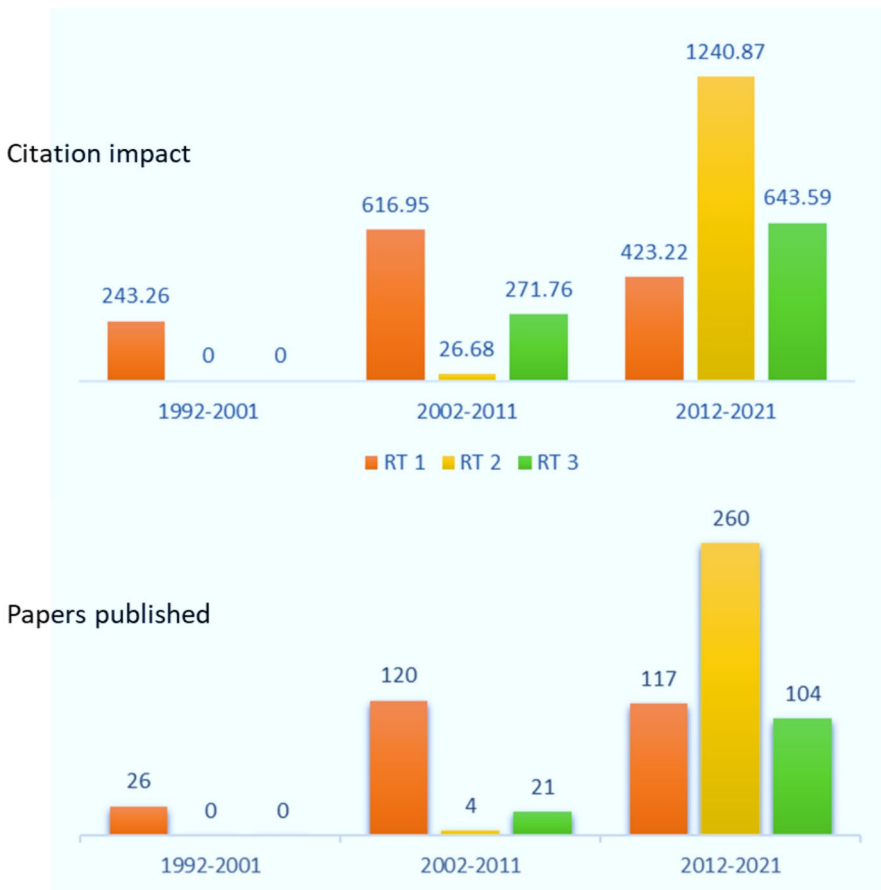


Fig. 4 Longitudinal changes in research them

this critical assumption at the design stage itself. This premise owes allegiance to the Socio Technical Systems (STS) theory and indicates a substantial technology-oriented maturation in HR scholars' thought. Examples of topics explored using this perspective are: engagement and retention of workers in resource-poor social enterprises in Vietnam (Truong and Barraket 2018); effectiveness of advanced manufacturing systems such as computer aided design, Kanban, robotics etc. in increasing manufacturing performance in USA (Das and Jayaram 2010); and lean production as adopted by a publishing company that serves the automotive industry, Tweddle (Van Ness et al. 2015), among others.

3.2.2 Research theme 2: Impact of HPWS on employees

This particular research theme is firmly entrenched in the human relations and psychologization paradigms. This cluster primarily emerged only in the last decade, between 2012 and 2021 (see Fig. 3), with an overall per paper normalised impact value of 4.80 and covering 26.16% of papers ($n=264$). A careful analysis reveals

that there are three trends observable in this theme as follows. The first observable trend is that psychological processes embedded in the employee-manager dyad are probed at depth by a section of scholars. For example, Kilroy et al. (2017) found that HPWS implementation led to a marked reduction in burnout (emotional exhaustion and depersonalization) among healthcare employees but only when the employees' perceptions of their own fit with the organization's values were high. Other scholars have argued that organizations should strive to create a mutual gains employee-relations climate. This is because such a climate will influence the design of practical HPWS which in turn will cause constructive voice behavior among the employees (Mowbray et al. 2020). We additionally notice that research around the negative employee outcomes of HPWS such as of abusive supervision, has started emerging in this time period (Han et al. 2020).

The second kind of focus that is observable within theme 2 is that of country studies at the very macro level, especially from East Asia, namely China (Cooke et al. 2021) and Korea (Oh and Park 2021), but also from some of the African countries (Nansubuga et al. 2019). This theme thus witnessed the maximum geographical diversity in HPWS scholarship and the emergence of HPWS scholarship in emerging economies. In Africa, HPWS are likely to have significant implications for knowledge creation. This inference is supported by a large empirical study in Uganda, where scholars showed that communities of practice in a national organisation for professionals positively influenced the soft components of HPWS (relational capital, employee engagement and coherent leadership) such that it led to a significant increase in knowledge creation oriented activities in industry (Nansubuga et al. 2019). In China, on the other hand, there is a greater need for SHRM oriented research than ever before because the industrial landscape is changing fast, technological complexity is growing and employee bargaining power is increasing (Cooke et al. 2021). It is important the research is more contextualised, that it takes socio-economic and political aspects into consideration and that it look deeper into the connection between SHRM and corporate social responsibility.

The third important trend in this theme is that of the increasing interactions between HPWS and technological interventions occurring in organisations. Zheng et al. (2020) note that HPWS in conjunction with information technology-based exploration capabilities of organisations are likely to increase employees' open innovation activities significantly. These positive causal inferences are supported by others in other technological outcomes and contexts such as in the increased adaptation of technology by banking employees in Bangladesh (Kee and Rubel 2021; L'Écuyer and Raymond 2020) chose to locate their study at the interface of HPWS and electronic human resource management (eHRM) systems. They observe that it is possible to craft not just one, but several configurations of HPWS and eHRM capabilities that will suit the particular and unique strategic orientations of different organisations. This multifinality based approach is something that is especially useful for both HR and IT practitioners. Melián-Alzola et al. (2020) based their study in the highly complex intensive care units (ICUs) of hospitals and found that HPWS implementation led to increased organizational agility and also increased employee satisfaction among ICU personnel. This trend is very recent and quickly becoming influential as may be seen from the variety of contexts described above.

3.2.3 Research theme 3: HPWS and new workplace dynamics

The third prominent research theme ($n=125$, Coverage of papers=17.12%, RTI/ $n=7.32$, duration=2005–2021) in the HPWS discourse relates to empirical studies on knowledge-based firms, integrative research and new managerial practices for knowledge workers. The RTI/ n value indicates that research theme 3 is most influential among all the three themes. Two trends are described here. A larger part of this theme relates to empirical testing of the HRM to organizational performance relationship which is the first observable trend in this theme. However, the focus is on unravelling the boundary conditions of this relationship by testing it in newer and more complex contexts such as family firms (Hoon et al. 2019), professional firms (Fu et al. 2019), idiosyncratic business models such as capital market based broker firms (Krausert 2016, 2018) and the like.

The second notable aspect of this theme is that it embodies the maximum methodological sophistication and plurality among the three themes discussed so far. There are meta-analytic studies (Saridakis et al. 2017), meta-ethnographies (Shaffer and Darnold 2020), longitudinal quantitative designs (Lee et al. 2014) and many mediational empirical studies (Wood 2021) and bibliometrics (Kaše et al. 2014). A meta-analysis is a robust way to summarise the quantitative findings of a group of documents and can be used only when a particular discourse has reached a certain level of maturity implying that there are enough relevant studies for this exercise. For instance, after aggregating eight longitudinal studies, Saridakis et al., 2(017) concluded that the beta of the predictive power of HPWS with respect to performance is 0.287, which may qualify as a medium sized effect size (Cohen 1988). As much as the effect size is an important contribution for this domain of research, a meta-analysis is also adjudged on the rigor of the analysis as well; in this case because it aggregates longitudinal studies rather than cross-sectional studies, it represents added value addition by its analysis. A meta-review may not aggregate effect sizes like a meta-analysis, nor report collaboration networks like a bibliometric study; but it still provides valuable research directions for the future. An example is Posthuma et al's (2013) study who used a mixed method approach to dissect 193 studies and reveal several research gaps.

3.3 Collaboration and citation networks

Unlike bibliographic coupling which tracks the referencing behaviours among documents; co-authorship analysis captures the collaboration patterns among authors. Since authors are embedded within institutions and countries, it is possible to generate aggregate and higher-level collaboration networks at these superior hierarchical levels as well. In addition to this, scholars in a given domain typically also identify themselves with particular clusters of journals or publications. As such, networks at source or journal level can also provide meaningful insights. The present corpus features 1457 number of unique authors, 230 sources or journals, 1417 affiliating institutions and 80 countries.

Collaboration networks among authors reveal the philosophical alignments among them. Citations and document numbers are some indicators of productivity. Addi-

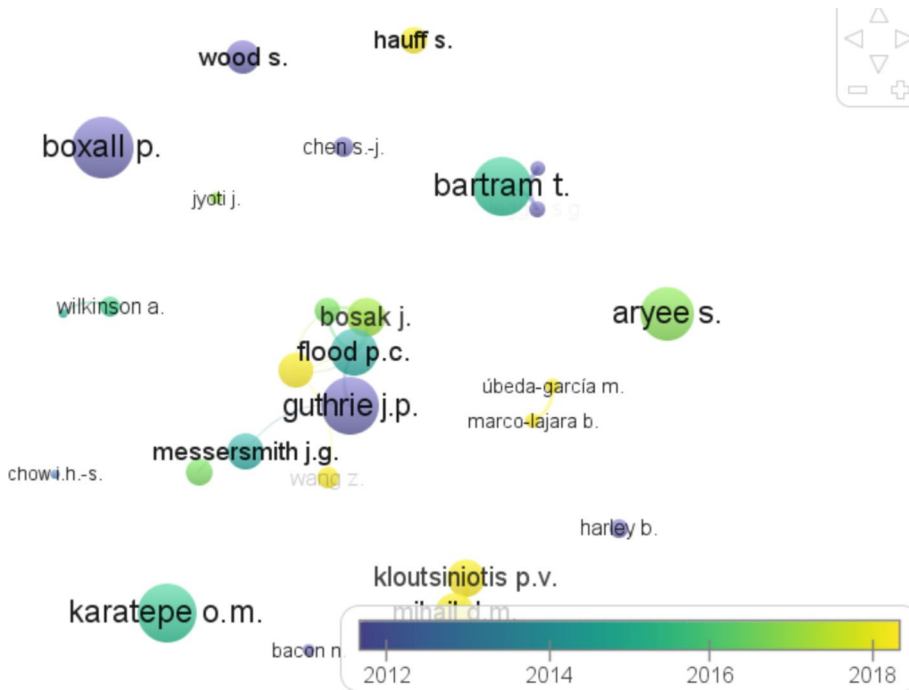


Fig. 5 Author collaboration networks

tionally, total link strength (TLS) is a standardised metric computed by Vosviewer and helps to compare entities or countries after taking both frequency and citations into account. A higher TLS indicates a higher influence-based position. Out of 1457 authors, only 27 have equal to or more than 5 contributions and qualify for inclusion in our network analysis (see Fig. 5). The top 6 authors with TLS more than or equal to 10 are: P.C. Flood (TLS=16, TC=514, n=11), J. Bosak (TLS=13, TC=267, n=8), T. Bartram (TLS=10, TC=464, n=11), S.G. Leggat (TLS=10, TC=324, n=6), P. Stanton (TLS=10, TC=289, n=5), and N. Fu (TLS=10, TC=200, n=5) in decreasing order of centrality; where n is frequency of publications and TC is total global citations per author. The visualization of author networks is overlaid with information about average publication year per author. For example, P. Boxall and J. P. Guthrie are some of the earlier scholars (avg. publication year=2012, denoted in purple) while D. M. Mihail and P. V. Kloutsiniotis have contributed some of the newer papers (avg. publication year=2018, denoted in yellow). The size of the author bubble represents the citations received by the author after normalising for year of publication. Further, among the top 20 most productive authors, Stephen Wood has been contributing for the longest duration, from 1990 till date (See Fig. 6).

Among affiliating institutions, out of 1417, only 22 meet the threshold of equal to or more than 3 contributions and qualify for inclusion in our network analysis (See density map in Fig. 7). In terms of TLS, only 10 institutions have TLS values ranging from 3 to 1, while 12 institutions have TLS=0. This indicates that among the most productive institutions, the collaboration intensity in HPWS research is rather thin.

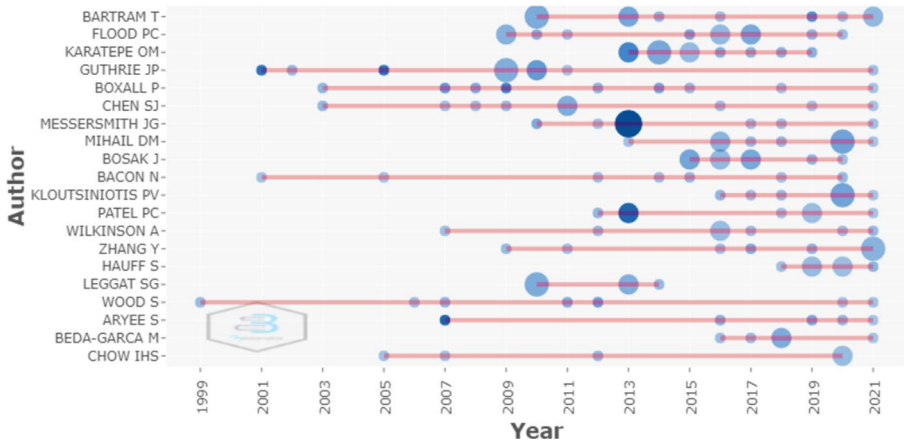


Fig. 6 Top 20 authors’ production over time

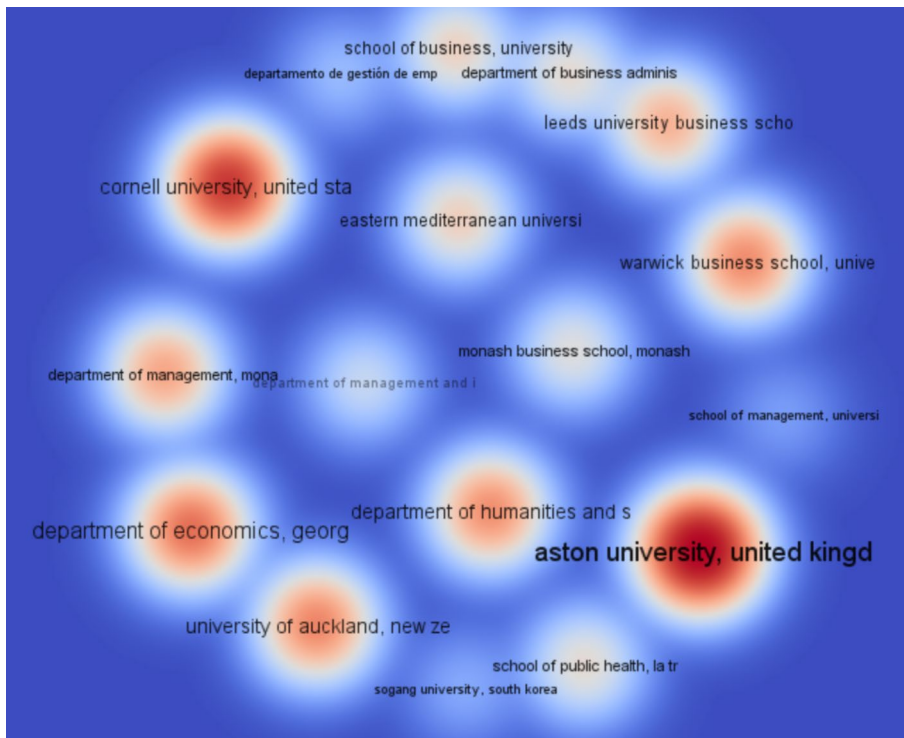


Fig. 7 Institution-based collaboration networks

The 10 institutions with non-zero TLS values are: Aston University, UK; King’s College London, UK; Bristol Business School, UK; Cornell University, USA; Monash University, Australia; RMIT University, Australia; University of Auckland, New

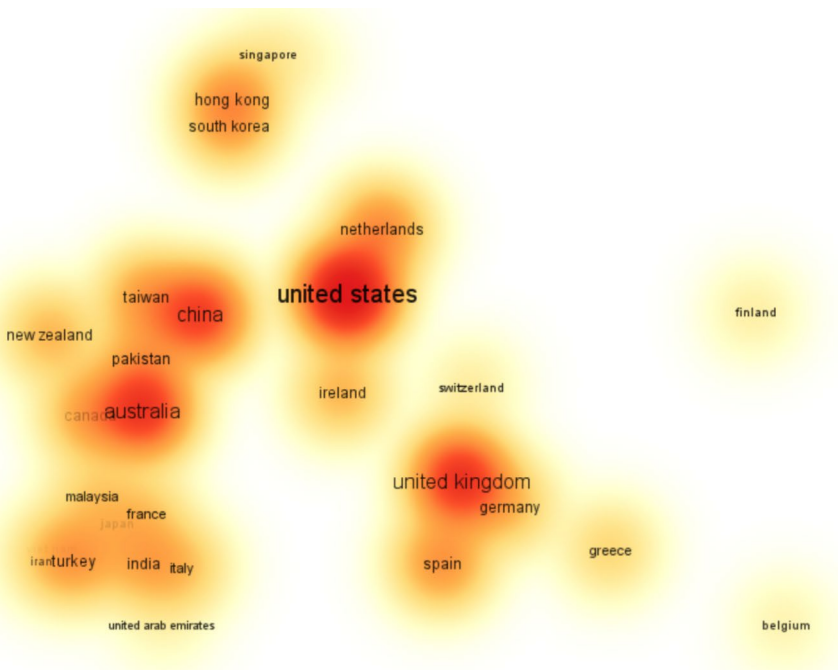


Fig. 8 Country-based collaboration networks

Zealand; University of Kansas, USA; University of South Australia, Australia; and Warwick Business School, UK.

At the country level, 29 countries qualified for inclusion in the analysis as they have contributions of 5 or more papers. Three clusters of collaboration are formed (see Fig. 8). The range of study frequency is very large, with the United States of America contributing the most at 159 papers, followed by UK at 103. The top four countries by this metric are USA (TLS=104, TC=10,610, n=159), UK (TLS=94, TC=4306, n=103), China (TLS=79, TC=1844, n=78), and Australia (TLS=68, TC=3062, n=96) in decreasing order of centrality; where n is frequency of publications and TC is total global citations per country. The size of the bubble in the picture, depicts the citation value normalised for the year of publication. Cluster 1 which is largest and most central, is led by Australia and includes the countries of Asia Pacific in it, such as India, Vietnam, Japan, Malaysia, United Arab Emirates etc. Cluster 2 is centred around UK with other European countries such as Germany, Greece, Spain etc. The third cluster has emerged around USA along with myriad countries such as South Africa, South Korea, China and Hong Kong among others. Unlike among the top institutions, we observe that at the country level, there is widespread collaboration, with TLS values ranging from 104 to 2. Thus, authors in HPWS are apparently aware of cross-country studies and therefore tend to form collaborative relationships with other authors based on their country location, rather than basing the decision on institutional affiliation.



Fig. 9 Source-based citation networks

To analyse patterns among sources or journals, a citation-network analysis was conducted to unravel meaningful insight, rather than a co-authorship analysis. Journals that cite each other are more likely to be closely associated in terms of conceptual and empirical viewpoints (positivistic versus critical; traditional behavioural topics versus new technology or new work arrangements-oriented contexts; organizational performance versus individual employee-based outcomes of HPWS, etc.). Only 14 journals have contributions numbering equal to or more than 9 studies each (see Fig. 9), with TLS values ranging from 525 to 43. The maximum contribution is of 105 papers by the International Journal of Human Resource Management (IJHRM, TLS=525). As usual, the size of the bubble in the journals' network visualisation denotes the journal impact expressed in terms of normalised citations. The first cluster (in pink) consists of 8 journals that have a predominantly positivistic and strategic orientation. These are: IJHRM, Personnel Review, Employee Relations, Human Resource Management (HRM), Human Resource Management Journal (HRMJ), Asia Pacific Journal of Human Resources, Journal of Business Research and Journal of Management. The second cluster with 4 journals (in green) includes: Human Resource Management Review, Industrial Relations, Industrial and Labour Relations Review and International Journal of Manpower. These journals predominantly analyse HPWS from an employee perspective and display a plurality of methodological orientations. The third cluster (in blue) is focused on the hospitality sector and

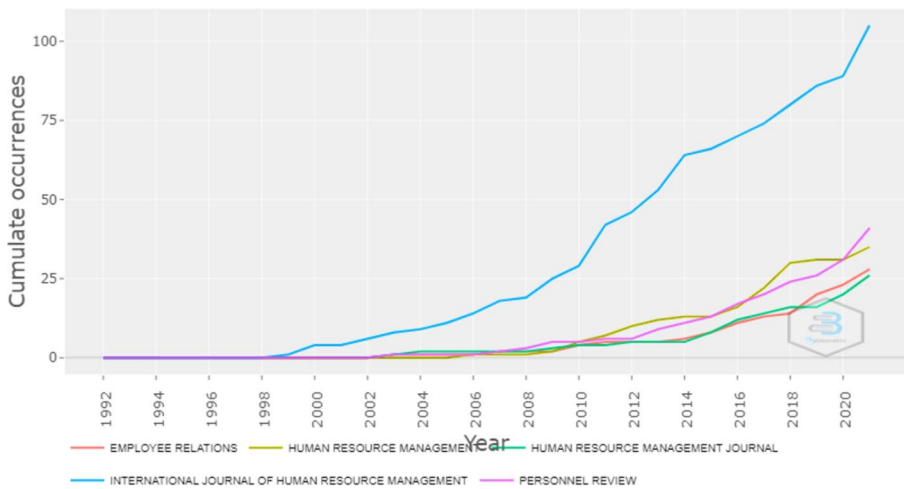


Fig. 10 Growth in top 5 journals

includes 2 journals: International Journal of Hospitality Management and International Journal of Contemporary Hospitality Management. Further, as seen from a longitudinal analysis of the top 5 most prolific journals (see Fig. 10), we may observe that IJHRM has by far surpassed its peers (HRM, HRMJ, Employee Relations and Personnel Review) in terms of contributing to research in HPWS.

3.4 Word co-occurrence

Words that appear in titles and keywords are important determinants in how easily papers get recalled during academic searches conducted via search engines. When discourses are sufficiently big, some words may occur in conjunction with particular words more often. This co-occurrence of words is an indicator of scholarly interest in that 'idea' and may be captured in various ways. Topic modelling is one such technique where words in the titles of articles are analysed statistically (Sharma et al. 2021). In this study, using this technique, high frequency words are drawn from titles and abstracts of articles to indicate the constructs that have the most search-ability. Figure 11 depicts the top 20 'bigrams' (two-word conjunctives) of topic words in their varying frequency levels and percentage of coverage. It may be observed that bigrams with the word 'resource' ('human resource', 'resource management' and 'resource practices') account for 38% of the entire map. Inclusion of the bigrams that indicate a strategic level of analysis such as; 'human capital', 'strategic hrn', 'firm performance' and 'organizational performance', raises the cumulative coverage to 54% of the map. One reason for this may be that the HPWS research borrows extensively from the resource based view and human capital theories of SHRM domain. It suggests that the HPWS literature may be inclined towards an SHRM paradigmatic affiliation and a positivistic epistemological position. A positivistic position is further supported by the high frequency bigrams of 'moderating role', 'mediating role',

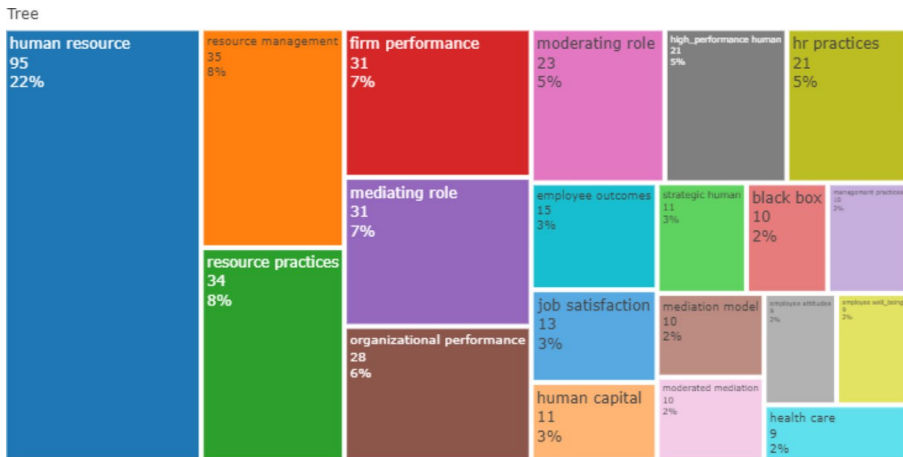


Fig. 11 Top 20 Word Bigrams

‘mediation model’ and ‘moderated mediation’ which account for an additional 16% of the map, taking the cumulative coverage to 70%.

To support the above findings, we additionally conducted a network analysis of author supplied keywords. The bigrams are generated with R-Biblioshiny software while the KCNs are created with VosViewer. A keyword co-occurrence network (KCN) (Strozzi et al. 2017) is reflective of a research idea and helps to triangulate the results of our previously discussed thematic analysis. The sample has 1571 unique author generated keywords/phrases. Only 60 words qualified on applying a threshold of frequency 7. In order to normalise this keyword corpus, we removed 11 terms such as ‘HPWS’, ‘HPHRP’ and all the other search terms used during our sample selection stage, since these would by default have a positive skew in frequency. The highest frequency (84) word was ‘human resource management’, helming the largest and most central cluster (in red). Some representative words (frequency in parentheses) spanning the consolidated KCNs schematic are as follows: job satisfaction (47), firm performance (31), China (27), quantitative (19), strategic human resource management (19), innovation (16), organizational culture (16), organizational commitment (13), transformational leadership (10), organizational learning (9), perceived organizational support (9), empowerment (8), knowledge sharing (8), intention to leave (7), creativity (7), resource-based view (7), psychological capital (7) and work intensification (7). The network generated (see Fig. 12) has differentially sized bubbles representing the frequency of the word. Overall, our keyword analysis is largely theoretically aligned with the key research ideas discussed in the research themes.

3.5 Gaps and research directions for the future

Four potential research directions are identified and discussed as follows. These directions follow from a close qualitative exploration of gaps conducted during the content analysis.

3.5.1. HPWS for dynamic and ambidextrous jobs.

3.5.1 Digitised and gamified practices to govern employees [3.5.2]

In the post-pandemic work scenario, HR managers are increasingly turning towards digital solutions to govern employees (Cheng and Hackett 2021). Some indicative questions that future scholars may investigate in this regard are as follows. Is the gamified learning system more effective at meeting strategic learning organisation goals compared to the non-gamified version? Is the digital psychometric instrument better at predicting strategic fit between a prospective candidate and the organization or a particular department? Are virtual and geographically dispersed teams better in terms of meeting high-performance goals and targets compared to on-site teams? An example of a study of a similar nature is Holm and Lorenz (2022) who argue that aided by HPWS, artificial intelligence is likely to augment skills in high-skilled work, but may be detrimental for low-skilled workers.

3.5.2 HPWS for teams [3.5.3]

Teams are extremely heterogeneous because of many structural aspects such as urgency of outcome (example: operating room team versus hospital administrative team), task knowledge or complexity (editorial team versus production team at a newspaper), duration (an ongoing department such as accounts versus project-based teams), position in the organisational hierarchy (workers versus executive staff in manufacturing) and many other factors. The key performance indicators (KPIs) for different categories of employees, sometimes in the same team, may be quite different. The KPIs are in turn determined by the specific HPWPs that may be applicable to an employee category. Future researchers should design studies that take team structure and both team and individual KPIs into cognizance. Any conflict between group and individual goals will cause the HPWS to fail to make an impact. Researchers should therefore problematise situations where structural and psychological mechanisms of teams can be resolved by implementing appropriate HPWS. Some examples of such work are: Leone and Biancofiore (2015), Pak and Kim (2016) and Chen and Rainey (2014).

3.5.3 HPWS and macro-level or distal outcomes [3.5.4]

This is an area that needs reinvigoration because macro-level outcomes that organizations have to straddle today are more diverse and sometimes, sector-influenced. Some examples of sector-specific questions may be as follows: Is there a relationship between high-performance work practices and organizational trust, especially in industries that are perceived to have products with negative societal connotations such as tobacco, alcohol or junk food? Can implementation of high-performance work practices predict if an organization in a risky industry such as oil or gas will become more safety conscious? Is the relationship between HPWS and CSR reporting uniform across sectors such as for instance, in financial organizations vis-à-vis chemical manufacturing? There are several examples worth quoting here, such as: Úbeda-García et al's (2022) study on green HPWS and environmental performance of organizations; Fu et al. (2019) on the impact of organizational coordination and

national culture on the relationship between HPWS and performance and von Bonsdorff et al. (2016) on the age composition of the workforce vis-a-vis performance expectations.

4 Discussion

The primary objective of this study was to provide a quantitative overview of the literature on high-performance work systems. In this section, we assess our performance in respect the five research questions (RQs) previously delineated. In **RQ1**, we inquired as to what are the broad trends in publication of this research domain. Answering this involved preliminary calculations such as time span of papers published, raw total citation value (TC) of the corpus, C/Y values for each of 730 papers and corpus impact normalised for years of circulation. For **RQ2**, we needed to look at the intellectual structure of this research domain. Hence, we conducted a bibliographic coupling with Vosviewer. Three main research clusters or themes emerged based on linkages between documents. However each theme had several subthemes embedded within, this was revealed through an in-depth manual content analysis. **RQ3** inquired about the collaboration structure which entailed looking at the sources or publication outlets, the authors, their affiliating institutions and the countries from where this research has emerged. This was done by social network analysis and other a few other techniques. Hong Kong emerged as the most impactful contributing country, followed by the USA. This was a surprising finding. One explanation offered is that while the initial impetus for HPWS research came from the USA (refer to the papers in research theme 1), in recent years, Asian countries, especially scholars based out of China and Hong Kong have contributed many papers. Because the foci of this research is continuously shifting toward newer practices, newly published papers tend to attract more citations compared to older ones. For **RQ4**, we were required to find the most important keywords corresponding to the most important ideas. To address this question, we conducted keyword co-occurrence network (KCN) analysis and bigrams analysis. The four KCNs align closely with our previous bibliographic coupling analysis. The final question, **RQ5** required us to do a gap analysis and to suggest potential research directions for the future. This was accomplished by means of the qualitative content analysis and in-depth reflection on the corpus.

A couple of recent papers have reviewed the HPWS research domain. Kaushik and Mukherjee (2021) survey 48 papers while Wood (2021) present a review of 34 papers. Both are narrative reviews and summarise the main findings of the studies in their corpus, through a qualitative content analysis approach. As such, to the best of our knowledge, the current study with its corpus of 730 papers is one of the most comprehensive reviews on the topic till date. It may also be noted that the objectivity embedded in the bibliometric method endorses additional rigor on a study such as the current one, which a completely manual review may not achieve.

4.1 Limitations

There are some limitations of this study. Because the objective was to provide a compilation of trends, we have not engaged with a detailed content analysis or conceptual synthesis of the primary studies here, as this has been done elsewhere (Das and Kodwani 2018). Future scholars may however wish to delve into each of the broad trends individually to uncover granular conceptual differences between and within the sub-discourses. Second, we have not attempted to quantitatively synthesize relationships in this discourse, as is commonly done in a meta-analysis. There are excellent examples of this elsewhere (See: Combs et al. 2006 ; Subramony 2009; and Saridakis et al. 2017). There are some methodological limitations as well. The limitation in respect of the inclusion criteria for research articles is that selection is based on the total number of citations a paper has. We have utilised a citation metric standardised for years in circulation to enable comparing influence among papers. However self-citations have the potential to spuriously inflate total citations and misguide regarding the actual quality of a paper. Also, there may be influential papers or book chapters which do not have citation data available, as such their impact is not captured. As can be seen in the geographical spread of HPWS, they are now practiced in many countries of Asia and Africa as well, apart from the developed world and English-speaking countries. By constraining ourselves to articles written in English, we may have ignored quality work in other languages. Finally, the corpus is constrained as of December 2021; however, additional relevant papers may have been published since then, and increased the citation count. This may be considered as another limitation of the study.

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