

RESEARCH ARTICLE

Review of Human Resource Management (HRM) Literature: A bibliometric Analysis (1981-2019)

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This study reviews Human Resource Management (HRM) literature by adopting a hybrid research approach - bibliometric analysis and content analysis - on 1802 documents from the Scopus database. Results from the bibliometric analysis shows HRM research presence in the areas of data sciences, information technology, and organizational behavior. A content analysis of 100 articles explored five different streams of HRM literature: (1) safety issues, (2) HRM technology, (3) business model and HRM, (4) information and knowledge management, and (5) HRM and teamwork. This study works as a lens focusing on the construction of practical issues and concepts in HRM literature. This study also provides a useful synopsis outlook of the entire HRM literature to date and identifies potential areas for future research.

Keywords: Bibliometric Analysis, HRM, content analysis, information and knowledge management.

JEL Classification: O15, E24, J24

The workplace and employees have been a significant research interest which has led to the development of human resource management (HRM) literature. Employees are considered as the strategic resources resulting in a competitive advantage for an organization (Barney & Wright, 1998; Boselie, Paauwe, & Jansen, 2001). The recent proliferation of HRM research indicates that it has emerged as an area of attraction to researchers, academicians, and business practitioners (Hyun, Cho, & Yoon, 2015). The journey of HRM started in 1981 with only one conference paper on personnel training in the HRM field but as of February 2020 a total of 1802 documents have been

published in the Scopus indexed database. the present study hopes to be a pioneering investigation that looks at the entire picture of HRM through a bibliometric analysis of the last 38 years. Many prolific authors, journals have identified the necessities of HRM literature review during this period.

The existing review papers on HRM has some limitations: they considered only a fraction of whole HRM literature and the limited range of dates narrowed the focus of previous researchers to a single aspect of HRM at a time (Markoulli, Lee, Byington, & Felps, 2017). Moreover, it seems as though almost all the review papers qualitatively reviewed HRM literature

and no single review paper provided a comprehensive quantitative outlook on how the HRM literature developed over time. Considering those limitations, the present study aims to provide a comprehensive outlook of HRM literature by adopting a hybrid research approach on 1802 documents from the Scopus indexed database for the years 1981 to 2020. Using different parameters of hybrid review techniques, this paper answers the following research questions:

- Which authors, institutions, countries, and sources contributed the most to HRM literature?
- What are the key research streams of HRM literature?
- What are the potential areas for future studies?

The answers to these research questions will provide a vivid picture of HRM literature through a bibliometric analysis. The keyword co-occurrence analysis, conceptual structure map, and co-citation network among authors explore different perspectives of HRM research. The co-occurrence network demonstrates the areas of HRM literature and represents interpret relative position based on author’s keywords. The conceptual structure map and co-citation network reveal prominent clusters with their network connectivity. Finally, the extensive content

analysis from 100 selected documents explore different streams of HRM literature such as safety issues, HRM technology, business model and HRM, information and knowledge management, and HRM and teamwork leading to future directions.

Methodology

The bibliometric review method has the scientific capacity to elicit information on eminent authors, institutions, sources, keywords, the relationship among these authors, countries, among others (Corrall, Kennan, & Afzal, 2013; Ikra, Rahman, Wanke, & Azad, 2021). The data collection for this study commenced in February 2020 in utilizing the Scopus database with a focus on HRM and social science disciplines from 1981 to February 2020. The Scopus database was selected for this study because it is the largest source of literature in various domains such as science, medicine, social science, humanities, and arts with a coverage of more than 20,000 peer reviewed journals. Apart from this, it also allows access tens of millions of peer reviewed journal articles. Moreover, regarding title coverage, the Scopus database’s performance is better in comparison with Web-of-Science database which is limited to ISI indexed journals Researchers also recommend the Scopus database for bibliometric

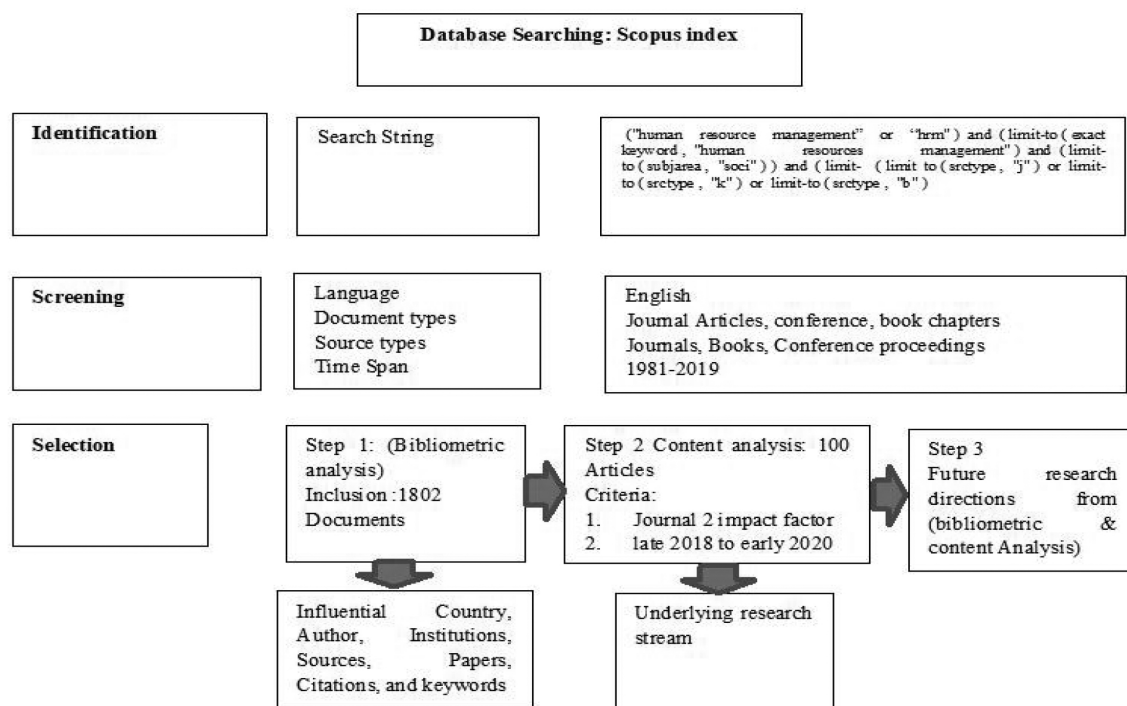


Figure 1. Sample selection procedure

review papers because of its comprehensiveness (Rosado-Serrano, Paul, & Dikova, 2018).

The search process or data collection approach of this study followed three stages: identification, screening, and selection (see Fig. 1). First, a Boolean search was performed for articles on HRM using a combination of the keywords “Human Resource Management” OR “HRM.” The Scopus database found 3000 documents. Second, a screening procedure and language filter (English) generate 1802 documents out of which 1523 are published articles.

This study uses different bibliometric parameters such as publications and citation ratio, h-index, m-index, keyword co-occurrence network, conceptual structure, and co-citation network to quantitatively review HRM literature. The bibliometric package of R software (Warnes et al., 2015) and VOS viewer software (Van Eck & Waltman, 2010) were utilized in this study for a graphical representation of the bibliometric results. Finally, 100 recently published articles were selected based on two criteria: first, articles published in journals with an impact factor equal to or greater than 2, and second, articles published after 2018 were selected for comprehensive content analysis. These 100 articles were carefully scrutinized to identify the most important recent research streams in HRM literature.

Findings from the bibliometric analysis

Publication and citation trends

The number of documents published in a specific discipline is regarded as an indicator for measuring the growth of that specific area. Figure 2 shows the publication and citation trends in HRM between 1981 and 2020. Since its inception in 1981, this area seemed

to have been overlooked by researchers in the following 6 year. However, from 1993, researchers began to focus anew on this field and HRM got its pace as a new research area. From 1994 to 2010), a spike in scientific publications was observed, with a total of around 500 documents, that accounted for 37.80% of the publications on HRM. Finally, during the last period (2011 to 2020), HRM literature enjoyed an exponential growth with more than 100 publications per year. It was observed that in the years 2018 and 2019, the productivity of HRM grew substantially, indicating a cumulative research interest in this field. During those two years, occupational safety, knowledge management, information technology adoption, data analysis, and teamwork were the most important areas to researchers. The importance of HRM research has increased over time as evidenced from the cumulative number of publications. Clearly, the citations count indicates the influence and importance of a particular research field (Gaviria-Marin et al., 2019). Interestingly, majority of the papers were published in the journal of Information and Operations Research and the Management Sciences. In those years, authors seemed to have concentrated on software-based HRM decision making such as computer-based decision and aids on decision making strategies (Todd, 1991), strategies for enhancing organizational effectiveness in the world (Blunt, 1990), and the effect of coordination and uncertainty on software project performance (Nidumolu, 1995).

Most eminent authors, institutions, countries, and sources

Table 1 demonstrates a list of the 20 most productive countries, authors, institutions, and sources in the HRM

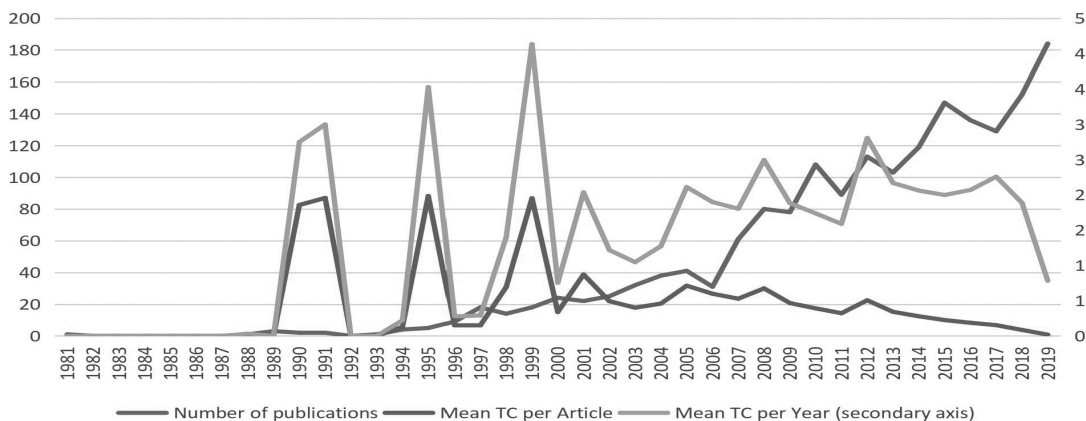


Figure 2. Publications and citations trends

Table 1. Most productive countries, authors, institutions, and sources

Country	NP	SCP	MCP	TC	C/P	Authors	H	TC	NP	Affiliations	NP	Source	H	G	M	TC	NP	PY
USA	321	280	41	7731	24.08	Na Na	1	7	24	Griffith University	16	Safety Science	20	32	1.82	1484	123	2010
United Kingdom	159	127	32	3218	20.24	Goodman D	5	93	7	Monash University	16	International Journal of Information Management	22	34	0.92	1286	57	1997
Australia	94	82	12	1892	20.13	Lee J	4	54	7	Universiti Utara Malaysia	14	Journal of European Industrial Training	17	29	0.68	1051	57	1996
Spain	50	46	4	1233	38.53	Thompson Jr	4	36	6	City University of Hong Kong	13	Applied Ergonomics	16	26	1.23	774	46	2008
Canada	39	36	3	762	19.54	Ahmad R	3	17	5	Loughborough University	13	Review of Public Personnel Administration	14	24	0.78	625	36	2003
Finland	33	31	2	599	29.95	Boustras G	3	34	5	University of Central Florida	12	Career Development International	15	35	0.63	1470	35	1997
Korea	33	23	10	566	11.32	Garavan Tn	4	128	5	Finnish Institute of Occupational Health	11	Industrial and Commercial Training	9	15	0.38	266	34	1997
China	32	21	11	430	13.03	Li X	4	23	5	Liberty Mutual Research Institute for Safety	11	Journal of Business Ethics	16	30	0.8	1205	30	2001
Netherlands	32	29	3	418	16.08	Liu H	1	20	4	University of California	11	Library Management	8	10	0.32	161	29	1996
Taiwan	28	24	4	411	19.57	Niskanen T	4	42	5	University of South Australia	11	Journal of Computer Information Systems	10	28	0.4	842	28	1996
Germany	26	18	8	402	33.50	Akhavan P	3	73	4	La Trobe University	10	Accident Analysis and Prevention	17	27	1.55	955	27	2010
Denmark	23	16	7	366	13.07	Baum T	4	311	4	Mississippi State University	10	International Journal of Technology Management	7	11	0.30	148	23	1998
India	21	19	2	363	25.93	Carayon P	3	137	4	Pennsylvania State University	10	Development and Learning in Organisations	3	4	0.19	23	22	2005
Greece	20	13	7	342	26.31	Chen H	3	68	4	Queensland University of Technology	10	Human Relations	16	21	0.62	1241	21	1995
Hong Kong	20	13	7	315	15.75	French Pe	2	18	4	University of Pretoria	10	Long Range Planning	9	21	0.53	718	21	2004
Sweden	20	16	4	263	8.22	Hirvonen Ml	4	39	4	University of Wisconsin-Madison	10	Journal of Information and Knowledge Management Systems	4	6	0.8	53	21	2016
France	16	10	6	262	13.10	Huang Q	3	63	4	Aalborg University	9	European Journal of Engineering Education	7	16	0.18	263	20	1981
Italy	15	14	1	252	15.75	Huang Yh	4	53	4	Arizona State University	9	International Journal of Engineering Education	5	7	0.63	62	20	2013
Ireland	14	10	4	243	10.57	Kim S	4	174	4	National University of Singapore	9	Asia-Pacific Journal of Business Administration	9	13	0.82	200	19	2010
Israel	14	11	3	222	18.50	Lee H	2	38	4	University of Tehran	9	Information Systems Research	13	19	0.42	2391	19	1990

Note: NP= Number of documents, SCP=single country publications, MCP=Multiple country publications, TC=total citations, C/P=Citations ratio, H=H-index, G=G-index, M=M-index, PY= Publication year started.

literature. Being one of the prime initiators in HRM, the US ranked first place in HRM literature with 321 articles and a total of 7731 citations, followed by the UK (159 articles, 3218 citations), Australia (94 documents, 1892 citations), and Spain (50 documents, 1233 citations). There are some countries such as Germany and Greece that have published only a few articles, but have received high average citations, indicating the high quality of their publications. Looking at the SCP and MCP reveals that majority of the countries published their work collaboratively. It is observed that the US collaboratively published 41 articles although its single country publications number 280. For almost all the countries, the SCP is higher than the MCP which shows that researchers feel more comfortable collaborating with researchers from the same country than with researchers from a different country. The US has the most collaboration with Korea, China, and Australia. China is a densely populated country, whereas Australia and Korea are technologically advanced countries. These characteristics might have encouraged researchers from the US to collaborate with the researchers from these countries.

The review revealed that except for the 4 or 5 top authors, most of the productive authors received a low h-index. The H-index has always been treated as a reliable and authentic tool for mapping scientific contribution and attainment of an individual author. It is noteworthy that the most productive author actually has not received so many citations in the HRM literature. Goodman published only seven papers from 2008 to 2016, has received 93 citations and has an h-index of 5 which indicates his strong influence on HRM literature. Out of the 20 top authors, 40% had 4 h-index. Authors such as Baum, and Kim led the list in terms of relevance with a total citation of 311 and 174 respectively, followed by Caray (137 citations). Another index, the g-index was proposed by Leo Egghe as a modified version of h-index. Formulated after arranging all the publications in decreasing order of the citations they received, the g-index is the top g number of articles received and the g citations together. Both Goodman and Lee received 7 g-citations followed by Thompson (6) while the rest of the authors received around 5.

The top 20 universities published a total of 224 documents, indicating that the HRM literature is in the maturity stage. Both Griffith University and Monash University topped the list with the highest number of publications (32 papers). Interestingly, six out of

the 20 most productive universities are from the US such as-the University of Central Florida (12 papers), the University of California (11 papers), Mississippi State University (10 papers), Pennsylvania State University (10 papers), and Arizona State University (9 papers). Among them, the University of Central Florida is marked occupies the sixth position on the list. These findings indicate that institutions from the US contributed the most to the HRM literature. Nevertheless, the City University of Hong Kong and University Utara Malaysia also ranked well with a total of 13 and 14 documents respectively. Moreover, some European universities, such as the Aalborg University in Denmark and the University of Tehran in Iran have also contributed significantly to the HRM literature.

Out of 1802 documents, 688 documents were published in 20 top journals. *Safety Science* took the prime position with 123 documents, followed by the Journal of European Industrial Training and the International Journal of Information Management. In terms of total citation count, Safety Science is marked as the top journal followed by the International Journal of Information Management (1284 citations), and Human Relations (1241 citations). All these indicate the dominant impact of Safety Science on HRM literature. Moreover, the h-index for Safety Science is 20, indicating that it has 20 publications in the HRM field that received at least 20 citations each after its publication.

Keyword Co-occurrence network

In the keyword co-occurrence network analysis, nodes show the conspicuousness of the keyword in terms of frequency, color representing the same cluster of keywords, and the thickness of the line symbolizing the intensity of the relationship with keywords. Figure 3 shows four clusters denoted by the red, green, blue, and purple colors.

The red cluster shows the largest node HRM connected with: mostly training and leadership out of 14 keywords. HRM and simulation training reflects employee development along with organizational performance (Kalawilapathirage et al., 2019). Resilience and mindset training are connected to emotional intelligence which leads to the development of the entire HRM (Williams, 2020). Kalawilapathirage, Omisakin, and Zeidan (2019) studied training development and job satisfaction in the airline industry. Correspondingly, Glaveli, Grigoroudis, and Manolitzas

(2019) revealed that effective decision making and robust policies boost the level of employees' job satisfaction. Apart from that, researchers observed the challenges that foreign companies face in attempts to influence cross-country cultural differences on leadership, staffing, and strategic management (Froese, Sutherland, Lee, Liu, & Pan, 2019). Also, behaviors of employee and employer promote HRM performance management and employee development (Joanie Carona, 2019; Zdenko Stacho 2019).

The green cluster is molded with five keywords such as high intense knowledge management, innovation, and higher education, knowledge sharing and learning. Higher education and innovation played vital roles in the development of knowledge management which has led to an increased awareness in last decade and these keywords developed flexible and performance-oriented HR system (Lee, Yu, & Park, 2010). Pejic-Bach, Bertonecel, Meško, and Krstić (2020) mentioned that today's HR professionals are acquiring skills to meet the demands of the upcoming fourth industry revolution. To keep pace with the fourth generation industry, technology should be integrated into higher educational institutions for academia and students. Brady, Devitt, and Kiersey (2019) implemented Technology for Assessment (TfA) for academic staff and Deja and Rak (2019) highlighted information behavior of academia as a future research.

The blue cluster is occupied with safety, motivation, and management issues, demonstrating a moderate connection among them. Reducing accidents rate to ensure the safety of workers is regarded as a

challenge in safety management (Bluff, 2019; Jatobá et al., 2020). Previous studies revealed the impact of machine learning and monitoring system for organizations' safe and healthy environment. Similarly, Tear, Reader, Shorrocks, and Kirwan (2020) studied workers' unsafe behavior to reduce accidents in buildings with amalgamation of artificial intelligence in Europe to enhance workers motivation. Content analysis revealed that developed countries are overloaded as evidenced by numerous safety studies in construction industry, whereas the developing and underdeveloped countries have limited studies on safety matters especially in the garments industry. Potentials exist to carry out studies based on data science in developing and underdeveloped countries to develop safety policies for a smooth management of organizations.

The purple cluster is the combination of communication, teamwork, project management but there is no interaction among these keywords. Communication and prudential thinking skills are essential for training in the workplace (Yıldırım, Başar, & Uğurlu, 2019). And Akgün (2020) reported that knowledge of team members is vital for teamwork performance in a particular project. Earlier scholars also asserted that projects' success depends on knowledge, judgmental technique, and experience. On the flip side, Chamakiotis, Boukis, Panteli, and Papadopoulos (2020) showed innovation activities synchronization through virtual teams with the advantage of technology. There is a variation of studies in the case of these three keywords though it is a cluster.



Figure 3. Keyword co-occurrence network

The Covid-19 pandemic also necessitates virtual team communication to accomplish a particular project with an assurance of user-oriented HRM policies.

Conceptual Structure Map

A conceptual structure map represents a conceptual network-based conceptual parameters including author keywords, keyword plus, abstracts, and title co-occurrence. The conceptual structure map in figure 4 identifies five different clusters for HRM research. Red color cluster and blue color clusters are composed of keywords, demonstrating the area of research concentration to those issues of HRM. The remaining three clusters marked by yellow, purple, and green color indicates that these areas of HRM literature are not well developed, representing an area of future research for researchers. The yellow color cluster can be defined by the three keywords such as human resource, resource management, and employment. Surprisingly, researchers seem to have overlooked the area marked by the yellow color. This cluster demands considerable attention from the researchers in the days ahead. Researchers may also focus on developing sustainable employment opportunities for future employees. Now-a-days, sustainable employment is the main attraction to employers because employee turnover rate have

increased during the last couple of years due to a shortage of this. Researchers may want to concentrate on exploring the reasons behind the turnover behavior of employees and suggest strategies for retaining people.

Co-citation network

The co-citation network is presented in Figure 5. The red cluster embraced 7 authors from the 20th century; talked about HRM practice, organizational performance, prospect and challenges; productivity, and turnover. Huselid (1995) is considered as the “mother” of the red cluster through his fundamental paper on the impact of HRM practice, as well as demonstrating strong ties with every author entire cluster except Legge (1995). Leggie (1995) published a paper titled “What is HRM” which fully focused on the theoretical aspect more than the practical implication of HRM. On top of that, Barney (1991) and Pefeffer (1994) indicated the resilient affiliation based on productive work on firm resources, competitive advantage, and social psychology. With the leadership of Huselid (1995), Lepak (1999) developed a theory of human capital from the HR architecture perspective that considers HR as human capital and this theory is still useful in the 21st century.

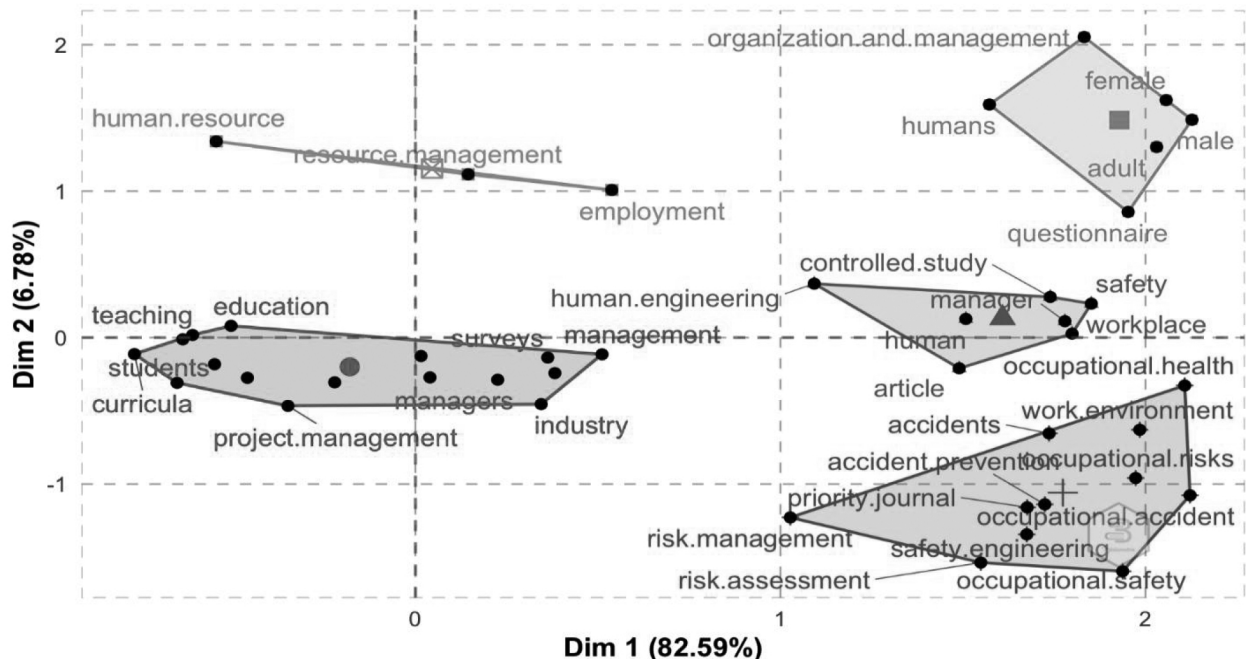


Figure 4. Conceptual Structure Map-method: MCA

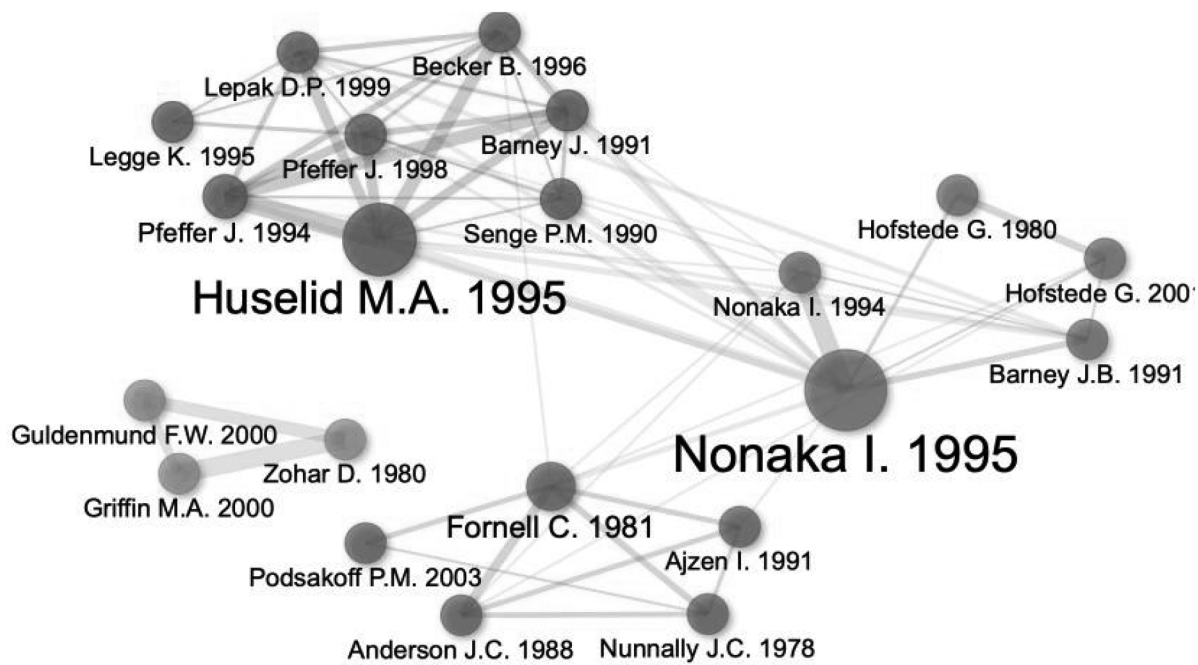


Figure 5. Co-citation network

Table 2. Different Streams of HRM literature

Core Streams	Sub Streams
Safety issue	Occupational health and safety, Collision Information and job security Safety of production Safety of hospital machinery and disaster medical response system Safety of psychological risks
HRM technology	Data analytics (Business analytics, Big data, Industry 4, Big data, data mining, casualties mining, Internet of things) Green HRM practices HRM and Simulation training
Business model and HRM	Innovation and organization adaptability
Information and knowledge management	Knowledge sharing in higher education (TfA) Knowledge sharing analytics
HRM and Team work	Virtual Team performance Top management team (TMT) diversity and ambidexterity Employee development

The blue cluster corroborates that Nonaka (1995) is responsible for a large portion which emphasized on “Knowledge Creation dynamic Theory in Organization” for Japanese firms with consideration of Nonaka’s (1994) and Barney J. B’s previous work on firm resources and sustained competitive advantage. Apart from that, Hofstede (1980) studied the cultural significance in work values globally with anticipated four dimensions that later became six dimensions due to immense demand of cross-cultural communication. To keep in line with globalized demand, Hofstede (2010) also developed a simulation game for Dutch floriculture to augment the digital transformation for virtual supply chains.

The green cluster concentrated on safety matters represented by three authors’ strong collaboration in the year of 2000. Guldenmund (2000) published a review of theory and research on nature of safety culture. Likewise, Zohar (2000) revealed a group-level model of safety climate in manufacturing jobs which tested the effect of group climate on micro accidents. In addition, Griffin (2000) revealed the necessity of safety at the workplace to protect employees from unprecedented hazards.

Analysis of recent trending papers

This section discusses the contents from 100 recent trending papers based on the following criteria: they were published in journals with an impact factor greater than or equal to 2, and they were published after 2018. A comprehensive reading of those 100 papers explore five core streams of HRM research namely: Safety issues in HRM, HRM technology, Business model and HRM, Information and knowledge management, and Team work and virtual team performance which are then subdivided into 14 categories (see Table 2).

Safety Issues

Safety is referred to as a key priority of each and every industry including construction, airline, tourism, health care, and many other industries. A substantial number of papers have looked into occupational safety covering collision, workers health risk, fatal injuries prevention system, safety management, safety of information and job, safety in production, safety of machinery, and prevention of psychological risks. Organizations emphasize on some metrics to illustrate their progress on reducing accident frequency rates

and fatalities (Wang, 2018). These metrics ensure the safety of the workers through high reliability organizing (HRO), resilience engineering (RE), alleviation of fatal injuries, causes of collision, human factor, and hazard assessment for familiarizing effective site of safety programs (HFACS) which are all regarded as prime challenges of safety management (Bluff, 2019; Harvey, Waterson, & Dainty, 2019). Stege, Bolte, Claassen, and Timmermans (2019) proposed workers’ mental models that account for safety improvement based on health effects and risk assessment. Another model, the occupational risk assessment model, (CHFORAM) proposed for effective treatment strategies of evaluation associated with risks and future plans at the post-treatment stage of construction sites (Stemm, Bofinger, Cliff, & Hassall, 2019). In the 21st century, it is a big challenge to manage security of data and information of newly developed models (Choonara, 2020; Sumah & Baatiema, 2019). Employers need to be concerned about information and job security policy (Samonas, Dhillon, & Almusharraf, 2020). The comprehensible policy of safety areas can enhance productivity and performance in both manufacturing and service industries (Hald, 2018; Jia, Rowlinson, Loosemore, Gilbert, & Ciccarelli, 2019). Simultaneously, a number of studies directed toward the assessment of health conditions for community workers (CHWs) intended to ensure better services to low-income communities (Jatoba et al., 2020). Finally, Tremblay and Gauthier (2018) urges the need to improve risk management practices for the facilities of hospitals in Canada. Additionally, Llorens, Navarro, Salas, Utzet, and Moncada (2019) explored that psychosocial issues in work environment that are mediated by HRM practices.

HRM Technology

Numerous studies have been conducted in different countries around the world to demonstrate the integration of HRM with data science and information technology (Pinzone et al., 2017). Data driven decision encourages the discussion on business analytics (BA), big data, business intelligence (BI), data analytics, information system (IS), internet of things (IoTs), integration and intelligence (IPII) design approach, and text mining to facilitate real time decisions (Wang, Hu, & Gong, 2018). Many information technologies and data analytics are now adopted in different industries such as construction, health, airforce, transportation and others. Among them, the construction industry has

received the highest priority on technology usage in the area of planning, risk management, construction design, safety monitoring, and training (Zou & Lun, 2017). Integrated wireless site (IWS) provides opportunities for the real time communication, radio frequency, and ultrasound waves for the detection and assessment of risk for construction workers (Kanan et al. (2018). In the healthcare industry, causal dependencies, robotic assisted surgery (RAS) and human-machine system coordinate the care of chronically ill patients by using multiple health information technology (HIT) (Catchpole et al., 2019; Pascale Carayona, 2019; Polyvyanyy, Pika, Wynn, & ter Hofstede, 2019).

Business Model and HRM

In the 21st century, to cope with the changing environment and to attain 'organizational adaptability,' continuous business innovation has become an emergency tool. Recently, holistic leadership has become the foundation for business innovation; and a Japanese company managed to achieve worldwide acceptance through business innovation (Kodama, 2019). Another example is The business environment of forest-based sector (FBS) companies which, as it changes rapidly, increases multifaceted complexities for organization adoption (Hetemäki et al., 2017). In one study conducted on Finnish companies, the purpose to generate a holistic picture of total business environment was examined. A number of factors influential on organisational innovation were examined through the utilization of organisational culture, employees' attitudes, organisational rules and policies, knowledge sharing, satisfaction and motivations (Abu-Shanab & Subaih, 2019). With the continued pace of business innovation, the activity-based flexible office (AFOs) model has become a remarkable innovation in workspace design (Babapour, 2019). Obviously, business models and innovation affects the performance of employees and organization. Knight and Parker (2021) developed an evidence-based integrative multi-level model on work redesign interventions for the evaluation of work redesigns towards the improvement of HRM. Innovative business models and robust HRM practices will help to build a digital environment to achieve a competitive advantage for a particular organization.

Information and Knowledge management

Today, it is beyond imagination that any organization will survive without information and knowledge management (KM). In developing knowledge management, creativity and innovation play a vital role. Information and knowledge management has been gaining an increased importance in the academic field. While a wider range of technologies are available to serve as learning modules for academic staff, the question about the adoption of new technology from the perspective of students still remains unanswered (Bennett, Dawson, Bearman, Molloy, & Boud, 2017). Recently, Brady et al. (2019) points out the urgent need to implement TfA (Technology for Assessment) for academic staff. Deja and Rak (2019) also argue that information behavior of academia as future research should be prioritized. In one study, TfA assessed the performance of academicians with the integration of theoretical model for knowledge management (O. F. Al-Kurdi, El-Haddadeh, & Eldabi, 2020) and student engagement was ensured through HRM simulation (North-Samardzic & de Witt, 2019). Today, numerous sectors have realized the benefits of knowledge sharing and several studies have examined the influential factors of KS (O. Al-Kurdi, El-Haddadeh, & Eldabi, 2018; Jarin, Mumu, Talukder, & Azad, 2021). One study proposed knowledge sharing (KS) analytics framework for IT workers based on an electronic collaborative software to motivate collaborative behaviors (Koriat & Gelbard, 2017). Concurrently, Liu, Chen, Hong, Liu, and You (2020) showed the status of research on emergency evacuation by using the scientific mapping knowledge domain.

HRM and Teamwork

Due to the advancement of technology, team work and virtual teams are gaining popularity and worldwide acceptance (Chamakiotis & Panteli, 2017; Olaisen & Revang, 2017). Chamakiotis et al. (2020) described how innovative activities are synchronized through virtual teams with the advantage of having technology. Cattermole-Terzic and Horberry (2020) worked on the improvement of traffic incident management focusing on team cognitive work analysis and results showed how decisions are made about an incident for determining issues and support of system solutions. Simultaneously, Wiltshire, Steffensen, and Fiore (2019) studied the collaborative problem solving (CPS) skills used for human interaction that ranges

from daily life to highly complex environments. CPS is an essential skill because of its increasing importance in the contemporary HRM work practice situation (Fiore, Graesser, & Greiff, 2018). Another technique, scenario-based simulation training, detects real-time changes rapidly and measures the appropriateness of the response (Gorman et al., 2020). This scenario-based simulation training can monitor and assess team performance that allow real-time responses visualization of teams and individual feedback based on contributions of team member's. Greenlee, Funke, and Rice (2018) contributed to another technique- MIP-DOI for determining the most relevant information with the assurance of each team member's performance. To enhance the team member's awareness, 'Personalized Change Awareness approach' results in higher productivity, and lowers workload by exploring information sharing algorithms (Amir, Grosz, Gajos, & Gultchin, 2019; Williams, 2020).

Future Research Directions

Through content analysis, five major streams from 100 recent papers were extracted and conveyed that HRM field is promising with many unexplored areas for further study. A fertile area for investigation is safety issues of workers in the construction industry and specifically in the garment industry since this realm has received little attention. Future researchers may well look into safety issues for garments workers and assess the collision of accidents in the garments sector when they work in different areas such as sewing and packaging. Tear et al. (2020) and Muhammad Arslana (2020) worked on unsafe behaviors of workers with the purpose of collecting information that may help reduce safety-related accidents in buildings with the integration of artificial intelligence.

Workplace safety must be assured not only in manufacturing and production but also in service industries such as restaurants and tourism sectors. Also, the healthcare sector is burned out due to Covid 19 as doctors cannot keep up with the work load and there is a shortage of manpower. The Covid-19 pandemic situation is evidence of psychological risks of that employee in various sectors such as healthcare, education, IT and many more face. To meet the unprecedented demand of health care, HRM highlights the implementation of internet technology and analytics for ensuring sufficient well-trained and

motivated health workers along with decent working conditions. With the application of HR analytics, data sciences can help doctors, experts, practitioners to make real-time decisions. HRM practices should be redefined and redesigned in the healthcare sector with consideration of psychosocial risks among health care professionals.

Further, academicians need to adjust their lifestyle to the virtual learning platform as they need to continue their educational affairs with much administrative work. Virtual platforms need to be integrated in the educational sector to orient students and academicians to prepare for Industry 4. The radically shifted learning platform directly affects family life which in turn leads to work family conflict. Thus, researchers may focus on the effective redesign of HR policies in the educational sector with consideration of virtual learning platform and work family conflict. Now adays, it has become a very promising research area to reduce psychosocial risks and family conflict due to prolonged connectivity with official work of academicians and IT professionals.

Future researchers can concentrate more on human capital, multinational companies, corporate social responsibility, and career development opportunities to develop comprehensible HRM policy by ensuring job satisfaction and job security. Moreover, future scholars can potentially integrate information technology with behavioral science so that learning and knowledge sharing can be disseminated among stakeholders.

Implications and Limitations

This study has several implications. First, this study provides a comprehensive overview of how the HRM literature evolved over time which can be preserved as directory for semantic structure in the HRM curriculum to guide academics and HRM practitioners. Second, the comprehensive review of 100 selected papers explores the recent research trends in HRM. From this study, employers will be able to identify data analysis tools for analyzing employees' behavioral patterns and their performance. Simultaneously, HRM practitioners will be able to create a training module to introduce employees with up-to-date technology and data analytics. Organizations should be obliged to meet employees' and workers' needs and rights according to labor laws and labor market regulators. Finally, this paper can be undertaken as a guideline that

summarizes all themes, theories, and methods used in previous literature, and help new researchers to conduct empirical studies on the identified research gaps. Thus, it can indirectly contribute to improving the quality of workplaces and ensures employee satisfaction. Policymakers should also concentrate on reducing organizational politics and alleviating psychological risks of employees. Nevertheless, this study has some definite limitations. It only considered the Scopus indexed database and it covers HRM literature only for a particular time period.

Conclusion

This study examines HRM literature based on 1802 documents from the Scopus database. Using different bibliometric parameters, this study identifies the most important sources, authors, institutions, and countries, in addition to examining citations and productivity patterns. The findings reveal that the US, Griffith University, and Safety Science are the most productive country, author, institution, and source in HRM literature. The rigorous content analysis explores five different streams in trending papers-safety issues, HRM technology, business model and HRM, information and knowledge management, and HRM and teamwork. This study contributes to the field by examining existing literature and ascertaining the benefits of the best HRM practices with an emphasis on different technologies and data sciences in diverse areas within the HRM paradigm. However, this study does have critical limitations; considering only the Scopus database limits its comprehensiveness to some extent. Using a framework-based review or meta-analysis approach will provide a more comprehensive qualitative insight of HRM literature. Researchers may also focus on a particular stream of HRM literature to provide greater insights.

Employers need to develop a comprehensible policy to ensure security of job and employees' personal information through data management. Thus, policy development of information policy as a research trend in the field of human resource management demands more scholarly work. Scholars and practitioners could draw attention to e-commerce, banks, insurance and smaller and medium size enterprises because covid-19 generated the necessity of e-everything to provide doorstep services for customers. Furthermore, researchers can focus on developing innovative

e-business model and robust HRM policies to achieve competitive advantage of the organization.

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