

BIBLIOMETRIC AND VISUALIZED ANALYSIS OF WORK ENGAGEMENT IN BUSINESS MANAGEMENT

Ziqiong ZHANG^{1, 2✉}, Rosmah MOHAMED¹, Rozanah Ab RAHMAN¹, Tao DONG²

¹*School of Business and Economics, Universiti Putra Malaysia, Selangor, Malaysia*

²*Faculty of Economics and Trade, Henan University of Animal Husbandry and Economy, Zhengzhou, China*

Article History:

- received 26 April 2024
- accepted 19 February 2025

Abstract. Within business management, the growing interest in work engagement stems from its recognised role in mitigating employee well-being, bolstering job satisfaction, and optimising organisational outcomes. This review comprehensively explores the knowledge structure of work engagement in business management, analysing 563 publications from the Scopus database spanning 2005 to 2023 through performance analysis, co-citation analysis, co-authorship analysis, keyword co-occurrence analysis, and content analysis. This review outlines prevailing trends and identifies influential scholars, articles, institutions, and leading countries. It illuminates the current state of scientific collaboration, providing a rationale for developing countries to seek academic cooperation with developed countries. Additionally, it delves into six current themes and four future directions, providing a robust theoretical framework for future research endeavours.

Keywords: bibliometric review, work engagement, cluster analysis, future trends, intellectual structure, business management.

JEL Classification: J24, M54.

✉ Corresponding author. E-mail: gs59597@student.upm.edu.my

1. Introduction

Over the past three decades, work engagement has emerged as a significant concept in business management, garnering substantial interest from researchers and organisations (Afrahi et al., 2022). Work engagement bridges the gap between employees and organisations, directly impacting employee performance and ultimately contributing to organisational success. Consequently, thriving organisations enhance employee productivity, creativity, and well-being, which is crucial for promoting social sustainability (Beltrán-Martín et al., 2023). Therefore, the interdependent relationship between work engagement and organisations yields mutual benefits for employees and the organisations and contributes to society's development (Beltrán-Martín et al., 2023).

The world is experiencing widespread redundancies and instability after the COVID-19 pandemic (Andrulli & Gerards, 2023). Organisations invest \$720 million annually in assessing work engagement to tackle these challenges (Klemp, 2022). Gallup (2025) reports that the average global work engagement is 23%. However, this figure is 70% for the best companies worldwide, highlighting the

challenge of increasing work engagement that countries worldwide confront.

Work engagement is a positive, satisfying state of mind distinguished by enthusiasm and commitment to task completion (Bakker, 2022). Scholars propose that work engagement can be distributed widely and generate substantial implications across organisations (Bakker et al., 2023). Additionally, practitioners believe engaged employees are self-motivated and dedicated to their job (Beltrán-Martín et al., 2023; Karatepe & Kim, 2023). Work engagement is essential to business management success due to the involvement of employees and multi-stakeholders (Karatepe & Kim, 2023).

With the increasing interest in understanding work engagement, the business management domain has produced the highest volume of publications on this topic, indicating that scholars recognise its critical role in enhancing employee performance, organisational success, and overall job satisfaction. Thus, numerous scholars have reviewed work engagement to explore its developmental trends. Although there are many review articles in this field, most of them adopt either qualitative or quantitative methods individually, with few integrating both qualitative and quantitative approaches.

The paper aims to reveal the structural knowledge and emerging trends of work engagement literature. It makes several novel contributions to the work engagement literature. First, by integrating qualitative and quantitative methodologies, we provide a more comprehensive methodological framework than previous single-method studies. Second, it examines the temporal evolution of work engagement, shedding light on trends that have remained underexplored. Third, it describes its findings within the post-COVID-19 context, exploring the interplay between work engagement, work-life balance, and the evolving workplace environment, making it particularly relevant to current organisational challenges.

To achieve the research objectives, we aim to address the following questions:

1. What are the publication trends in work engagement in business management?
2. What is the scientific collaboration pattern of work engagement in business management?
3. What are the current themes of work engagement in business management?
4. What are the future directions of work engagement in business management?

2. Literature review

2.1. Work engagement

Kahn (1990) first introduced the concept of work engagement by proposing that engaged employees are physically, cognitively, and emotionally engaged in their jobs. With research development, two distinct perspectives on work engagement have emerged. Kumar and Weil (1998) proposed a continuum in which burnout and engagement represent contrasting ends, whereas (Bakker et al., 2004) consider work engagement as a distinct concept, the opposite of burnout. Over time, numerous scholars have embraced Bakker et al.'s (2004) definition of “*work engagement*” as a positive and satisfying state of mind encompassing qualities such as vigour, dedication, and absorption.

Work engagement enhances organisational performance and success in business management (Beltrán-Martín et al., 2023). It indicates a positive connection among employees, their responsibilities, colleagues, and organisational goals (Beltrán-Martín et al., 2023). Scholars explore factors such as corporate culture, commitment, leadership, and incentives that foster work engagement at the organisational level (Kanjanakan et al., 2023). Researchers also examine individual-level factors influencing work engagement, such as job crafting, self-efficacy, and psychological capital, to enhance job satisfaction, well-being, and innovation (Karatepe & Kim, 2023; Ok & Lim, 2022). Therefore, investigating work engagement is beneficial for both organisations and employees.

2.2. Theoretical frameworks of work engagement

Currently, the research on work engagement mainly employs four models, with the Job Demands-Resources (JD-R) model being the most prevalent for investigating work engagement (Bakker et al., 2023). Based on this model, stress occurs when the demands placed on individuals are imbalanced with the available resources to cope (Bakker, 2022). Two main job characteristics affect work engagement: job demands and resources (Farley et al., 2023). Job demands lead to physiological and psychological costs, while job resources help alleviate these costs (Demerouti & Bakker, 2022). Consequently, job demands diminish work engagement due to physical and mental fatigue, while job resources increase work engagement by reducing the cost of job demand (Bakker, 2022; Zahari & Kaliannan, 2022).

Social exchange theory (SET) (Homans, 1958), Conservation of resources theory (COR) (Hobfoll, 1989), and the Social Psychological Model (SPM) (Bakker, 2022) are also significant theories in this field. SET posits that employees and organisations are fundamentally engaged in a social exchange relationship. Employees become engaged when they feel invested in the organisation (Karatepe et al., 2022; Qi et al., 2023). COR posits that social and organisational resources shape employees' personal resources (Reiche et al., 2023). Employees with sufficient resources actively engage in their work, while those with insufficient resources protect their resources and disengage (Reiche et al., 2023). SPM indicates that work engagement spreads within the organisation, improving coordination among team members (Bakker, 2022). Social proactive behaviours can sustain work engagement (Bakker, 2022). These theories demonstrate that organisational and social-psychological factors significantly influence work engagement.

2.3. Application of work engagement

According to the JD-R model, job resources positively predict work engagement, whereas job demands negatively predict it (Knight et al., 2019). Job resources (e.g., resilience, autonomy, self-efficacy) are more robust indicators of work engagement than job demands (Bakker et al., 2023). Bakker et al. (2023) summarised two types of work engagement outcomes: job-related outcomes (e.g., job performance, job satisfaction, turnover intention) and motivating outcomes (e.g., innovative behaviour and creativity) (Jasinski & Derbis, 2023; Karatepe & Kim, 2023; Kwon & Kim, 2020).

Scholars investigate the mediating role of work engagement in the relationship between job resources (e.g., employee attitude, feedback) and job outcomes (e.g., turnover intention, job satisfaction, and performance) (Jasinski & Derbis, 2023; Jawad et al., 2023; Wang et al., 2023). Furthermore, several scholars explore the moderating effect of work engagement. Imam and Kim (2023) stated that work engagement moderates the positive association between leadership and positive behaviours. Most articles

employed work engagement as a mediating variable, while only a few used it as a moderating variable.

2.4. The previous reviews of work engagement

Work engagement and organisational success have attracted scholars to conduct systematic literature reviews and summarise trends: (1) Work engagement changes over time and with individual circumstances (Bakker, 2022). (2) Leadership affects work engagement (Wang et al., 2023; Zahari & Kaliannan, 2022). (3) Organisational and individual factors can influence work engagement (Ampofo & Karatepe, 2022; Bakker, 2022; Zahari & Kaliannan, 2022). (4) Research on work engagement interventions is burgeoning (Bakker, 2022; Yan & Donaldson, 2023). (5) Predicting work engagement through big data is a future trend (Bakker, 2022; Wang & Li, 2023).

Extensive research on work engagement has led scholars to use bibliometric analysis to summarise trends, yet the results of the studies are inconsistent. Han et al. (2022) and Kişi (2023) found that the U.S. is a prominent country in this field, while Altaf and Masrek (2021) suggest that the Netherlands leads it. According to Altaf and Masrek (2021), Arnold B. Bakker dominates the field, while Brad Shuck is identified as the most influential author (Kişi, 2023), but Han et al. (2022) indicate that Karatepe leads the field. Among the research trends identified by Altaf and Masrek (2021) and Han et al. (2022) are *work engagement*, *job outcomes*, and *burnout*, while Kişi (2023) suggests that *leadership* and *digital technologies* are the future directions. Differences in databases, disciplines, and scopes lead to varied conclusions. Comprehensive bibliometric studies on work engagement in business management remain limited. To fill this gap, we conducted a bibliometric analysis in this field.

2.5. Novelty of the study

The concept of work engagement has garnered considerable attention over the past two decades, but several gaps remain to be filled. First, a majority of existing studies adopt either a quantitative (Altaf & Masrek, 2021; Han et al., 2022; Kişi, 2023) or qualitative (Bakker, 2022; Bakker & Albrecht, 2018) approach, with few adopting an integrated approach. Second, most scholars focus on single topics related to work engagement, such as task performance, human resource development, and hospitality industry (Christian et al., 2011; Han et al., 2022; Shuck & Wollard, 2010), with few studies conducting comprehensive reviews in the field of business management. Third, research often neglects temporal dimensions, offering only static insights into work engagement trends. Fourth, despite the global interest in work engagement, no research has yet identified the barriers to cooperation between developed and developing countries in this area. Similarly, the regional evolution of work engagement research, shifting from Europe to other parts of the world, lacks systematic analysis. This study addresses these gaps by combining methodologies, tracing temporal and regional trends, and identifying

emerging contributors. It also examines work engagement in the post-COVID-19 era, focusing on its relevance to work-life balance and new workplace dynamics.

3. Method

Figure 1 illustrates the procedural stages:

- Database identification Scopus was selected for bibliometric analysis and identified the search string.
- Data selection and collection: Following the PRISMA diagram (see Figure 2) (Zakaria et al., 2021), we conducted searches, screened, and collected bibliometric data. The final analysis yielded a total of 563 publications. The *refined value form* and the *bibliometric data form* were retrieved from the Scopus database.
- Performance analysis: Analysed the total number of publications and citations in bibliometric data (year, journal, country, institution, author, article) using Excel, Bibliometrix (Guo et al., 2023), and Publish or Perish (Harzing, 2007).
- Scientific mapping and content analysis: To achieve visualisation of the scientific domains, co-citation analysis, co-authorship analysis, keyword co-occurrence analysis, and overlap keyword co-occurrence analysis using VOSviewer (Van Eck & Waltman, 2010). To supplement the findings, we employed content analysis to investigate the present themes and future trajectories.

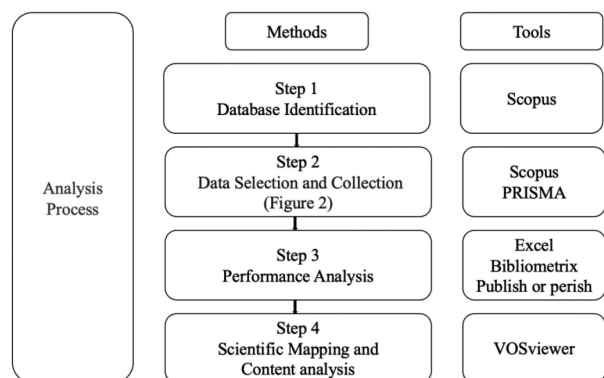


Figure 1. The steps of bibliometric analysis

3.1. Data identification

Since the Scopus database offers a more extensive author and institution metrics database than Web of Science (Leder et al., 2023), it was chosen as the bibliometric database for this review. The final number of publications for analysis was determined following the PRISMA diagram (see Figure 2) (Zakaria et al., 2021):

- Search field and string: TITLE-ABS-KEY ((work AND engagement) OR (job AND engagement) OR (employee AND engagement)).
- Time frame: 2005–2023 (Scopus automatically generates periods based on search terms and disciplines).
- Language: English (We exclusively analysed English literature due to its extensive presence and ease of text analysis).

- Subject area: Business Management (Focus of this study).
- Document type: Journal article (Due to our analytical limitations, we selected the primary literature type: journal articles).

According to the above steps, 2293 articles were identified.

Keyword restrictions added for precise work engagement targeting:

- LIMIT-TO ((EXACT KEYWORD, “work engagement”) OR (EXACT KEYWORD, “employee engagement”).
- After screening, 1730 articles were excluded, leaving 563 for data extraction and bibliometric analysis.

3.2. Data analysis

Bibliometric analysis informed the framework for work engagement research (Ali et al., 2023). A total of 563 publications from the Scopus database were selected for analysis. We employed a performance analysis to evaluate the publication trends (research elements) and utilised scientific mapping to examine the collaboration among these research elements.

Performance analysis: extracted data sets from the *refined value form* and organised them into Excel tables. During the performance analysis, publications and citations

are used to evaluate the publication trends related to research elements such as years, journals, countries, institutions, authors, and articles. The *bibliometric data form* was imported into Biblimentrix (Guo et al., 2023) to generate a graph of the author’s productivity over time. Citation information was generated by importing the *bibliometric data form* into Publish or Perish (Harzing, 2007).

Scientific mapping: To analyse the scientific collaboration and intellectual structure, the *bibliometric data form* was imported into VOSviewer (Van Eck & Waltman, 2010) to conduct co-citation analysis, co-authorship analysis, and keyword co-occurrence analysis.

Co-citation analysis analyses publication citation patterns, the more frequently two publications are cited together, the stronger their co-citation relationship (Lee et al., 2023). Author co-citation analysis (ACA) measures the knowledge structure of a topic area by analysing co-citation patterns among authors (Lee et al., 2023). It identifies the most influential authors by analysing the frequency of co-citations. Due to technical limitations, this review employed first-author ACAs.

Co-authorship analysis reveals the scientific cooperation between scholars and countries (Mitrović et al., 2023). This review employed co-authorship analysis to explore the scientific collaboration of countries on work engagement in business management.

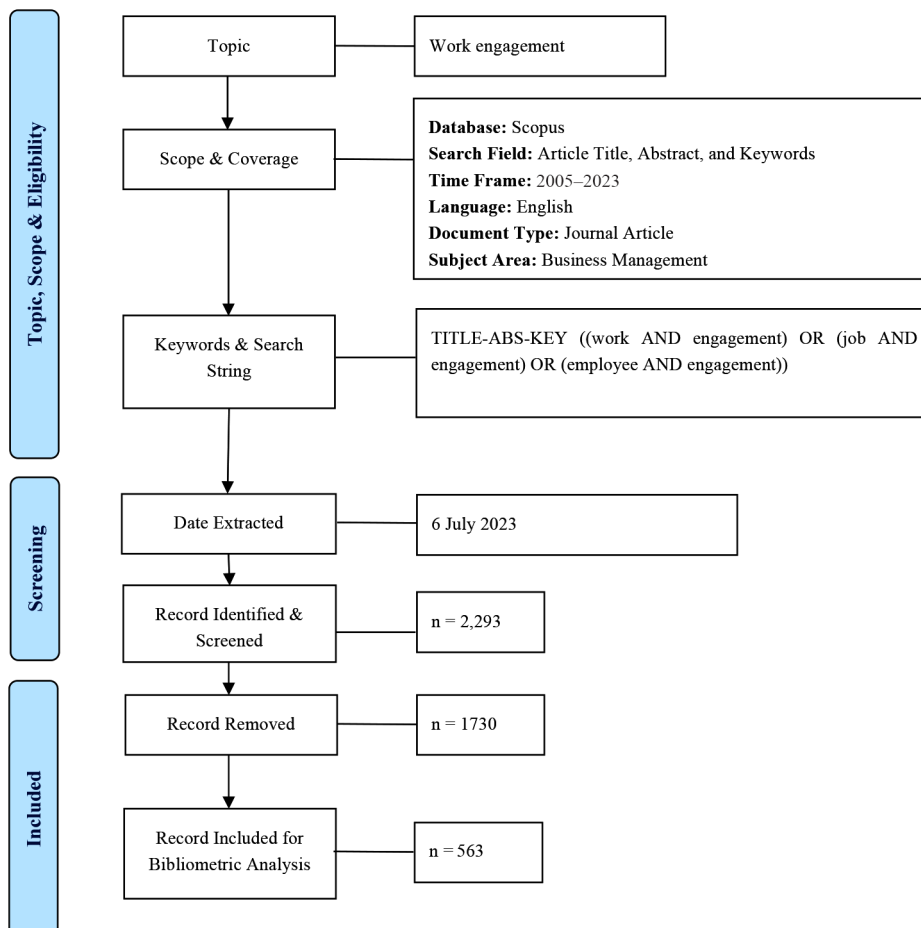


Figure 2. PRISMA diagram (source: Zakaria et al., 2021)

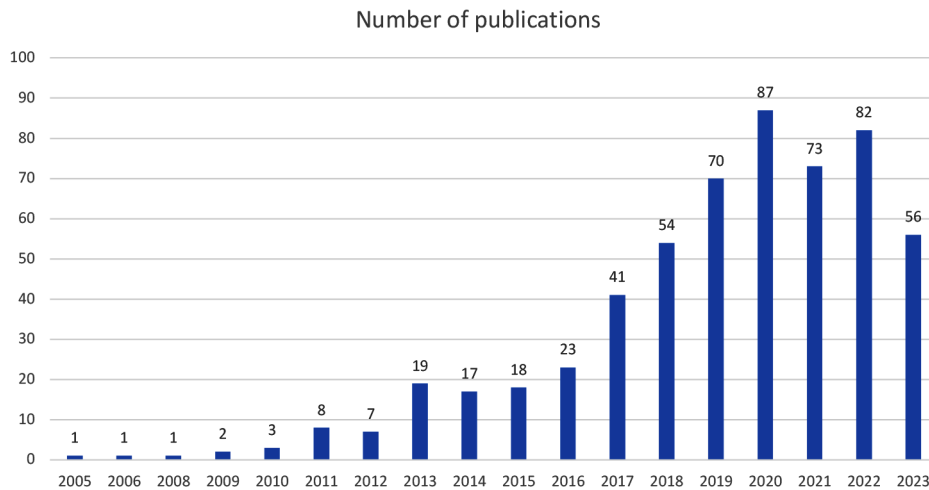


Figure 3. Publication years

Keyword co-occurrence analysis entails identifying the patterns of keywords co-occurring in a corpus (Ali et al., 2023). This review utilised all keywords for keyword co-occurrence analysis to evaluate the current themes. Additionally, we employed overlay key co-occurrence to assess the dynamic evolution of this field.

Content analysis: To enhance the elaboration of the findings, we combined keyword co-occurrence analysis and text analysis, enabling a more comprehensive discussion of the content.

4. Results

4.1. Performance analysis

To answer the first research questions, this section applies Excel and Bibliometrix to conduct the performance analysis. Figure 3 presents the trend in work engagement publications in business management, divided into three phases: Phase 1 (2005–2012) comprised 23 articles; Phase 2 (2013–2016) encompassed 77 articles with a notable rise in relevant publications; Phase 3 (2017–2023) with a substantial surge in articles amounted to 463. 2020 was the most productive year, with 87 publications. Consequently, work engagement exhibits a significant growth trend within business management.

Table 1 represents the top 5 journals on work engagement in business management. *International Journal of Human Resource Management* has the most publications (TP:23), followed by the *SA Journal of Human Resource Management* (22), the *European Journal of Work and Organisational Psychology* (19), the *Journal of Vocational Behaviour* (18), and the *Problems and Perspectives in Management* (14).

Over 80 countries have contributed to work engagement research in business management. Table 2 highlights the ten most productive countries. The Netherlands topped the list with 93 publications, followed by the United Kingdom (TP: 86), the United States (50), India (48), and

Indonesia (43); several other high-yielding countries had more than 25 publications. Additionally, the Netherlands has the most citations (TC: 7,299), followed by the United Kingdom (3,423), Australia (1,092), and the United States (1,059). Thus, the Netherlands emerges as the most influential country in this domain.

Table 1. Top 5 productive journals

Journals	Total number of publications (TP)
International Journal of Human Resource Management	23
SA Journal of Human Resource Management	22
European Journal of Work and Organisational Psychology	19
Journal of Vocational Behaviour	18
Problems and Perspectives in Management	14

Table 2. Top 10 productive countries

Country	Total number of publications (TP)	Total number of citations (TC)
Netherlands	93	7299
United Kingdom	86	3423
United States	50	1059
India	48	787
Indonesia	43	183
South Africa	39	405
Australia	38	1092
Malaysia	35	290
China	31	942
Finland	26	730

Table 3 lists the top 10 prolific institutions on work engagement in business management. Utrecht University leads the list (TP:33), followed by Erasmus University Rotterdam (29). Other noteworthy institutions include KU

Leuven (20), Eindhoven University of Technology (15), University of Johannesburg (12), and University of Jyväskylä (10). The remaining four universities on the list have also made substantial contributions, with more than eight publications in this field.

Table 3. Top 10 productive institutions

Affiliations	Total number of publications (TP)
Utrecht University	33
Erasmus University Rotterdam	29
KU Leuven	20
Eindhoven University of Technology	15
University of Johannesburg	12
University of Jyväskylä	10
Open University of the Netherlands	9
Lingnan University (Hong Kong)	8
North-West University	8
Griffith University	8

Table 4 illustrates the top 5 most productive authors in work engagement in business management. Wilmar Schaufeli (TP: 27) and Arnold B. Bakker (TP: 22) are the most prolific authors in this domain. Wilmar Schaufeli holds the highest TC score (3,690), followed by Arnold B. Bakker (2,890), Evangelia Demerouti (2,487), Kerstin Alfes (809), and Taru Feldt (343). Consequently, Wilmar Schaufeli and Arnold B. Bakker, both from the Netherlands, are prominent figures in this field.

Table 4. Top 5 productive authors

Author Name	Number of publications (TP)	Total cites (TC)	Country
Wilmar Schaufeli	27	3690	Netherlands
Arnold B. Bakker	22	2890	Netherlands
Evangelia Demerouti	14	2487	Netherlands
Kerstin Alfes	7	343	Finland
Taru Feldt	6	809	Germany

Figure 4 reveals the authors' productivity over time. The dark ring shows the number of publications, while the light ring indicates the total annual citations. Based on publication years and citation records, Arnold B. Bakker, Wilmar Schaufeli, and Evangelia Demerouti are the leading figures in work engagement research. Notably, Kerstin Alfes and Taru Feldt have also become increasingly influential contributors to the field.

Table 5 lists the top 10 publications on work engagement in business management. The article by Xanthopoulos et al. (2009) has the most citations (1,019), examining the relationship between job resources and work engagement. Other highly cited articles include those by

Table 5. Top 10 cited articles

Authors	Title	Cites
Xanthopoulos et al. (2009)	Reciprocal relationships between job resources, personal resources, and work engagement	1019
Petrou et al. (2012)	Crafting a job on a daily basis: Contextual correlates and the link to work engagement	557
Salanova and Schaufeli (2008)	A cross-national study of work engagement as a mediator between job resources and proactive behaviour	508
Alfes et al. (2013)	The link between perceived human resource management practices, engagement and employee behaviour: A moderated mediation model	429
Tims et al. (2011)	Do transformational leaders enhance their followers' daily work engagement?	407
Bakker et al. (2006)	Crossover of burnout and engagement in work teams	363
Bakker et al. (2005)	The crossover of burnout and work engagement among working couples	278
Knight et al. (2017)	Building work engagement: A systematic review and meta-analysis investigating the effectiveness of work engagement interventions	229
Den Hartog and Belschak (2012)	Work Engagement and Machiavellianism in the Ethical Leadership Process	219
Shuck et al. (2011)	Employee engagement: An examination of antecedent and outcome variables	218

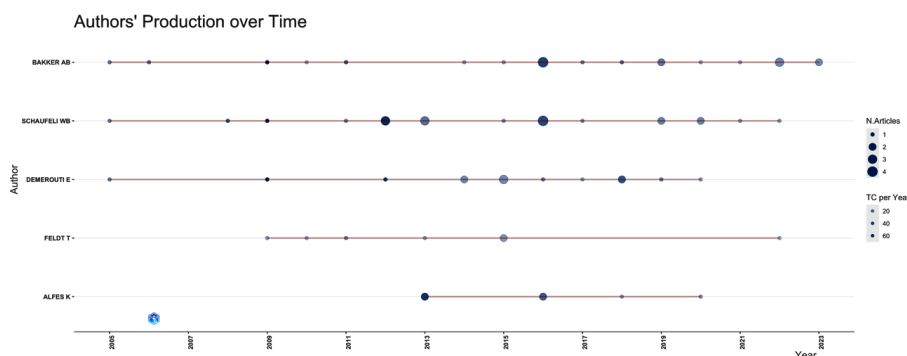


Figure 4. Authors' production over time

Petrou et al. (2012) (557), Salanova and Schaufeli (2008) (508), Alfes et al. (2013) (429), and Tims et al. (2011) (407). Petrou et al. (2012) explored the link between job engagement and job crafting, while Salanova and Schaufeli (2008) examined work engagement as a mediator between job resources and proactive behaviour. Alfes et al. (2013) assessed its mediating role between HRM practices and job outcomes, and Tims et al. (2011) studied how leadership style affects work engagement. Other key studies focused on burnout (Bakker et al., 2005, 2006), leadership (Den Hartog & Belschak, 2012), interventions (Knight et al., 2017), and the drivers and outcomes of work engagement (Shuck et al., 2011). These highly cited articles investigate work engagement's antecedents, consequences, and mediation roles.

4.2. Scientific mapping

The second question is examined using co-citation and co-authorship analyses in VOSviewer, the third through keyword co-occurrence analysis, and the fourth via overlay keyword co-occurrence analysis.

4.2.1. Co-citation analysis

For network visualisation, items are represented by their labels and a vertex. The distance between two items depicts their correlation through co-citation linkages. The item's weight determines the size of the vertex. The item's colour is determined by the cluster to which it belongs (Van Eck & Waltman, 2010).

Figure 5 represents the most cited authors' schematic of the ACA network. Each vertex represents an author in this network visualisation, while the lines between the vertices depict their linkages. A minimum of 100 citations is set as the threshold for inclusion, resulting in 55 authors meeting this criterion and forming five distinct clusters. Arnold B. Bakker exhibits the most robust link strength, closely followed by Wilmar Schaufeli, Evangelia Demerouti,

and Marisa Salanova. Additionally, significant homogeneity is observed, particularly among the vertices representing Arnold B. Bakker, Evangelia Demerouti, Despoina Xanthopoulou, and Sabine Sonnentag. A similar phenomenon is observed among Wilmar Schaufeli, Marisa Salanova, and Jari J Hakanen. Consequently, Arnold B. Bakker and Wilmar Schaufeli emerge as the most dominant authors in this domain.

4.2.2. Co-authorship analysis

Figure 6 shows the co-authorship by country. International cooperation on work engagement research spans 82 countries. Countries with at least five publications and three citations were included, and 34 countries met the threshold, forming six clusters. The Netherlands, the U.K., the U.S., Australia, Malaysia, and Spain lead their respective clusters. The Netherlands is the most influential country, closely linked to Belgium, South Africa, the U.S., Australia, and the U.K. Malaysia, Saudi Arabia, and Pakistan also collaborate. Notably, strong cooperation is mainly in developed countries like the Netherlands, the U.K., the U.S., and Australia.

Figure 7 represents the overlay visualisation of co-authorship by country, revealing the field's pioneers in the Netherlands, Belgium, Norway, Ireland, and Finland. Since 2018, work engagement research has risen in the U.K., Australia, New Zealand, Canada, and the U.S. By 2020, Malaysia, Thailand, Pakistan, and Indonesia saw significant increases. In 2022, Saudi Arabia, Poland, and Turkey began to show interest. Work engagement research originated in Europe, spread to North America and Oceania, then to Southeast Asia, and finally reached the Middle East.

4.2.3. Keyword co-occurrences analysis

Figure 8 shows the keyword co-occurrence network. Keywords appearing at least eight times are included. The top 36 keywords are grouped into six clusters. Cluster 1 (red)

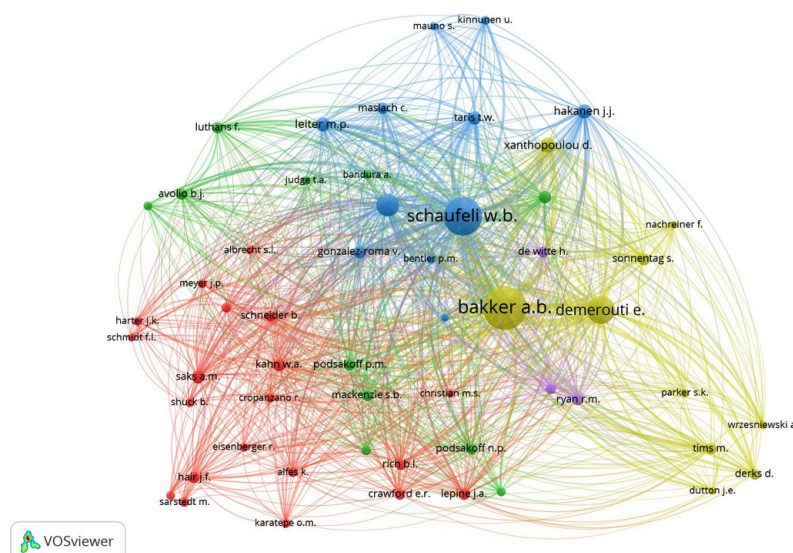


Figure 5. Co-citations visualisation network by cited author

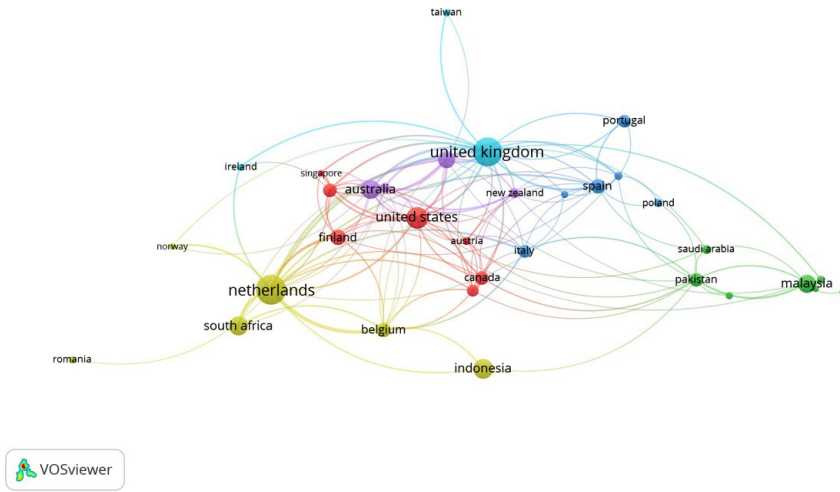


Figure 6. Co-authorship visualisation network by countries

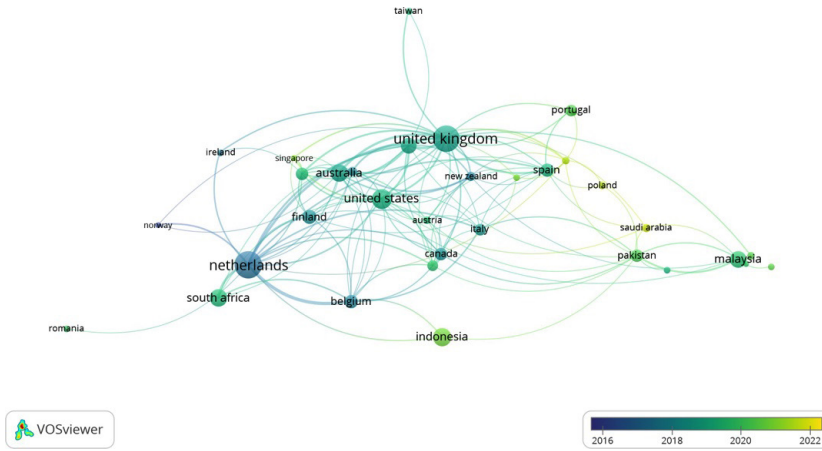


Figure 7. Overlay co-authorship visualisation network by countries

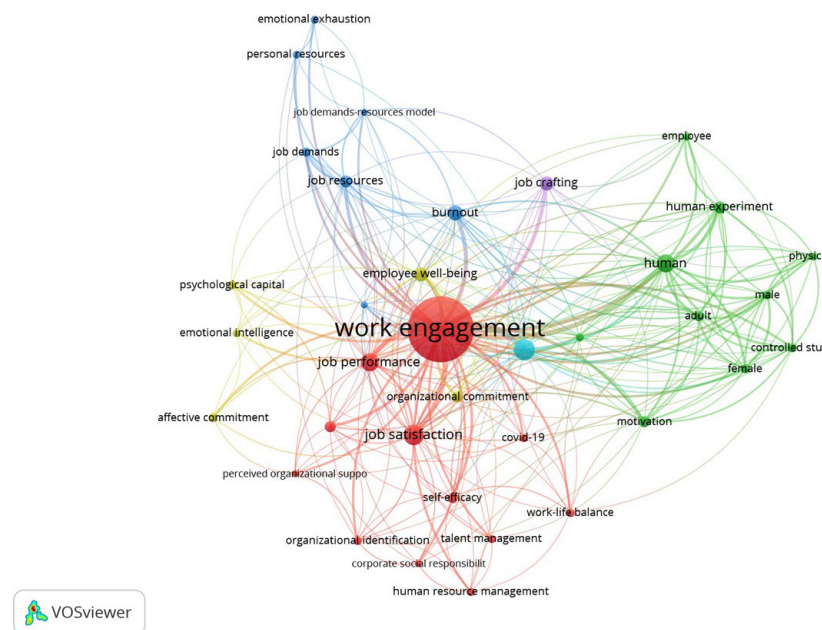


Figure 8. Keywords co-occurrences visualisation network

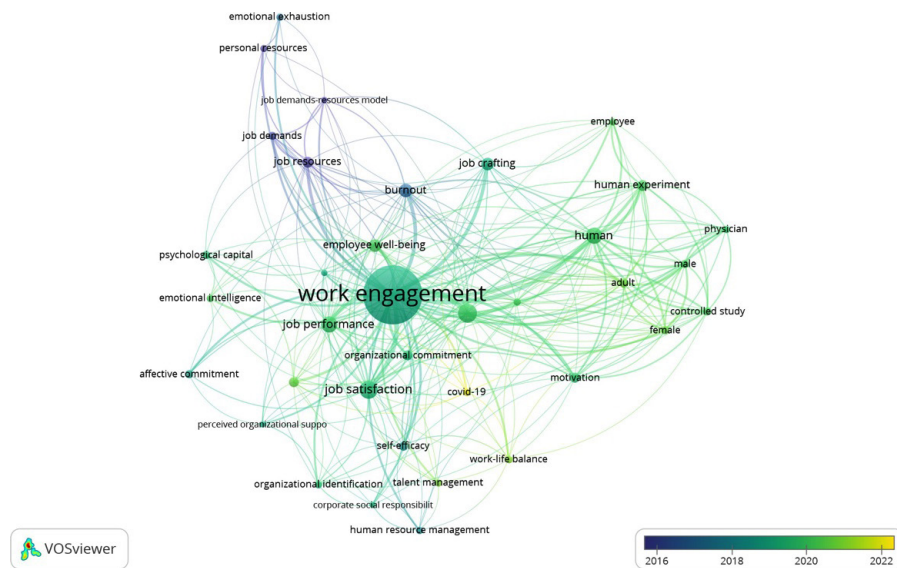


Figure 9. Overlay keywords co-occurrences visualisation network

comprises 12 items like “work engagement,” “job satisfaction,” and “job performance,” dominating the co-occurrence of work engagement with typical job outcomes. Cluster 2 (green) has ten items like “human,” “controlled study,” and “human experiment,” examining work engagement interventions through controlled studies and human experimentation. Cluster 3 (blue) contains seven items, such as “burnout,” “job resources,” “job demands,” and “Job Demands-Resources Model,” assessing work engagement and job burnout through the JDR model. Cluster 4 (yellow) contains five items, including “employee well-being,” “affective commitment,” and “psychological capital,” relating to psychological factors. Cluster 5 (purple) has one item, “job crafting,” exploring work engagement and job crafting. Cluster 6 (light blue) includes one item, “leadership,” linking work engagement to leadership. Consequently, this map identifies six themes: “typical job outcomes,” “work engagement interventions,” “job demands-resources (JD-R),” “psychological factors,” “job crafting,” and “leadership.”

Figure 9 shows the overlay keyword co-occurrence network by all keywords from 2016 to 2022. Over time, work engagement themes exhibit changing frequency and strength of association with keywords, indicating the field’s rapid evolution into new research areas. In 2016, research focused on the JD-R model, burnout, and work engagement. By 2018, more researchers explored the impact of organisational factors (e.g., perceived support, commitment) and individual factors (e.g., self-efficacy, psychological capital) on work engagement, as well as typical job outcomes like job satisfaction and performance. In 2020, research focused on work engagement interventions, including controlled studies and human experiments. In 2022, scholars highlighted the link between work engagement and work-life balance during the COVID-19 pandemic.

5. Discussion

This bibliometric review examines the knowledge structure of work engagement literature in business management, covering publication trends, scientific collaboration, current themes, and future directions. It confirms the existing knowledge structure of work engagement and reveals new insights into its evolution in business management literature. This study identifies key research gaps and offers valuable recommendations through bibliometric and content analyses. It also examines the post-pandemic work environment, uncovering research potential linking work engagement, work-life balance, and COVID-19, which offers new insights into how work engagement adapts to modern business contexts.

5.1. Publication trends

This review analyses 563 articles on work engagement in business management from 2005 to 2023 (see Figure 3). The discussion delves into the significant findings.

Work engagement publications showed slow growth from 2005 to 2012, a moderate increase from 2013 to 2016, and a burst of research since 2017 (see Figure 3). A content analysis of 563 article abstracts strongly focused on burnout, the JD-R model, and work engagement in the early stages (2005–2012). In the second phase (2013–2016), work engagement became key in HRM, with the JD-R model as the main framework. Scholars increasingly view work engagement as a mediator between job resources (e.g., attitudes, personality, psychological empowerment) and job outcomes (e.g., satisfaction, performance, turnover) (Beltrán-Martín et al., 2023). In the third phase (2017–2019), the JD-R model and job outcomes remained key focuses of work engagement, but interest grew in leadership, psychological capital, and job crafting. From 2020 to 2023, this period shows a clear shift toward

studying engagement in more diverse contexts, particularly influenced by the pandemic's impact on work engagement, while also maintaining interest in fundamental aspects like leadership, work innovation, work-life balance, and psychological factors (Canboy et al., 2023; Jawad et al., 2023; Kwon & Kim, 2020; Ok & Lim, 2022).

Work engagement's impact on business management is prominent in HRM journals, the most prolific of which is the *International Journal of Human Resource Management* (see Table 1). Psychology journals, like the *European Journal of Work and Organisational Psychology* and the *Journal of Vocational Behavior*, have also published articles on work engagement, contributing valuable theory at the intersection of management and psychology. This differs from previous findings (Han et al., 2022; Kişi, 2023) and may reflect differences in disciplinary focus.

The Netherlands leads in publications and citations (see Table 2), with universities like Utrecht, Erasmus Rotterdam, and Eindhoven (see Table 3) at the forefront of work engagement research. This is attributed to the influential authors Wilmar Schaufeli and Arnold B. Bakker from Dutch institutions, consistent with Altaf and Masrek's (2021) findings. In addition, Kerstin Alfes and Taru Feldt have also become increasingly influential contributors to the field. Based on the region of these authors, European scholars were the main contributors to the work-engagement study.

The most cited article (see Table 5) is by Xanthopoulou et al. (2009), examining the relationship among job resources, personal resources, and work engagement. Other top-cited articles cover job crafting (Petrou et al., 2012), work engagement and burnout (Bakker et al., 2005, 2006), work engagement as a mediator (Alfes et al., 2013; Salanova & Schaufeli, 2008), and leadership's impact on engagement (Den Hartog & Belschak, 2012; Tims et al., 2011). These studies offer key insights for work engagement research and highlight emerging trends.

5.2. Collaboration pattern

The Netherlands is the most influential country in work engagement (see Table 2), aligned with Altaf and Masrek (2021). However, Han et al. (2022) and Kişi (2023) identified the U.S. as the leading country. These inconsistent results primarily stem from differing disciplinary focuses. The cooperation between the Netherlands, the U.S., the U.K., and Australia (see Figure 6) shows that geographic proximity doesn't determine global collaboration networks. Strong ties also exist between Malaysia, Pakistan, and Saudi Arabia (see Figure 6). The research collaboration on work engagement shows the limited partnership between developed and developing nations, reflecting systemic barriers. More equitable funding, capacity-building, and knowledge-sharing could help bridge this gap.

The geographical spread of work engagement research followed a distinct pattern, initially emerging in European countries before expanding to North American and Oceanian regions, subsequently reaching Southeast Asia, and

finally extending into Middle Eastern nations (see Figure 7). Research on work engagement has matured in developed countries, but remains nascent in developing countries, highlighting the need for enhanced collaborative efforts between these regions to advance the field.

Schaufeli and Bakker stand as the primary pioneers in work engagement research (see Table 4), demonstrating sustained contributions to the field (see Figure 4). Their work is frequently cited together and strongly interconnected with other researchers' publications (see Figure 5). They are leading experts in the field, with extensive research on burnout, work engagement, and the JD-R model in business management.

5.3. Current themes

Utilising a combination of keyword co-occurrence analysis and content analysis, six main current themes were identified (see Figure 8):

Work engagement significantly influences job outcomes such as satisfaction, performance, and turnover intention (Ampofo & Karatepe, 2022). Researchers continue to validate these effects across various cultures (e.g., Indonesia, Nigeria, Jordan, South Africa, India), industries (e.g., Finance, Healthcare, Manufacturing, Education), and groups (e.g., teachers, academics, generation Z), highlighting opportunities for further exploration.

Work engagement interventions, aligning with Bakker's (2022) findings, are strategies to boost engagement. Knight et al. (2019) categorised these into four types: personal resource development (e.g., self-esteem, resilience), job resource development (e.g., promotion, organisational support), leadership development (e.g., goal management, team management), health-focused interventions (e.g., stress management training, relaxation training) (Obschonka et al., 2023). Controlled studies and human subjects enhance the rigour and validity of research on these interventions.

The JD-R model is fundamental in work engagement research (see Figure 8) with job resources and demands being key predictors (Bakker et al., 2023; Kişi, 2023). Work engagement is also examined as a mediator between job resources and outcomes, reflecting the model's advanced application in this field.

As a positive psychological state, work engagement is linked to factors like well-being, affective commitment, emotional intelligence, and psychological capital (see Figure 8). Content analysis reveals the emerging psychological variables include psychological reattachment, distress, ownership, contract, and detachment (Lee et al., 2022; Obschonka et al., 2023). The increasing connection of social psychology with work engagement aligns with Bakker's (2022) findings. While the impact of psychological factors has gained attention, this field remains in its early stages, requiring further study.

Job crafting enhances work engagement by allowing employees to modify their work environment to their strengths, interests, and values (Karatepe & Kim, 2023; Ok

& Lim, 2022; Zhao et al., 2023). It boosts engagement by increasing job and personal resources, while engagement, in turn, fosters job crafting (Ok & Lim, 2022). This synergistic relationship has become a key focus in recent research.

Leadership is crucial in boosting work engagement (Jawad et al., 2023), which aligns with the perspective of Kişi (2023). The content analysis explored 13 leadership styles, with most studies focusing on transformational, ethical, authentic, servant, and spiritual leadership. The effects of various styles, from autocratic to democratic, on work engagement are increasingly significant and require further research.

5.4. Future directions

Since 2016, work engagement research in business management has grown rapidly (see Figure 3) with its thematic evolution from 2016 to 2022 explored (see Figure 9). The JD-R model remains the core framework for studying work engagement. Between 2016 and 2018, researchers focused on its link to job burnout (Bakker et al., 2023). From 2018 to 2020, studies shifted to organisational factors like identification, commitment, and social responsibility (Canbooy et al., 2023; Jawad et al., 2023). Subsequently, attention turned to individual-level factors such as psychological capital, emotional intelligence, self-efficacy, job satisfaction, job performance, job crafting, and well-being (Karatepe & Kim, 2023; Ok & Lim, 2022; Zhao et al., 2023). From 2020 to 2022, the research explored work engagement in specific groups and interventions (Knight et al., 2019; Yan & Donaldson, 2023). Since 2022, studies have examined work-life balance and engagement, particularly during the COVID-19 pandemic.

Work engagement research covers diverse themes, but overemphasis on trends while ignoring underexplored topics may limit comprehensive understanding. By utilising a combination of keyword co-occurrence networks (see Figure 8), overlay keyword co-occurrence networks (see Figure 9), and content analysis, several future directions emerge.

Expand the research scope on work engagement across countries, industries, and professions. The results reveal insufficient research in developing countries and highlight the need for stronger cooperation between developed and developing nations. Additionally, emerging fields, such as the digital industry, should be included in future studies.

Increase research on organisational-level interventions, like leadership and organisational support, which significantly impact work engagement. This result is consistent with Bakker's (2022) view. The reason is that organisations have a significant impact on work engagement.

Deepen individual-level research on work engagement by exploring factors like job crafting, psychological empowerment, and emotional intelligence. This is crucial as work engagement is complex and dynamic, requiring a comprehensive understanding of its influences.

Study the link between work-life balance and work engagement, considering both organisational factors

(support, training, welfare) and individual aspects (job crafting, psychological empowerment). Promoting work-life balance and work engagement benefits organisations with increased productivity, reduced turnover intention, and improved employee well-being.

5.5. Contributions and implications

This study contributes to the growing body of research on work engagement by offering a comprehensive and systematic review of its knowledge structure within business management. By combining qualitative and quantitative methods, this study provides a novel approach to understanding how work engagement has been studied and highlights emerging trends that future research can further explore.

5.5.1. Theoretical contributions and implications

This study highlights that work engagement research is in a phase of rapid growth, underscoring its rising significance in organisational studies, which offers several novel contributions to the field of work engagement research: Firstly, it introduces new themes, such as psychological factors, job crafting, and leadership, which have not been extensively explored in the existing literature on work engagement. These emerging topics expand the theoretical boundaries of the field and provide new directions for future research. Additionally, this research is the first to examine the evolution of work engagement in the post-pandemic era, shedding light on how global shifts. These insights contribute to the theoretical understanding of work engagement, offering a more contemporary and dynamic view of how it evolves in response to external factors.

Moreover, the study confirms the dominance of the JD-R model in work engagement research while also highlighting the increasing contribution of new scholars, such as Kerstin Alfes and Taru Feldt. Work engagement research started in Europe and has spread to Southeast Asia and the Middle East, though economic inequalities mean most collaboration remains between developed nations. This research advances the field by introducing new dimensions and providing a deeper understanding of its evolution in a dynamic world.

5.5.2. Practical contributions and implications

Practically, the findings of this study offer valuable insights for organisations aiming to enhance work engagement. The identification of psychological factors, job crafting, and leadership as critical elements of work engagement present new opportunities for developing targeted interventions. For instance, organisations can focus on leadership development programs, fostering a culture of job crafting, and promoting psychological well-being to boost engagement among employees. Furthermore, the study's focus on the post-pandemic evolution of work engagement underscores the importance of adapting engagement strategies to the new realities of hybrid work, remote work, and changing employee needs. Employers can leverage these

findings to design more flexible and supportive work environments that meet the diverse needs of the workforce.

6. Conclusions

This research presents a comprehensive overview of work engagement in business management. Our first question examined the significant publication trend of work engagement research in business management based on publications and citations. We have identified a rapid growth stage of work engagement research in business management. Regarding the second question, we investigated collaborations between influential authors and countries using co-citation and co-authorship analysis. We have identified the Netherlands' dominant position and Wilmar Schaufeli and Arnold B. Bakker's contributions in this field. Concerning the third question, we summarised six current work engagement themes through keyword co-occurrence and content analysis. Our last question involved a dynamic keyword co-occurrence analysis and content analysis that identified four future directions.

This study advances the understanding of work engagement by introducing new themes, such as psychological factors, job crafting, and leadership, and offering a fresh perspective on its evolution in the post-pandemic era. It underscores the continued relevance of the JD-R model while highlighting the need for broader collaboration and exploration in diverse regional and organisational contexts. These findings provide theoretical insights and practical guidance, laying a foundation for future research and strategies to enhance work engagement in a rapidly changing world.

There are some methodological limitations to this study. First, the analysis was limited to data from one database, Scopus, restricting the number and scope of analysed publications. Future research could enhance comprehensiveness by integrating data from other databases. Second, our examination focused solely on journal articles, excluding valuable sources like conference proceedings and book reviews. Future studies should encompass diverse document types. Third, the review is limited to business management. However, future research on work engagement can explore various subject areas. Nevertheless, this review informs scholars and practitioners interested in this topic, and its limitations may be overcome through further research.

References

- Afrihi, B., Blenkinsopp, J., Fernandez de Arroyabe, J. C., & Karim, M. S. (2022). Work disengagement: A review of the literature. *Human Resource Management Review*, 32(2), Article 100822. <https://doi.org/10.1016/j.hrmr.2021.100822>
- Alfes, K., Shantz, A. D., Truss, C., & Soane, E. C. (2013). The link between perceived human resource management practices, engagement and employee behaviour: A moderated mediation model. *The International Journal of Human Resource Management*, 24(2), 330–351. <https://doi.org/10.1080/09585192.2012.679950>
- Ali, I., Balta, M., & Papadopoulos, T. (2023). Social media platforms and social enterprise: Bibliometric analysis and systematic review. *International Journal of Information Management*, 69, Article 102510. <https://doi.org/10.1016/j.ijinfomgt.2022.102510>
- Altaf, A., & Masrek, M. (2021). Visualizing the knowledge domain of work engagement through bibliometric analysis. *Library Philosophy and Practice (e-Journal)*. <https://digitalcommons.unl.edu/libphilprac/5300>
- Ampofo, E. T., & Karatepe, O. M. (2022). The effects of on-the-job embeddedness and its sub-dimensions on small-sized hotel employees' organizational commitment, work engagement and turnover intentions. *International Journal of Contemporary Hospitality Management*, 34(2), 509–533. <https://doi.org/10.1108/IJCHM-07-2021-0858>
- Andrulli, R., & Gerards, R. (2023). How new ways of working during COVID-19 affect employee well-being via technostress, need for recovery, and work engagement. *Computers in Human Behavior*, 139, Article 107560. <https://doi.org/10.1016/j.chb.2022.107560>
- Bakker, A. B. (2022). The social psychology of work engagement: State of the field. *Career Development International*, 27(1), 36–53. <https://doi.org/10.1108/CDI-08-2021-0213>
- Bakker, A. B., & Albrecht, S. (2018). Work engagement: Current trends. *Career Development International*, 23(1), 4–11. <https://doi.org/10.1108/CDI-11-2017-0207>
- Bakker, A. B., Demerouti, E., & Sanz-Vergel, A. (2023). Job demands–resources theory: Ten years later. *Annual Review of Organizational Psychology and Organizational Behavior*, 10(1), 25–53. <https://doi.org/10.1146/annurev-orgpsych-120920-053933>
- Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2005). The crossover of burnout and work engagement among working couples. *Human Relations*, 58(5), 661–689. <https://doi.org/10.1177/0018726705055967>
- Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands–resources model to predict burnout and performance. *Human Resource Management*, 43(1), 83–104. <https://doi.org/10.1002/hrm.20004>
- Bakker, A. B., Emmerik, H. van, & Euwema, M. C. (2006). Crossover of burnout and engagement in work teams. *Work and Occupations*, 33(4), 464–489. <https://doi.org/10.1177/0730888406291310>
- Beltrán-Martín, I., Guinot-Reinders, J., & Rodríguez-Sánchez, A. M. (2023). Employee psychological conditions as mediators of the relationship between human resource management and employee work engagement. *The International Journal of Human Resource Management*, 34(11), 2331–2365. <https://doi.org/10.1080/09585192.2022.2078990>
- Canbooy, B., Tillou, C., Barzantny, C., Gueclue, B., & Benichoux, F. (2023). The impact of perceived organizational support on work meaningfulness, engagement, and perceived stress in France. *European Management Journal*, 41(1), 90–100. <https://doi.org/10.1016/j.emj.2021.12.004>
- Christian, M. S., Garza, A. S., & Slaughter, J. E. (2011). Work engagement: A quantitative review and test of its relations with task and contextual performance. *Personnel Psychology*, 64(1), 89–136. <https://doi.org/10.1111/j.1744-6570.2010.01203.x>
- Demerouti, E., & Bakker, A. B. (2022). Job demands–resources theory in times of crises: New propositions. *Organizational Psychology Review*, 13(3). <https://doi.org/10.1177/20413866221135022>
- Den Hartog, D. N., & Belschak, F. D. (2012). Work engagement and Machiavellianism in the ethical leadership process. *Journal of Business Ethics*, 107, 35–47. <https://doi.org/10.1007/s10551-012-1296-4>
- Farley, S., Mokhtar, D., Ng, K., & Niven, K. (2023). What influences the relationship between workplace bullying and employee

- well-being? A systematic review of moderators. *Work & Stress*, 37(3), 345–372.
<https://doi.org/10.1080/02678373.2023.2169968>
- Gallup, I. (2025). *Indicator: Employee engagement*. <https://www.gallup.com/394373/indicator-employee-engagement.aspx>
- Guo, R., Hu, D., Liu, D., Jiang, Q., & Qiu, J. (2023). MXene nanomaterials in biomedicine: A bibliometric perspective. *Frontiers in Bioengineering and Biotechnology*, 11, Article 1184275.
<https://doi.org/10.3389/fbioe.2023.1184275>
- Han, Y., Yang, Y., & Mohamed, R. (2022). A bibliometric analysis of work engagement in the hospitality and tourism industry. *Journal of Hospitality and Tourism Insights*, 6(5), 1946–1966.
<https://doi.org/10.1108/JHTI-06-2022-0235>
- Harzing, A. W. (2007). *Publish or perish*. <https://harzing.com/resources/publish-or-perish>
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513–524.
<https://doi.org/10.1037/0003-066X.44.3.513>
- Homans, G. (1958). Social behavior as exchange. *American Journal of Sociology*, 63(6), 597–606. <https://doi.org/10.1086/222355>
- Imam, A., & Kim, D.-Y. (2023). Ethical leadership and improved work behaviors: A moderated mediation model using prosocial silence and organizational commitment as mediators and employee engagement as moderator. *Current Psychology*, 42(13), 10519–10532. <https://doi.org/10.1007/s12144-021-02631-5>
- Jasinski, A. M., & Derbis, R. (2023). Social support at work and job satisfaction among midwives: The mediating role of positive affect and work engagement. *Journal of Advanced Nursing*, 79(1), 149–160. <https://doi.org/10.1111/jan.15462>
- Jawad, M., Naz, M., & Rizwan, S. (2023). Leadership support, innovative work behavior, employee work engagement, and corporate reputation: Examining the effect of female in not government organizations. *Corporate Social Responsibility and Environmental Management*, 30(2), 708–719.
<https://doi.org/10.1002/csr.2383>
- Kahn, W. A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal*, 33(4), 692–724. <https://doi.org/10.2307/256287>
- Kanjanakan, P., Zhu, D., Doan, T., & Kim, P. B. (2023). Taking stock: A meta-analysis of work engagement in the hospitality and tourism context. *Journal of Hospitality & Tourism Research*, 47(5), 851–876. <https://doi.org/10.1177/10963480211066958>
- Karatepe, O. M., & Kim, T. T. (2023). Job crafting and critical work-related performance outcomes among cabin attendants: Sequential mediation impacts of calling orientation and work engagement. *Tourism Management Perspectives*, 45, Article 101065. <https://doi.org/10.1016/j.tmp.2022.101065>
- Karatepe, T., Ozturen, A., Karatepe, O. M., Uner, M. M., & Kim, T. T. (2022). Management commitment to the ecological environment, green work engagement and their effects on hotel employees' green work outcomes. *International Journal of Contemporary Hospitality Management*, 34(8), 3084–3112.
<https://doi.org/10.1108/IJCHM-10-2021-1242>
- Kişî, N. (2023). Bibliometric analysis and visualization of global research on employee engagement. *Sustainability*, 15(13), Article 10196. <https://doi.org/10.3390/su151310196>
- Klemp, N. (2022, August 10). 5 employee engagement trends in the post COVID era. *15Five*. <https://www.15five.com/blog/employee-engagement-trends-in-the-era-of-coronavirus/>
- Knight, C., Patterson, M., & Dawson, J. (2017). Building work engagement: A systematic review and meta-analysis investigating the effectiveness of work engagement interventions. *Journal of Organizational Behavior*, 38(6), 792–812.
<https://doi.org/10.1002/job.2167>
- Knight, C., Patterson, M., & Dawson, J. (2019). Work engagement interventions can be effective: A systematic review. *European Journal of Work and Organizational Psychology*, 28(3), 348–372.
<https://doi.org/10.1080/1359432X.2019.1588887>
- Kumar, V. K., & Weil, P. D. (1998). The truth about burnout: How organizations cause personal stress and what to do about it. *Personnel Psychology*, 51(2), Article 542.
- Kwon, K., & Kim, T. (2020). An integrative literature review of employee engagement and innovative behavior: Revisiting the JD-R model. *Human Resource Management Review*, 30(2), Article 100704. <https://doi.org/10.1016/j.hrmr.2019.100704>
- Leder, T. D., Baucic, M., Leder, N., & Gilic, F. (2023). Optical satellite-derived bathymetry: An overview and WoS and Scopus bibliometric analysis. *Remote Sensing*, 15(5), Article 1294.
<https://doi.org/10.3390/rs15051294>
- Lee, S. E., Ju, N., & Lee, K.-H. (2023). Service chatbot: Co-citation and big data analysis toward a review and research agenda. *Technological Forecasting and Social Change*, 194, Article 122722. <https://doi.org/10.1016/j.techfore.2023.122722>
- Lee, W. J., Sok, P., & Mao, S. (2022). When and why does competitive psychological climate affect employee engagement and burnout? *Journal of Vocational Behavior*, 139, Article 103810.
<https://doi.org/10.1016/j.jvb.2022.103810>
- Mitrović, I., Mišić, M., & Protić, J. (2023). Exploring high scientific productivity in international co-authorship of a small developing country based on collaboration patterns. *Journal of Big Data*, 10(1), Article 64.
<https://doi.org/10.1186/s40537-023-00744-1>
- Obschonka, M., Pavez, I., Kautonen, T., Kibler, E., Salmela-Aro, K., & Wincent, J. (2023). Job burnout and work engagement in entrepreneurs: How the psychological utility of entrepreneurship drives healthy engagement. *Journal of Business Venturing*, 38(2), Article 106272.
<https://doi.org/10.1016/j.jbusvent.2022.106272>
- Ok, C. M., & Lim, S. E. (2022). Job crafting to innovative and extra-role behaviors: A serial mediation through fit perceptions and work engagement. *International Journal of Hospitality Management*, 106, Article 103288.
<https://doi.org/10.1016/j.ijhm.2022.103288>
- Petrou, P., Demerouti, E., Peeters, M. C., Schaufeli, W. B., & Hetland, J. (2012). Crafting a job on a daily basis: Contextual correlates and the link to work engagement. *Journal of Organizational Behavior*, 33(8), 1120–1141.
<https://doi.org/10.1002/job.1783>
- Qi, J. (Miracle), Wang, S., & Lindsey Hall, K. K. (2023). Bridging employee engagement and customer engagement in a service context. *Journal of Business Research*, 160, Article 113803.
<https://doi.org/10.1016/j.jbusres.2023.113803>
- Reiche, S. B., Dimitrova, M., Westman, M., Chen, S., Wurtz, O., Lazarova, M., & Shaffer, M. A. (2023). Expatriate work role engagement and the work-family interface: A conditional crossover and spillover perspective. *Human Relations*, 76(3), 452–482.
<https://doi.org/10.1177/00187267211046816>
- Salanova, M., & Schaufeli, W. B. (2008). A cross-national study of work engagement as a mediator between job resources and proactive behaviour. *The International Journal of Human Resource Management*, 19(1), 116–131.
<https://doi.org/10.1080/09585190701763982>
- Shuck, B., Reio Jr, T. G., & Rocco, T. S. (2011). Employee engagement: An examination of antecedent and outcome variables. *Human Resource Development International*, 14(4), 427–445.
<https://doi.org/10.1080/13678868.2011.601587>
- Shuck, B., & Wollard, K. (2010). Employee engagement and HRD: A seminal review of the foundations. *Human Resource Develop-*

- ment Review, 9(1), 89–110.
<https://doi.org/10.1177/1534484309353560>
- Tims, M., Bakker, A. B., & Xanthopoulou, D. (2011). Do transformational leaders enhance their followers' daily work engagement? *The Leadership Quarterly*, 22(1), 121–131.
<https://doi.org/10.1016/j.leaqua.2010.12.011>
- Van Eck, N. J., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523–538. <https://doi.org/10.1007/s11192-009-0146-3>
- Wang, F., & Li, Y. (2023). Social media use for work during non-work hours and work engagement: Effects of work-family conflict and public service motivation. *Government Information Quarterly*, 40(3), Article 101804.
<https://doi.org/10.1016/j.giq.2023.101804>
- Wang, H., Xiao, Y., Zhang, H., & Chen, X. (2023). "Who knows me understands my needs": The effect of home-based telework on work engagement. *Psychology Research and Behavior Management*, 16, 619–635. <https://doi.org/10.2147/PRBM.S402159>
- Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2009). Reciprocal relationships between job resources, personal resources, and work engagement. *Journal of Vocational Behavior*, 74(3), 235–244.
<https://doi.org/10.1016/j.jvb.2008.11.003>
- Yan, Q., & Donaldson, S. I. (2023). What are the differences between flow and work engagement? A systematic review of positive intervention research. *The Journal of Positive Psychology*, 18(3), 449–459.
<https://doi.org/10.1080/17439760.2022.2036798>
- Zahari, N., & Kaliannan, M. (2022). Antecedents of work engagement in the public sector: A systematic literature review. *Review of Public Personnel Administration*, 43(3), 557–582.
<https://doi.org/10.1177/0734371X221106792>
- Zakaria, R., Ahmi, A., Ahmad, A. H., & Othman, Z. (2021). World-wide melatonin research: A bibliometric analysis of the published literature between 2015 and 2019. *Chronobiology International*, 38(1), 27–37.
<https://doi.org/10.1080/07420528.2020.1838534>
- Zhao, X., Wang, J., Mattila, A., Leong, A. M. W., Cui, Z., Sun, Z., Yang, C., & Chen, Y. (2023). Examining the cross-level mechanisms of the influence of supervisors' job crafting on frontline employees' engagement and performance. *International Journal of Contemporary Hospitality Management*, 35(12), 4428–4450. <https://doi.org/10.1108/IJCHM-08-2022-1028>