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Conducting a Bibliometric Study through a Systematic Literature Review regarding Job Characteristics and Work Engagement

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Abstract

In businesses, top management typically discusses increasing employee performance by focusing on job characteristics (JC) and work engagement (WE). Typically, employees' job characteristics are classified based on the Job Demand Resource Theory (JDR) or the Job Characteristics Theory (JCT). In fact, work engagement is concerned with an employee's enthusiasm and dedication to their job. This systematic literature review intends to examine research articles on job characteristics and work engagement (WE) from 2017 to 2021 that were retrieved from publicly available databases. Furthermore, this study critically reviews the most significant theories and employs Bibliometric analysis and Microsoft Excel to develop research themes. In addition, Bibliometric study included selected literature trends, the most influential words, the most dominant authors, co-occurrence networks, thematic maps, and factorial analyses. PRISMA was utilised for systematic screening. A conceptual model and prospective study directions have been presented to intellectuals and aspiring academics. Hence, this review is a noteworthy addition to the current body of literature. This analysis recommends that businesses and policymakers should explore regulations and tactics to optimise the job characteristics of the work force. Moreover, managers should recognize that WE enlighten performance and increase the organization's revenue and commitment. Applying these JC and WE concepts would provide firms with a competitive edge that would enable them to sustain and flourish worldwide.

Keywords: Bibliometric analysis, Job characteristics, PRISMA, Systematic literature review, Work engagement

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Introduction

Job characteristics are superior and fundamental variables (Rai et al., 2017). As jobs are hypothetical to be more and more thought provoking for employees, they are reflected as comfortable, gratified, and praised. In this challenging world, personnel are acknowledged as the long-term resources for the evolution of a business. When satisfied, engaged, and committed to their jobs, they are essential for an organisation's progress. Therefore, JC and WE are indispensable in sustaining the trustworthy and dedicated employees within organizations. WE are cognitive, affective, and behavioural because of their commitment for work. It is related to the JC comprising the employees' demands, knowledge, and skills. These both components (JC and WE) are mandatory to attain and accomplish a job in a paramount manner.

In previous literature, diverse theories are explored to design the job characteristic of employees. Job characteristics theory (Hackman & Oldham, 1976), job demand-resource theory (Demerouti et al., 2001), job demands-control theory (Karasek, 1979), and relational job design theory (Grant, 2007) were used to explore the job characteristic of employees. According to the selected research studies for this review, the predominant theories are the job characteristics theory (Hackman & Oldham, 1976) and job demand resource theory (Bakker & Demerouti, 2007). These theories are commonly used because of their uniqueness (Renn & Vandenberg, 1995). The five job characteristics are skill variety, task significance, autonomy, task variety, and feedback. The three psychological states mediate the job characteristics. These characteristics enriched the intrinsic motivation and work effectiveness of an employee. Hackman, (1980), replaced absenteeism and turnover variables with two moderators (knowledge & skills and context satisfaction) in his book *Work Redesign*. The characteristics of the job demonstrated the core steps, categories of skills, and talent required to accomplish the job (Iqbal et al., 2019)**.** The job characteristics of employees can also be categorized into two extensive groupings of job demands and job resources. It depicted the inclusion of WE in the model, decreased cynicism, and enlightened the performance. (Bakker, 2017).

In the Job Demand Resource Theory (JD-R theory), health and well-being can be attained as a job outcome. The job demands represented negative job characteristics and job resources envisaged positive ones.

These job demands and resources ultimately condensed costs (Bakker & Demerouti, 2007). The concept of WE is already included in the JDR theory (Sonnentag, 2017). The top management scuffles to augment the performance of employees, while accomplishing WE with job characteristics (Han et al., 2021). Job demands include heavy workloads, task conflicts, emotional demands, job insecurity, and role ambiguity. In comparison, some job resources are voice climate, influence of work, informational justice, managerial quality, trust, and organizational support (Roczniewska et al., 2021). The designing of job characteristics motivates the employees to be engaged with the organization and can impact WE (Tanuwijaya et al., 2022; Adiarani, 2019). As a result, the well-defined job characteristics and high level of WE can be projected, which in turn supports them to perform jobs effectively. Due to individuality and exclusivity, most JCT and JDR theories are employed. For future models of job design, the JCT can be used as a fundamental theory and is well regarded by numerous research scholars. For hundreds of years, this theory was a foundation and mechanism for numerous research manuscripts (Renn & Vandenberg, 1995), which reinforced the redesigning of jobs (Kulik et al., 1988) and is known as the leading theory (Gagné & Panaccio, 2014). JD-R theory is also responsible for measuring well-being in a diverse organizational context with an exceptional theoretical structure to determine the job characteristics (Lesener et al., 2019). Job characteristics are mostly constant and objective. The researchers have paid less attention to the dynamic job characteristics in diverse firms and cultures (Oerlemans & Bakker, 2018). Therefore, most research scholars are interested in exploring the factors for enhancing their WE of the workforce (Tanuwijaya et al., 2022).

As a whole, this systematic literature review is innovative, unique, and remarkable since it considers selected research papers from a variety of fields, particularly medical sciences, hospitality, education, and organizations, including job characteristics and WE variables. This thorough literature review, which is divided into five sections, added theoretically and practically to the existing literature. The first portion includes of a brief introduction, the second section comprises a literature review, the third section encompasses the research methods, the fourth section comprises of analysis and results, and the section five encompasses the discussions and conclusion of this study.

Objectives

The selected review variables (JC and WE) are significant for the literature as they provided positive individual, team, and organizational results. It has two folded objectives which are mentioned below:

1. To analyse forty research studies in terms of citation, country, and journal, critically review the most noticeable theories and the most common measures employed.

2. To analyse the trends of selected literature, dominant authors, word cloud, and conceptual structure through Bibliometric analysis and MS-excel analysis of research studies in terms of type of research study, sources and citations.

Review of Literature

Job Characteristics

The jobs and their characteristics are dynamic in nature and change with time and circumstances in various sectors and cultural contexts according to the demand of the competitive and global world (Oerlemans & Bakker, 2018). In prior research, instructional leadership, WE, culture, empowerment, and job characteristics in school teachers were investigated (Zahed-Babelan et al., 2019), and the relationship between job characteristics, WE, and organisational justice in the nursing environment in China was determined (Dong et al., 2020). The job performance, job characteristics, crafting, and work engagement (WE) in the service industry were evaluated (Dulara & Sen 2017) and the connection between job characteristics and WE in the workplace was studied (Rai et al., 2017).

JCT (Hackman & Oldham, 1976), job demands-resources theory (Demerouti et al., 2001), job demands-control theory (Karasek, 1979), and relational job design theory (Grant, 2007) are explored in the earlier literature to design the employees' job characteristics. The primarily used theories are the JCT (Hackman & Oldham, 1976) and JD-R theories (Bakker & Demerouti, 2007) in this review and prior literature. Job characteristics theory (JCT) was introduced by Hackman & Oldham (1975), as this is the basic, leading, and well-viewed theory (Gagné & Panaccio, 2014; Renn & Vandenberg, 1995). The JCT was initiated through the struggles of Turner and Lawrence. Hackman & Lawler (1971) introduced the concept of objective characteristics concept. It is also built on the

primary research of Hackman and Lawler (Harvey et al., 1985). Hackman explored how job characteristics affect employees' attitudes and behaviours of employees and the divergence and dissimilarities of individuals. Later, these individual divergences are known as growth need strength in JCT (Hackman, 1980). Job characteristics comprised task identity, feedback, autonomy, significance, and variety. The task identity is the prospect for the completion of work, feedback on task depicting the information delivered by the job about performance at work; task autonomy is describing the discretion in work arrangement, task significance represents the influence of the job on others in the workplace or the world, task variety refers to the range of tasks (Oldham & Fried, 2016). The psychological states consisted of the meaningfulness, knowledge, and responsibility of results which resulted in work outcomes. Hackman, (1980), removed two variables named as absenteeism and turnover and added two moderators named as knowledge & skills and context satisfaction in his book "Work redesign". He concentrated on internal work motivation.

The JD-R theory also measured well-being in diverse settings (Lesener et al., 2019). In JD-R theory, job characteristics are the resources at the job. These resources assisted in the reduction of demands at a job (Demerouti et al., 2001). In the opinion of the JD-R model, the two job outcomes (health and well-being), can be achieved with the help of job demands and resources. The job demands represented negative job characteristics and included only those demands which are associated organizationally, physically, and socially sustaining the mental as well as physical efforts of an employee. Job resources visualized the positive job characteristics and reduced costs by reducing demands at the job, social, organizational, and physical facets of the job (Bakker & Demerouti, 2007).

Work Engagement

WE has its roots in history from several views, as well as an altered understanding of burnout. A worker can face burnout during work (Schaufeli & Taris, 2014). Schaufeli et al. (2002), defined WE as a permanent and persistent cognitive condition that is not concentrated on any single item, behaviour, occasion, or individual; it is labelled as 'an optimistic and satisfying, work-related frame of mind'. In prior research, the relationship between WE, psychological distress, and perceived communication behaviour among Japanese nurses was investigated (Kunie et al., 2017). The association between WE, counterproductive work

behaviours, and emotional exhaustion in the U.S. and China was determined (Chen et al., 2020). The Job characteristics and WE of nurses in Malaysia were investigated (Othman & Nasurdin, 2019), and the relationship between job characteristics and personality in the U.S. context was investigated (Smith & DeNunzio, 2020). Diverse authors have defined WE in different eras based on the outcomes of their research projects or to emphasise reasoning and facts. The important definitions of WE in prior literature are described in the Table 1 below:

Table 1

Important Definitions of Work Engagement (WE) in Prior Literature

Definitions	Sources
"Harnessing of organizational members' selves to their work roles; in engagement, people employ and express themselves physically, cognitively, and emotionally during role performances".	(Kahn, 1990)
"A positive, fulfilling, work-related state of mind characterized by vigor, dedication, and absorption".	(Schaufeli et al., 2002)
"It is attributed to the 'bottom-up' manner in which the engagement notion has quickly evolved within the practitioner community".	(Macey & Schneider, 2008)
"JD-R model foster engagement in terms of vigor (energy), dedication (persistence) and absorption (focus)".	(Bakker & Demerouti, 2008)
"Work engagement happens in the process of working and fluctuates depending on the task the person is working on at the moment".	(Sonnentag, 2017)

The objectives of this review are to address a gap in the existing literature through the descriptive analysis of forty research articles using Bibliometric and Microsoft Excel. Hence the earlier research paid little consideration to the review of JC and WE.

Novel Definition of WE

From the important definitions of WE across different periods by several researchers, a comprehensive novel definition for WE was required as there is no settlement on a particular definition of WE (Macey &

Schneider, 2008). The concept of WE was much confusing (Schaufeli et al., 2002). Work engagement is a part of a job attitude and the above definitions did not incorporate all three components (cognitive, affective, and behavioural) of job attitudes (Rosenberg & Hovland, 1960), while defining this concept (WE). In the definition of Kahn, (1990),the cognitive part of job attitude is reflected, and the emotional fact or among the numerous aspects of the affective component is just depicting as affective components express feelings, which can be psychological and sociological as well. In the remaining definitions, three components are not reflected directly (Bakker & Demerouti, 2008; Macey & Schneider, 2008; Sonnentag, 2017). Therefore, WE can be defined in the following manner;"Work engagement is a cognitive, affective, and behavioural engagement of an employee in order to accomplish it to the best of one's ability with heartiness, unremittingness, and focus."

The above original definition is also a theoretical contribution to this systematic review, indicating the WE of the employee as one who is fully dedicated to work and realises the job as though it is only and entirely for the employee's benefit.

Research Methodology

According to Whittemore & Knafl (2005), there are five phases to conduct, organize, and structure a systematic literature review. These steps are the research questions, searching for the related literature, analysing and presenting data, and reporting the obtained results.

Protocols and Inclusion/Exclusion Criteria

From 2017 to 2021, electronic research studies were chosen from various databases and sources for the systematic literature review. Science Direct, Taylor & Francis, Emerald, and Google Scholar were among the databases and sources considered. Additional sources, such as Wiley Online Library, academia, pedocs.de, and SSRN, were included in the Google Scholar category. This review includes all forms of selected research articles (meta-analyses, review papers, empirical, and conceptual research manuscripts). Medical sciences, hotels, education, and companies such as private or IT were among the most prominent sectors. For this analysis, only studies published in English were considered. Under the article type selection, the keywords used to search the contents were Work characteristics and work engagement; review and research articles were

chosen. The social sciences, business, Management, and accounting options were picked in the subject area option. We included the most relevant, easily accessible, and important research studies on work characteristics and WE.

The selected literature did not include encyclopaedias, book chapters, theses, or unpublished research articles. Several research papers on specific industries and communities were excluded (like Flight attendants, cruise ship employees, non-Government drugs, outsourcing sector employees, train drivers, tourism, and airlines).

Figure 1

PRISMA (a flow diagram)
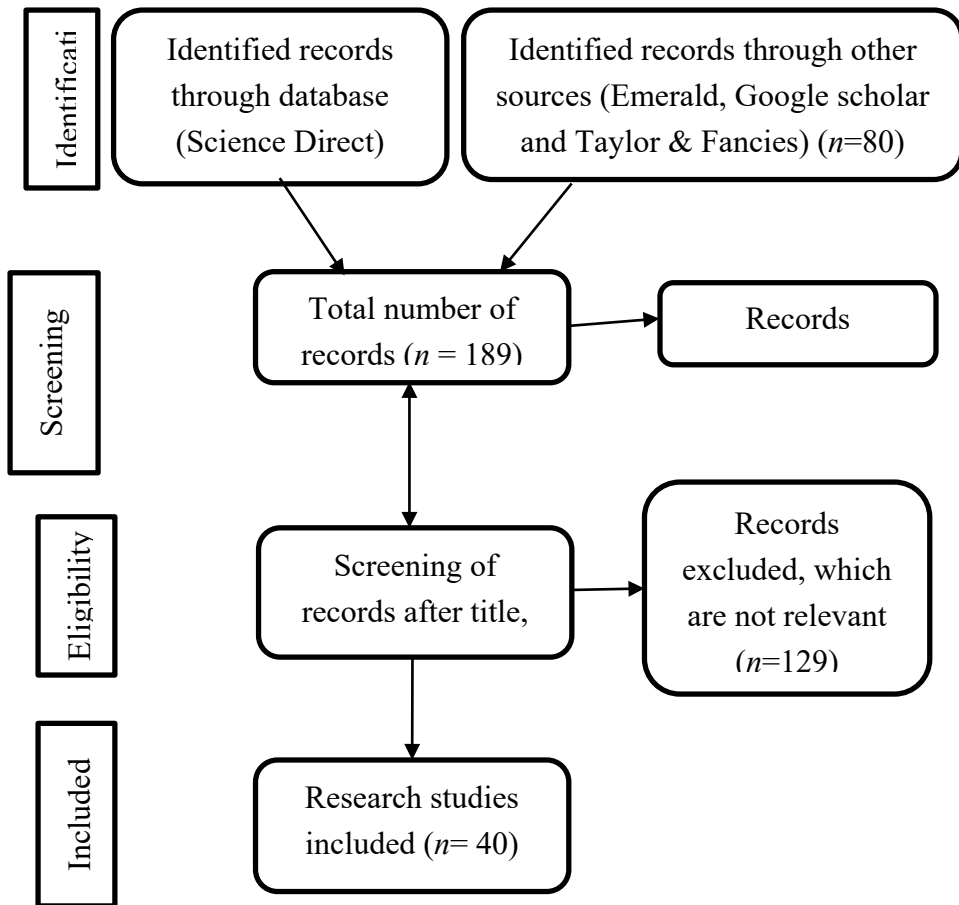
Articles Selection Process

In this systematic review of job characteristics and WE from 2017 to 2021, a flowchart was created using the PRISMA (preferred reporting items for systematic reviews and meta-analyses) guidelines to select the research articles (See Fig.1), and the PRISMA was created to avoid the possibility of a non-systematic approach to literature reporting (Moher et al., 2009). One hundred and nine (109) articles were collected from Science Direct, with twenty-nine of them serving as meta-analyses, research studies, or review papers. Sixty research articles were searched on Google scholar, and five (5) research papers were shortlisted while keeping the exclusion criteria in mind. Emerald was searched for fifteen (15) research studies, and five (5) research articles were chosen. Taylor & Francis looked into five (5) research articles, but only one was chosen.

Analysis and Results

Critical Review of JCT and JD-R Theory

JCT, from a parsimony standpoint, has unnecessarily incorporated three psychological states and can be substituted with psychological ownership, which links the essential job characteristics (Mérida-López et al., 2019). Psychological ownership can exchange three psychological states and produce similar job outcomes like internal motivation and job satisfaction.

Just several researchers examined these three psychological states as m ediators in their studies(Morgeson & Champion, 2003), and predicted greater parsimony in job design and psychological ownership. As a result, for the sake of parsimony(simplicity), this model replaced three mediating variables with psychological states (Pierce et al., 2009). JDR theory was helpful in analysing the job demands and resources. This extensive applicability and utility was not sufficient. After three years, the revised JDR theory was designed by Schaufeli and Bakker (Schaufeli & Bakker, 2004). By including the variable of work engagement (WE) with burnout, it provided insight into positive as well as negative psychological aspects. This model is a heuristic (open), flexible and descriptive, not an explanatory model. It also affects generalizability. It did not provide a psychological clarification as it simply mentioned job demands and resources definition. The model lacked *explanatory power* and included parsimony characteristics of a good theory in the best way

(Schaufeli & Taris, 2014). In this systematic literature review, JDR theory has been chosen by the mostly research studies due to its flexibility.

Analysis of Scales to Measure Work Engagement

The confusion in the definition of Work Engagement (WE) concept has also generated a problem in measuring the concept. It is a multidimensional concept in the view of several researchers (Schaufeli et al., 2002). In Table 2, an analysis of different scales was indicated to measure WE by several authors over time.

Table 2

Analysis of Scales to Measure Work engagement

Tools	Abbreviations	Sources
A student version of the Utrecht Work Engagement Scale	UWES	(Schaufeli et al., 2002).
Short form of Utrecht Work Engagement Scale	UWES	(Schaufeli et al., 2006).
Oldenburg Burnout Inventory An alternative instrument for the assessment of work engagement	OLBI	(Bakker & Demerouti, 2008).
Oldenburg Burnout Inventory An alternative instrument for the assessment of work engagement	OLBI	(Demerouti et al., 2010).
Oldenburg Burnout Inventory Two dimensions: exhaustion-vigor and cynicism-dedication	OLBI	(Sinval et al., 2019).

Here, mostly research studies were used by the UWES (Utrecht Work Engagement Scale) to measure the work engagement of employees in diverse context.

Analysis of Research Studies

This review included research studies on job characteristics and WE from different sectors. Table 3 (See Appendix. 1), depicts the detailed analysis of the forty (40) selected research papers by highlighting their highest citation score, 569, published in the Journal of Vocational

Behaviour in U.S.A by Rudolph and his co-authors in 2017. It assisted in accomplishing the first objective of this review paper.

Bibliometric Analysis

For the last thirty years, Bibliometric approaches have been used in businesses especially (Kaushal et al., 2021; Murgado-Armenteros et al., 2015), which are remarkable for its comprehensive R-tool and provides a comprehensive platform for mapping the prior literature (Ellegaard & Wallin, 2015). For this analysis, the Biblioshiny interface was developed by Aria & Cuccurullo (2017). This interface is for non-coders and provided unique tables and figures, which were not commonly available in any software (Moral-Muñoz et al., 2020). In this review, the analyses was conducted by choosing the title and abstract of the selected articles. Separately, the supported tabs were used to perform the analyses of the seven review papers and twenty-two research studies. The seven review studies comprised as meta-analyses, review, and conceptual papers. These articles were imported from science direct to Bibliometric software in BibTeX format. The selected research studies were analysed in the biblioshiny interface by selecting the various options in strategy for research in the search field (as keywords, title, and abstract). Many research scholars have followed the Bibliometric (Biblioshiny interface) software to analyse the selected research studies (Ali et al., 2020; Almeida & Paula, 2019; Aria & Cuccurullo, 2017; Ellegaard & Wallin, 2015; Gull et al., 2022; Khan et al., 2021; Moral-Muñoz et al., 2020) and the following mentioned tables and figures were based on the previously conducted research reviews. The second objective of this review paper accomplished, through the following analysis of the trends of the selected literature, dominant authors, word cloud, and conceptual structure through Bibliometric analysis.

Selected Literature Trends

The trends in selected literature are predicted in Table 4(a). The time frame chosen was 2017-2021. The six sources chosen presented that the review papers included in this review were from the previous five years. The authors employed a total of 37 keywords. The number of authors chosen was thirty (30). According to the documentation, there were 4.29 authors. According to Table 4(b), the research studies included in this review were conducted within the last five years and had fourteen primary sources. This systematic research review contained fourteen (14) sources.

There were a total of 93 keywords used by authors, with a total of 61 authors. According to the document, there were 2.77 authors.

Table 4a

Review Papers Trends

| Timespan	2017-21
Sources	6
Total Documents	7
Publications based on average years	2.29
Keywords of Authors	37
Authors	30
Authors related to a single document	0
Authors connected to multiple documents	30
No. of documents as per author	0.233
Authors as per document	4.29
Co-authors as per document	4.29

Table 4(b)

Research Papers Trends

Timespan	2017-21
Sources like Journals, Books	14
Total Documents	22
Publications based on average years	2.45
Keywords of Authors	93
Authors	61
Authors related to a single document	3
Authors related to multiple documents	58
No. of documents as per author	3
Authors as per document	2.77
Co-authors as per document	2.91

Dominant Authors Analysis

Arnold b. Bakker is the most relevant author of the twenty-two research publications (see Fig. 2). This author is used four times because the JD-R theory is mostly employed to describe the JC (prominent variable of the research review). Arnold B. Bakker proposed this approach.

Figure 2

Dominant Authors' Analysis (Research Papers)
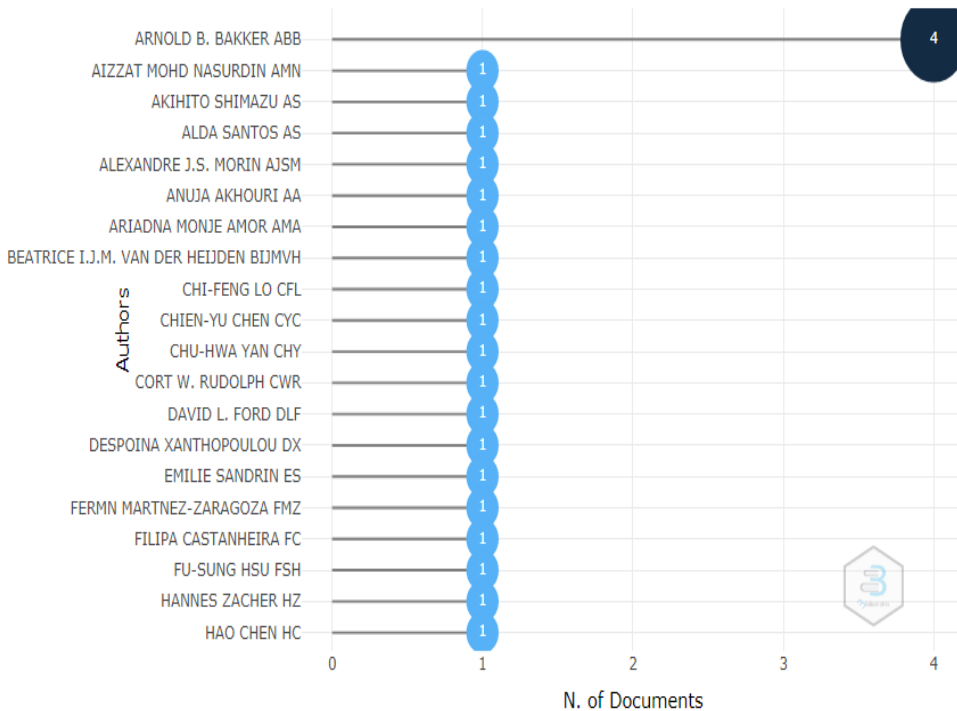
Word Cloud Analysis

With the support of the abstract, word cloud presents that the most prominent word in the selected review is the job, satisfaction, engagement, and nurse (see Fig. 3a). The customarily research reviews have considered the job demands and engagement. By choosing the query as abstracts, the most noticeable words in the designated research papers are job, study, nurses, demands, and relationship. Most research studies considered job demands and engagement (see Fig. 3b). The following word clouds from research studies show that work characteristics and WE concepts should be probed more in industries other than nursing, particularly electronics. These variables should be investigated more by concerning emotional support, OCB (Organizational Citizenship behaviours), cohesion behaviours, turnover intentions, behavioural outcomes, CSR (Corporate Social responsibility), job embeddedness, and psychological exhaustion.

Figure 3a
Word Cloud (Review Articles)

Figure 3b
*Word Cloud (Research Articles)*

Co-occurrence Network (Conceptual Structure)

Conceptual structure refers to the organisation used in the interaction between concepts or words in selected publications. Three clusters denoted study themes and were coloured blue, green, and red (see Fig. 4). The blue cluster emphasised the studies on nurses' JC and WE. Nurses' JC should be tailored to improve their WE for improved performance. From a psychological and occupational standpoint, designing job characteristics can have beneficial consequences. The red study stream of Co-occurrence networks showed that Changing and altering job characteristics can result in positive changes in employee behaviors. The green cluster indicated the JCM and JD-R theories, which were beneficial in amplifying the WE of the workforce on the job. Applying these theories can be beneficial for redesigning job characteristics. It would aid in the reduction of employee turnover. Both models can improve the social and emotional outcomes of the workforce at the job place (see Fig. 4).

Figure 4

Co-occurrence Network
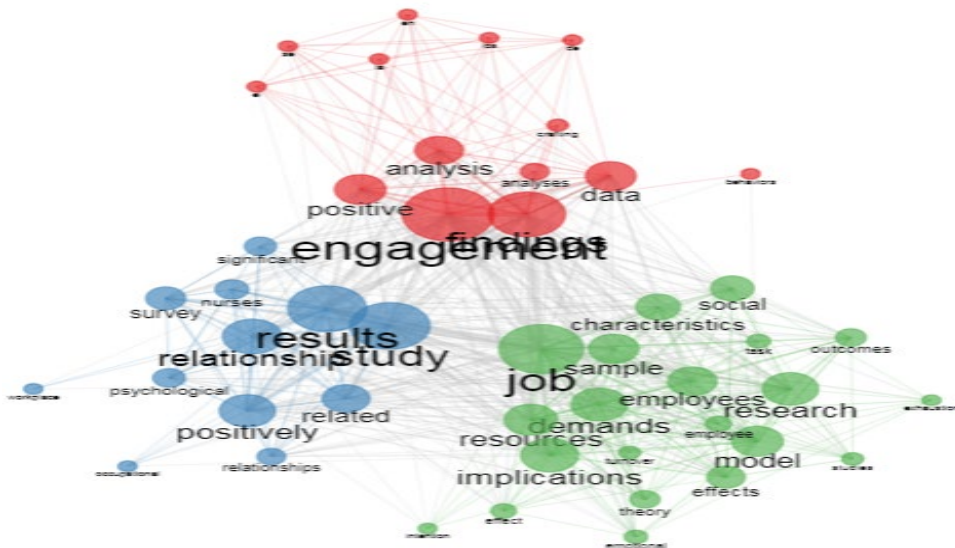
Thematic Map (Conceptual Structure)

The thematic map refers to the themes in a two-dimensional diagram (centrality and density) (Corte et al., 2019). The first quadrant displayed the

keywords study, paper, and relationships in themes that were emerging or disappearing. These keywords were less density and central. These keywords had a promising future in study, indicating that additional empirical research on job characteristics and work engagement is still needed (WE). As basic themes, the second quadrant represented the keywords organization, job, and literature. It shown that the relevant literature is solely associated with job characteristics and organizations. As niche themes, the third quadrant featured the keywords engagement, studies, and relationships. It represented important concepts because employees' WE were needed to uplift and acquire a competitive advantage. Employees who are engaged are the organization's assets. Highly engaged personnel increase revenues and increase market share for firms. As motor themes, the fourth quadrant highlighted the keywords factors, expectations, and support. These elements should be investigated more in future avenues that modify job characteristics to improve employees' WE. Employee involvement with their individual firms can be boosted through support from both work and home. Increased employee engagement leads to increasing expectations of firms and managements to grow globally (see Fig. 5).

Figure 5
Thematic Map
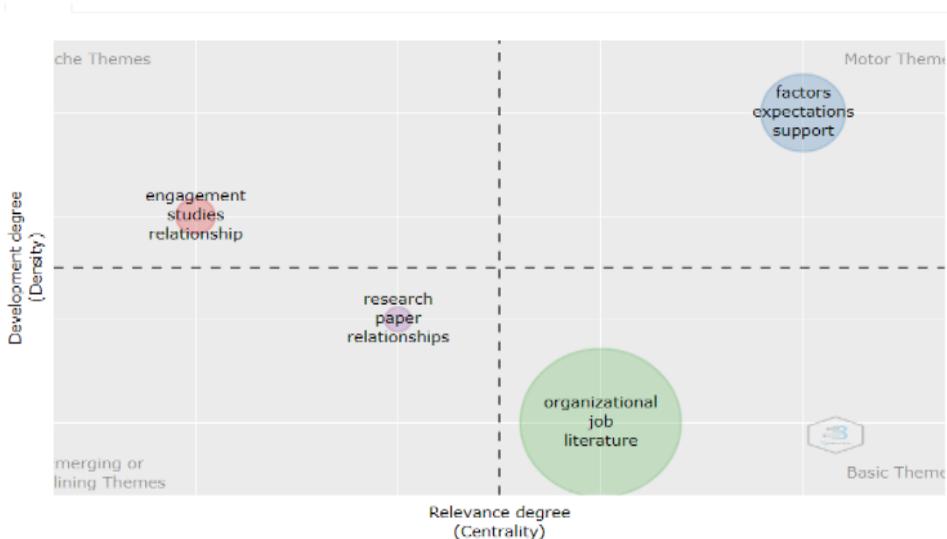
Factorial Analysis (Conceptual Structure)

The two clusters are displayed in the factorial analysis (Corte et al., 2019). The colours of clusters in the factorial analysis are pink and blue (see Fig. 6a). The pink cluster indicates that job or employee engagement is usually found as a positive relationship with the results of the research studies. The blue cluster shows that primarily JD-R model is used in the research manuscripts of this review. Here, the words like research, demands, resources, implications, and model are employed.

The same analysis was explored for the research papers in pink and blue clusters of the factorial analysis (see Fig. 6b).

Figure 6a
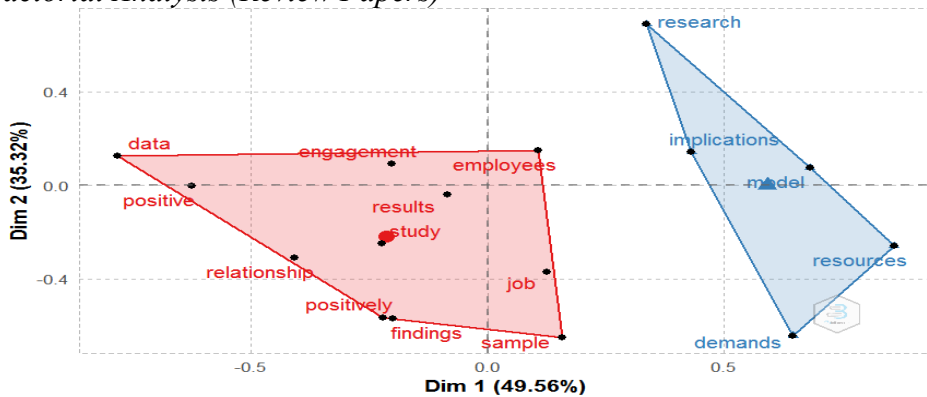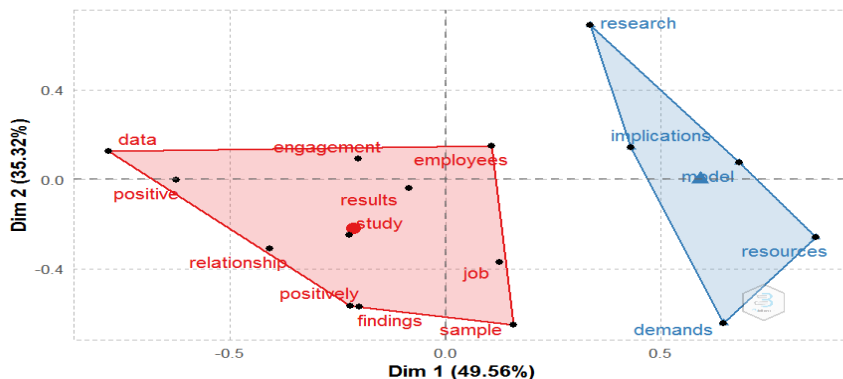*Factorial Analysis (Review Papers)*

Figure 6b
*Factorial Analysis (Research Papers)*

MS-Excel Analysis

The research studies analysis (type of study wise) represents that mostly research studies are empirical studies, whereas the minimum research studies are meta-analyses (Fig. 7). The second objective of this systematic review study is also achieved by conducting the analysis of research studies via a type of research study, sources, and citations through MS-excel.

Figure 7

Research Studies Analysis (Type of Study Wise)
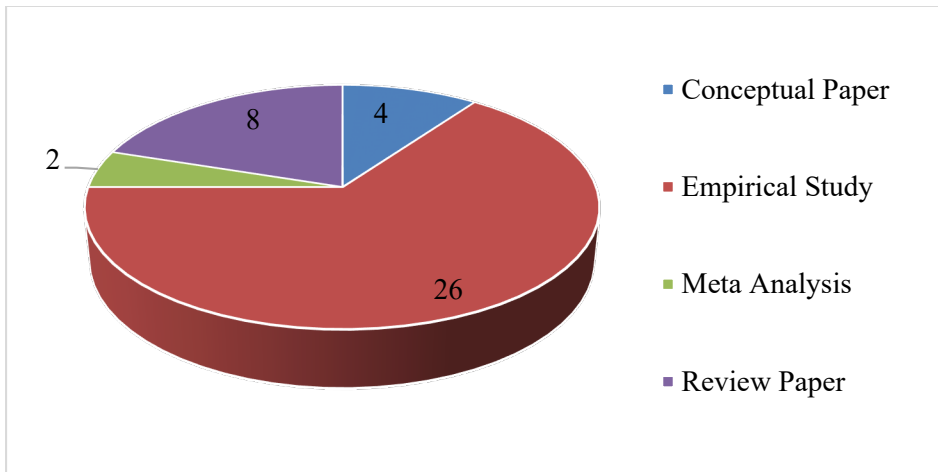
The research studies analysis (sources-wise) represents that mostly research studies are retrieved from the Science direct whereas the minimum are retrieved from Taylor and Francis (see Table 5 and Fig. 8).

Table 5

Research Studies Analysis (sources wise)

Year	Sources				
	Emerald	Google Scholar	Science Direct	Taylor & Francis	Grand Total
2017	2	2	10		14
2018	1	1	4		6
2019	2	1	7		10
2020		1	4		5
2021			4	1	5
Grand Total	5	5	29	1	40

Figure 8

Research Studies Analysis (sources wise)

	2017	2018	2019	2020	2021
■ Emerald	2	1	2		
■ Google Scholar	2	1	1	1	
■ Science Direct	10	4	7	4	4
■ Taylor & Francis					1
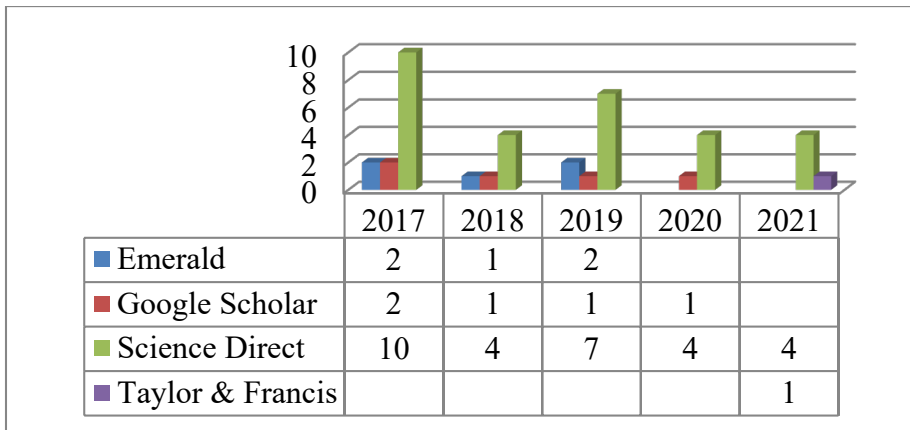
According to the table the highest citation is 569 in the research article "Job crafting: a meta-analysis of relationships with individual differences, job characteristics, and work outcomes", published in Journal of vocational behavior (Fig. 9).

Figure 9

Research Studies Analysis (Citations Wise)
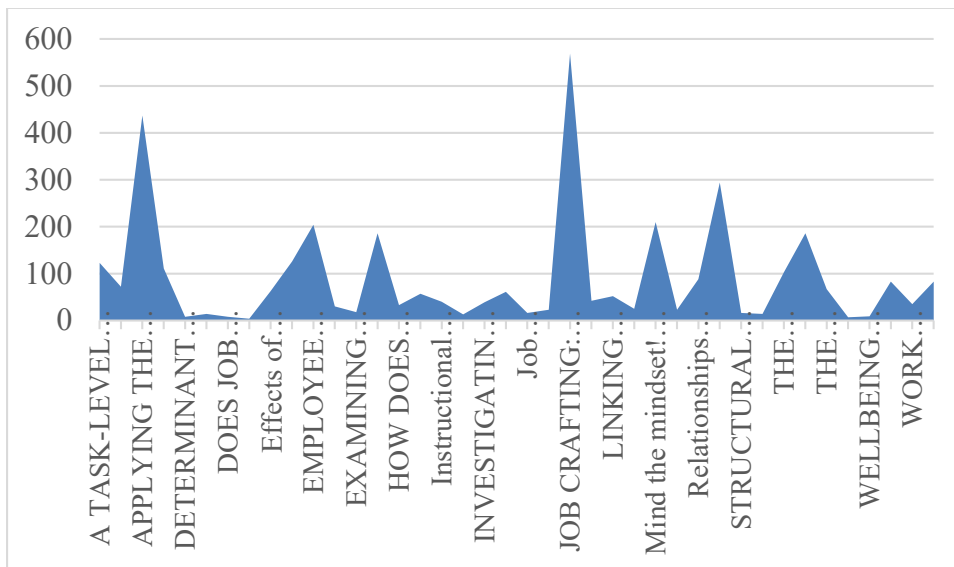
Discussion

This review analysed the indicated research studies related to job characteristics and work engagement (WE). PRISMA flow diagram was used to identify, qualify, screen out, and include research papers from 2017 through 2021. The present research objectives were given in the introduction of this study. In the preceding section of analysis and results, a systematic literature evaluation was conducted based on these study objectives.

This section comprises of practical implications, conclusion, limitations, and future research directions. The WE notion was perplexing and spawned numerous multidimensional concepts (Schaufeli et al., 2002). As a result of employing the Bibliometric research approach, an innovative and comprehensive definition of WE was provided in this systematic literature review. An analysis of various WE scales indicated that the UWES (Utrecht Work Engagement Scale) was chosen to measure WE in the most of research articles. In selected review papers, the total number of keywords used by the authors was 37, the total number of writers was 30, and the number of authors per document was 4.29. The overall number of keywords used by the writers in selected research papers was 93, the total number of authors was 61, and the number of authors per document was 2.77. Arnold b. Bakker was the most influential author, and the minimum research investigations were meta-analyses and review publications.

According to the data, the meta-analysis received the most citations (569), which has been published in the Journal of Vocational Behavior in the United States in 2017. Cohesion behaviours, OCB (Organizational Citizenship Behaviors), CSR (Corporate Social Responsibility), and job embeddedness have received less emphasis in the notions of job characteristics and WE. The word cloud analysis demonstrated that the job characteristics and WE have paid greater attention to the nursing sector in order to be examined in many industries, particularly electronics. These concepts should be investigated further in relation to emotional support, cohesiveness behaviours, turnover intentions, behavioural outcomes, job embeddedness, and psychological exhaustion. The co-occurrence networks demonstrated that WE and the design of job characteristics can influence employee behaviour. In this regard, the JCT and JD-R theories can improve the workforce's social and emotional outcomes. The factorial analysis of the

conceptual framework showed that future researchers must learn more about expectations and support in order to improve the WE. This study also highlighted the practical consequences, limitations, and future directions for scholars.

Practical implications

Practically, the best strategies should be adapted to design the job characteristics and these job characteristics assist firms in increasing employee engagement with their work (Dulara & Sen, 2017). These strategies can assist the structure by enhancing employees' WE through job characteristics of an employee. Finally, these approaches may help to boost employee performance (Han et al., 2021). Keeping talented and dedicated managers is a competitive advantage for valuable firms and is essential for putting the WE concept into action. (Schaufeli et al., 2006). Furthermore, earlier research investigations have shown that acceptable job characteristics motivate employees to improve output and boost work productivity (Schmid & Dowling, 2022).

The policies should be updated on a regular basis to boost employee interest in the job by improving the WE. It would result in the expansion and development of a specific industry. This comprehensive review assisted the management of numerous sectors in revamping job characteristics. For employees, job autonomy and freedom are the most important aspects of their jobs. Employees' WE was refined more as a result of job demands and resources. They eventually boost employees' performance. Managers should know that WE improve employee performance, commitment, and trust. It would increase the organisations' earnings. Integrating job characteristics and WE principles would offer firms with a competitive advantage in order to continue and grow worldwide. The practical consequences and future directions can be used by organizations, human resource departments, and policymakers to develop realistic strategies.

Conclusion

Globally, research studies on job characteristics and work engagement (WE) are being conducted. This thorough literature review incorporates a critique of theories, scales to measure WE, a novel definition of WE, and a country-by-country analysis of forty research articles and their citations. It also includes PRISMA for systematic screening, Bibliometric, and excel-based analysis of research studies. According to the examination of the

selected study manuscripts, the minimum studies were meta-analyses and review articles. Therefore, this systematic literature review (SLR) contributes in the existing body of literature regarding job characteristics and work engagement (WE), through a Bibliometric and MS-Excel analysis. Furthermore, this study significantly proposed a conceptual model, and provided suggested solutions for the future scholars.

As a nutshell, this review made a significant theoretical and practical contribution to the existing literature. It encouraged firms, managers, and policymakers to redesign employee job characteristics in order to increase work engagement (WE).

Limitations

There are certain limitations to this systematic literature review. This systematic literature review evaluated only research studies published in English, although research papers published in other languages might have offered a more comprehensive evaluation of job characteristics and work engagement (WE). In addition, the review included papers over the last five years from publicly available sources. If the inclusion of databases had included research articles from the last twenty years, there would have been opportunities to report on many themes and results.

Future Directions

This study advised that comparing Pre- Covid-19 and Post Covid-19 research investigations would steer the study towards a new direction. The researchers suggested including study articles from other databases, which could yield varied results and themes (Hakanen et al., 2006). According to the researcher's knowledge, the analysis of the selected studies of this review provided clear guidance to future researchers, as more emphasis on meta-analyses and review papers on Job characteristics and WE are required. JCT and JD-R theories are well-known for their individuality and uniqueness in job design. Furthermore, the JCT can be more inclusive from a parsimony standpoint by integrating psychological ownership with job characteristics rather than the three psychological states (Mérida-López et al., 2019), and future studies can incorporate it into the different context of cultures. The JD-R theory, on the other hand, is open, flexible, and descriptive rather than explanatory. Instead of simply providing the meaning of job demands and resources, it might reflect greater explanatory power with psychological clarification (Schaufeli & Taris, 2014). As a

result, future researchers should identify unique job demands and resources based on the different nature of employment, job context, and dynamic economic, social, and cultural factors. The current identified research gap is the exploration of a new conceptual model, as in the factorial analysis in the conceptual structure tab of Bibliometric software depicting two distinct clusters of WE and JD-R theory without highlighting whether JCT or JD-R Theory are more helpful in enhancing the WE of employees, and this model should be more empirically examined in manufacturing and service organizations by future researchers through statistical tools and software to infer diverse conclusions.

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Appendix 1

Table 3
Analysis of Forty Research Studies

S. No.	Title	Journal Name	Citations as per 25-03-2022	Country	Sources
1	Work engagement, emotional exhaustion, and counterproductive work behavior	Journal of business research	35	U.S. and China	(Chen et al., 2020)
2	Engagement of nurses in their profession. A qualitative study on engagement	Enfermera clnica (English edition)	30	Spain	(García-Sierra & Fernández-Castro, 2017)
3	Employee intrapreneurship and work engagement: a latent change score approach	Journal of vocational behavior	204	Netherlands	(Gawke et al., 2017)
4	How does emotional intelligence help teachers to stay engaged? Cross-validation of a moderated mediation model	Personality and individual differences	33	Spain	(Mérida-López et al., 2019)
5	Well-being among hospital nurses: a cross-sectional study of the contributions of relational job characteristic	International journal of nursing studies	9	Portugal	(Santos et al., 2020)
6	Investigating the combined effects of workaholism and work engagement: a substantive-methodological synergy of variable-centered and person-centered methodologies	Journal of vocational behavior	39	France	(Moher et al., 2009)
7	Structural empowerment, psychological empowerment, and work engagement: a cross-country study	European management journal	16	Spain and UK	(Monje et al., 2021)

S. No.	Title	Journal Name	Citations as per 25-03-2022	Country	Sources
8	The relationship between work engagement and psychological distress of hospital nurses and the perceived communication behaviors of their nurse managers: a cross-sectional survey	International journal of nursing studies	67	Japan	(Kunie et al., 2017)
9	Job crafting: a meta-analysis of relationships with individual differences, job characteristics, and work outcomes	Journal of vocational behavior	569	USA	(Rudolph et al., 2017)
10	A task-level perspective on work engagement: a new approach that helps to differentiate the concepts of engagement and burnout	Burnout research	123	Germany	(Sonnentag, 2017)
11	Job crafting-satisfaction relationship in electrical/electronic technology education program: do work engagement and commitment matter?	Revista de psicologa del trabajo y de las organizaciones	42	Nigeria	(Ogbuanya & Chukwuedo, 2017)
12	Daily job crafting and momentary work engagement: a self-determination and self-regulation perspective	Journal of vocational behavior	111	Dutch	(Bakker & Oerlemans, 2019)
13	Linking corporate social responsibility attributions and creativity: modelling work engagement as a mediator	Journal of cleaner production	52	India	(Chaudhary & Akhouri, 2018)
14	Do type D personality and job demands-resources predict emotional exhaustion and work engagement? A 3-wave prospective study	Personality and individual differences	6	Dutch	(Bosmans et al., 2019)
15	Does workplace friendship promote or hinder hotel employees' work engagement? The role of role ambiguity	Journal of hospitality and tourism management	4	Taiwan	(Yan et al., 2021)

S. No.	Title	Journal Name	Citations as per 25-03-2022	Country	Sources
16	Job characteristics and experience as predictors of occupational turnover intention and occupational turnover in the European nursing sector	Journal of vocational behavior	61	Europe	(Heijden et al., 2018)
17	Does job passion enhance job embeddedness? A moderated mediation model of work engagement and abusive supervision	International journal of hospitality management	8	Taiwan	(Teng et al., 2021)
18	Job characteristics and staying engaged in work of nurses: empirical evidence from Malaysia	International journal of nursing sciences	23	Malaysia	(Othman & Nasurdin, 2019)
19	Examining personality, job characteristic interactions in explaining work outcomes	Journal of research in personality	18	U.S.	(Smith & DeNunzio, 2020)
20	Workplace fun and work engagement in tourism and hospitality: the role of psychological capital	International journal of hospitality management	83	Taiwan	(Tsaur et al., 2019)
21	Strategic and proactive approaches to work engagement	Organizational dynamics	294	Netherland	(Bakker, 2017)
22	Applying the job demands-resources model: a how-to guide to measuring and tackling work engagement and burnout	Organizational dynamics	437	N/A	(Schaufeli, 2017)
23	Fostering meaningful work in organizations: a multi-level review and integration	Journal of vocational behavior	186	Netherlands	(Lysova et al., 2019)
24	The influence of work on personality trait development: the demands-affordances transactional (data) model, an integrative review, and research agenda	Journal of vocational behavior	186	UK	(Woods et al., 2019)
25	Work engagement or burnout: which comes first? A meta-analysis of longitudinal evidence	Burnout research	83	Romania	(Maricuțoiu et al., 2017)

S. No.	Title	Journal Name	Citations as per 25-03-2022	Country	Sources
26	The energizing nature of work engagement: Toward a new need-based theory of work motivation	Research in organizational behavior	103	U.S.	(Green et al., 2017)
27	Intangible assets and organizational citizenship behavior: a conceptual model	Heliyon	13	South Korea	(Tefera & Hunsaker, 2020)
28	Determinants of nurse manager job satisfaction: a systematic review	International journal of nursing studies	8	Brazil	(Penconek et al., 2021)
29	Active aging at work: contributing factors and implications for organizations	Organizational dynamics	72	Netherlands	(Zacher et al., 2018)
30	Effects of work environment and job characteristics on the turnover intention of experienced nurses: the mediating role of work engagement	Journal of advanced nursing	126	China	(Wan et al., 2018)
31	Instructional leadership effects on teachers' work engagement: roles of school culture, empowerment, and job characteristic	CEPS journal	40	Iran	(Zahed-Babelan et al., 2019)
32	The effects of job characteristics, organizational justice and work engagement on nursing care quality in china: a mediated effects analysis	Journal of Nursing management	14	China	(Dong et al., 2020)
33	The role of job characteristics, job crafting and work engagement on job performance: a study on service industry	Journal of humanities and social science	7	Malaysia	(Dulara & Sen, 2017)
34	Influence of job characteristics on engagement: does support at work act as a moderator?	International Journal of sociology and social policy	57	N/A	(Rai et al., 2017)
35	Job characteristics and performance: the mediating role of job crafting	The international journal of Indian psychology	16	India	(Sen & Dulara, 2017)

S. No.	Title	Journal Name	Citations as per 25-03-2022	Country	Sources
36	Effects of individual and job characteristics on hotel contact employees' work engagement and their performance outcomes	International journal of contemporary hospitality management	63	Northern Poland	(Grobelna, 2019)
37	Mind the mindset! The interaction of proactive personality, transformational leadership, and growth mindset for an engagement at work	Career development international	210	Netherlands	(Caniëls et al., 2018)
38	Relationships between job characteristics, work engagement, conscientiousness and managers' turnover intentions: a moderated-mediation analysis	Personnel review	88	India	(Agarwal & Gupta, 2018)
39	Promoting work engagement in the hotel sector: review and analysis	Management research review	23	USA	(Park et al., 2019)
40	Linking meaningfulness to work outcomes through job characteristics and work engagement	Human resource development international	25	South Korean	(Han et al., 2021)