



Research Article

A Scientometric Analysis on Employee Well-Being Interest – Current Status and Possible Development of Research

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Abstract

The objective of this paper was to answer the posed research questions: Q1. Representatives of which fields of science conduct research on the issue of employee well-being? Q2. In what contexts do scientists consider the issue of employee well-being? Q3. What research topics represent the potential for the development of research on employee well-being in the coming years? To achieve this objective, data spanning the period 01.01.2019-21.09.2024, sourced from the Web of Science, were utilized. A scientometric analysis was performed employing the VOSviewer software.

The findings indicated that the predominant scientific domains in which the articles are disseminated include: psychology, medical sciences, management sciences, sociology and environmental sciences. The phenomenon is predominantly scrutinized within the following contexts: well-being in general, well-being results, well-being subcategories, organizational life, HRM, leadership, workplace violence, employee support, health care system, technology, sustainability, migration.

Considering the outcomes derived from the co-occurrence analysis of the terms, it can be concluded that in recent years scholarly attention has encompassed mainly: the essence of employee well-being, health care, HRM and leadership, other aspects of organizational life, technology in general, modern technologies as well as green economy and sustainable development. It can be postulated that investigations within these research domains will be further intensified in the ensuing years. Based on the observed growth trajectory of the current number of publications and the average citation frequency of articles, it can be anticipated that the volume of publications will grow most significantly in the latter two domains.

Keywords: employee well-being, well-being, bibliometric analysis, scientometric analysis

Introduction

The concept of employee well-being has enjoyed increasing interest among scientists and a growing number of publications. Examples from recent years include publications by authors such as Khatri, P. and Gupta, P. (2019), Molnár, C., Papp, C. and Juhasz, T. (2024), Stankevičienė, A., Tamaševičius, V., Diskiene, D., Grakauskas, Ž. and Rudinskaja, L. (2021), Wilczyński, A. and Kołoszycz, E. (2023), who write about both the phenomenon itself and tools, models or scales.

The growing interest in the topic of employee well-being was particularly visible during the COVID-19 pandemic, when, among others, the effects of lockdown on organizational behavior, including employee behavior and well-being, were analyzed. For example, Carnevale, JB. and Hatak, I. (2020) highlighted the implications of COVID-19 for employee well-being and HRM, while De Kock, JH., Latham, HA., Leslie, SJ., Grindle, M., Munoz, S-A., Ellis, L., Polson, R. and O'Malley, CM. (2021) as well as Denning, M., Goh, ET., Tan, B., Kanneganti, A., Almonte, M., Scott, A., Martin, G., Clarke, J., Sounderajah, V., Markar, S., Przybylowicz, J., Chan, YH., Sia, C-H., Chua, YX., Sim, K., Lim, L., Tan, L., Tan, M., Sharma, V., Ooi, S., Beatty, JW., Flott, K., Mason, S., Chidambaram, S., Yalamanchili, S., Zbikowska, G., Fedorowski, J., Dykowska, G., Wells, M., Purkayastha, S. and Kinross, J. (2021) analyzed the impact of the pandemic on psychological well-being. Möhring, K., Naumann, E., Reifenscheid, M., Wenz, A., Rettig, T., Krieger, U., Friedel, S., Finkel, M., Cornesse, C. and Blom, AG. (2021) studied the effects of COVID-19 on subjective well-being, while Ripp, J., Peccoralo, L. and Charney, D. (2020) considered its relevance to emotional well-being. Xiao, YJ., Becerik-Gerber, B., Lucas, G. and Roll, SC. (2021) assessed the impact of working from home during the pandemic on physical and mental well-being, while Núñez-Sánchez, JM., Gómez-Chacón, R., Jambrino-Maldonado, C. and Garcia-Fernandez, J. (2021) looked at the corporate well-being program during the COVID-19 era.

The aim of the paper is to answer questions that arise in the context of the growing interest in this research area, namely:

Q1. Representatives of which fields of science conduct research on the issue of employee well-being?

Q2. In what contexts do scientists consider the issue of employee well-being?

Q3. What research topics represent the potential for the development of research on employee well-being in the coming years?

The responses obtained to such questions may be of interest to representatives of at least several fields of science. They may constitute a guide for them in searching for current contexts and potential for future research and a hint where it is worth publishing in order to obtain the greatest potential for disseminating the acquired knowledge.

Materials and methods

Data preparation

The bibliographic data were from the Web of Science Core Collection, which in the opinion of Estoque, RC., Togawa, T., Ooba, M., Gomi, K., Nakamura, S., Hijioka, Y. and Kameyama, Y. (2019) and Zhang, J., Yu, Q., Zheng, F., Long, C., Lu, Z. and Duan, Z. (2016) is the most often used platform that, according to Martínez, MA., Herrera, M., Contreras, E., Ruiz, A. and Herrera-Viedma, E. (2015) and Sánchez-Núñez, P., Cobo, MJ., de las Heras-Pedrosa, C., Peláez, JI. and Herrera-Viedma, E. (2020), contains the most precise and reliable research information, and a large number of analysis tools to process it.

First, we searched for the concept of well-being in the context of work to see how much interest there is in this issue. We received 19,003 records. The first text listed in the database is dated 01.06.1934, and it is the article by Zimmermann, EW. (1934). The period of interest in this issue can, therefore, be assumed to be 91 years, with significant increases in the number of publications occurring in 2004, when the annual number of texts exceeded 100 items, and 2019, when it exceeded 1,000 for the first time. In the period 2019-2024, a total of 62.14% of all studies were published (Fig 1).

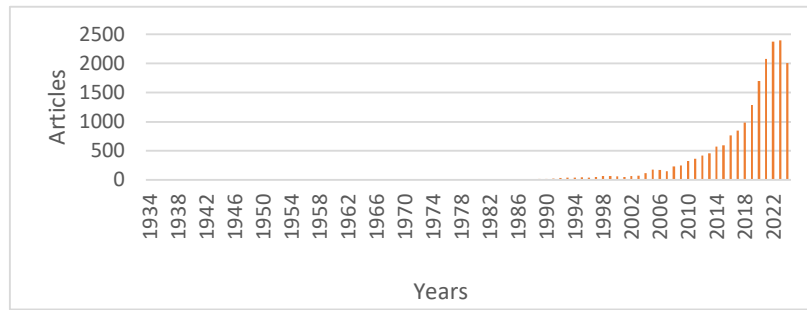


Fig 1. Number of publications on employee well-being (01.01.1934 – 21.09.2024)

Source: Author's own elaboration

Analytical approach

We limited the publication database downloaded from Web of Science to articles, review articles and proceeding papers (total 94.54% of publications), and subjected it to a preliminary analysis, defining top ten research areas and WoS categories, to determine the sciences where research on employee well-being is most often conducted. We also

checked which journals publish the most studies from this research area. In the second step, we limited the database to articles and review articles, as publications guaranteeing the highest quality of studies, subjected to thorough reviews. For mapping, we adopted texts in English, and limited the analysis period to texts from 01.01.2019 to 21.09.2024, in order to indicate the most current contexts and areas of research (Fig 2).

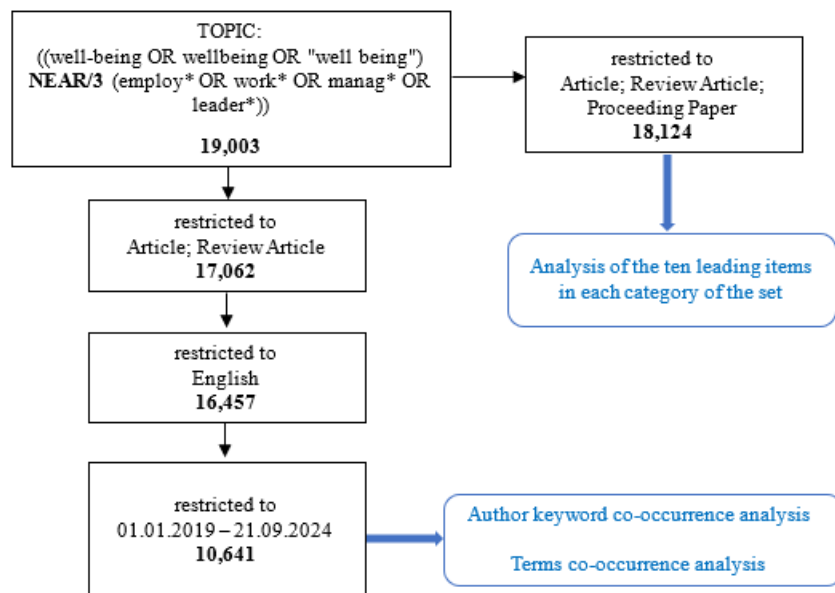


Fig 2. Flowchart of the bibliographic search and selection process

Source: Author's own elaboration

We used the VOSviewer program to perform the scientometric analysis. VOSviewer is a program developed by Nees Jan van Eck and Ludo Waltman from Centre for Science and Technology Studies of Leiden University that unify mapping and clustering techniques to run scientometric research. VOSviewer can be used to construct maps of keywords and terms based on co-occurrence data or to construct maps of authors or journals based on co-citation data. The program can display a map in various different ways, each emphasizing a different aspect of the visualization. As van Eck, NJ. and Waltman, L. (2010) and Waltman, L., van Eck, NJ. and Noyons, ECM. (2010) point out, the viewing capabilities of VOSviewer are especially useful for analyzing large number of items.

We used two modules available in the program:

- author keywords co-occurrence analysis,
- terms co-occurrence analysis.

We prepared both maps taking into account previously developed thesauruses, in which we removed all terms related to the COVID-19 pandemic from the original results. During the pandemic and immediately after it, a great many publications were published in which the authors

analyzed the impact of the pandemic on employee well-being, but it cannot be assumed that such papers will make a significant contribution to the research field in the coming years. When preparing the thesauruses, we also removed commonly occurring words unrelated to employee well-being (e.g. researcher, future, conclusions), terms related to publishing data (e.g. journal, series, volume), names of research methods, and we also adopted a single way of writing synonymous the ones or terms included in the texts both in the singular and plural. The described corrections allowed us to obtain clearer maps, giving a picture of the current approaches to employee well-being research by scientists from various fields of science, looking at EWB from different research perspectives.

Results

Research areas analysis

If we look at the number of fields of knowledge whose representatives publish studies on EWB, one should assume that it is definitely a multidisciplinary area that can be analyzed taking into account different points of view. In Table 1, we have included the top ten research areas and WoS categories in which scientists have published the most publications.

Table 1: Top ten research areas and WoS categories regarding the amount of publications

Research Areas	References	% of 18 124	WoS Categories	References	% of 18 124
Psychology	4,048	22.34	Public Environmental Occupational Health	2,857	15.76
Business Economics	3,650	20.14	Management	2,424	13.38
Public Environmental Occupational Health	2,857	15.76	Psychology Applied	1,808	9.98
Environmental Sciences Ecology	1,200	6.62	Psychology Multidisciplinary	1,362	7.52
Social Sciences Other Topics	1,104	6.09	Environmental Sciences	1,003	5.53
Engineering	971	5.36	Business	881	4.86
Education Educational Research	873	4.82	Nursing	780	4.30
Health Care Sciences Services	829	4.57	Social Sciences Interdisciplinary	742	4.09
Nursing	780	4.30	Education Educational Research	703	3.88
Science Technology Other Topics	695	3.84	Psychiatry	690	3.81
Sum	17007	93.84		13250	73.11

Source: Author's own elaboration

The list shows that most publications in the analyzed topics are published by representatives of psychology, medical sciences, management sciences, sociology and environmental sciences. We also checked which journals published most papers. The top ones are: International Journal of Environmental Research and Public Health (483 papers; 2.67% of papers), Frontiers in Psychology (445; 2.46%), Sustainability (257; 1.42%), Plos ONE (165; 0.91%), Journal of Occupational and Environmental Medicine (155; 0.86%), Journal of Occupational Health Psychology (138; 0.76%), WORK: A Journal of Prevention Assessment Rehabilitation (135; 0.75%), BMC Public Health (132; 0.73%), Work and Stress (124; 0.68%), BMJ Open (112; 0.62%). A total of 2,146 texts were published, which constitutes 11.84% of all publications.

Keywords and terms co-occurrence analyses

To answer the second question: Q2. In what contexts do scientists consider the issue of employee well-being? and third question: Q3. What research topics represent the potential for the development of research on employee well-being in the coming years? we conducted analyses of the co-occurrence of keywords and terms. Identification of the most important research contexts in the area of well-being will provide a basis for deeper or further research by interested scientists from the scientific disciplines indicated in the previous analysis.

The co-occurrence keyword analysis allows us to determine the main contexts of the analysis adopted by the authors. Therefore, we adopted the “author keywords” for the analysis, and, for the clarity of the results, we introduced the restriction of the minimum number of occurrences of a keyword: 20. The visualization contains 201 words out of the 20,555 that the authors included in their articles. The words were arranged into 9 clusters (Fig 3).

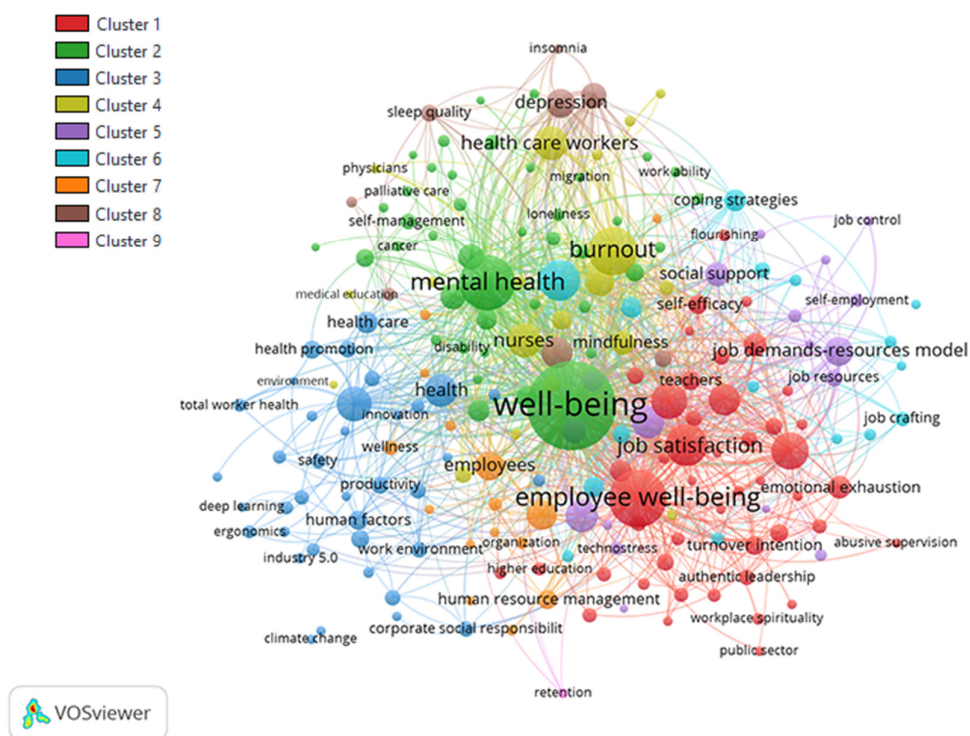


Fig 3. Author keyword co-occurrence map

Source: Author's own elaboration

The keyword that appears most frequently in the analyzed set is “well-being” (1,821), which should not be surprising, considering the subject of this analysis and the fact that it is a superior category to “employee well-being”, which is in second place in terms of the number of occurrences. The word “well-

being” also has the most connections with other keywords (189) and is most frequently connected with the remaining ones (2,902). For “employee well-being”, these values are: 781, 163 and 1,052. The top five keywords in the individual categories of their importance are presented in Table 2.

Table 2: Top five keywords regarding main values for keyword net

Occurrences		Links		Total link strength	
well-being	1,821	well-being	189	well-being	2,902
employee well-being	781	mental health	167	mental health	1,319
mental health	713	employee well-being	163	burnout	1,238
burnout	570	burnout	155	employee well-being	1,052
job satisfaction	413	stress	150	stress	887

Source: Author's own elaboration

A deeper insight into contexts is provided by cluster analysis. The largest of them (red) groups words with very different meanings, and it is the most diverse, and it is difficult to determine the leading subject in it. Keywords in this cluster have very general meanings. They are most frequently associated with the others: employee well-being, job satisfaction, work engagement, psychological well-being, and subjective well-being. The situation is similar in the second largest cluster (green), where most associations with the remaining keywords are: well-being, mental health, workplace, work and intervention.

Interesting combinations occur in the third cluster where words of significant importance for research relevant from the point of view of the current development of science appear. They can be divided into 3 groups, which we defined as: modern technologies (keywords: digitalization, artificial intelligence, social media, industry 4.0, industry 5.0 and machine learning), sustainable development (sustainability, sustainable development, social sustainability and corporate social responsibility) and green economy (environment, ecosystem services, climate change).

The yellow cluster contains words that primarily concern two areas that we identified: health care

system (health care workers, health care, hospital, physicians, nurses, patient safety, medical education) and employee support (compassion, compassion fatigue, and empathy).

Among the remaining clusters, the thematic connections are shown by the orange and brown clusters. In the first cluster, the words primarily concern: organizational life (human resource management, leadership, managers, organizational change, and organizational culture) and violence (bullying, discrimination, and stigma). The second contains keywords related to the effects of low well-being in employees (anxiety, depression, fatigue, occupational stress, and sleep quality).

We completed the keyword analysis by conducting a term co-occurrence analysis using the option "terms from title and abstract fields". We assumed 40 as the minimum number of occurrences of a term. As a result, out of 152,786 terms appearing in the set of documents, 266 met the threshold, and of these the most relevant were 160 (relevance score 60%). The map contains 5 clusters connecting mutually related terms (Fig 4).

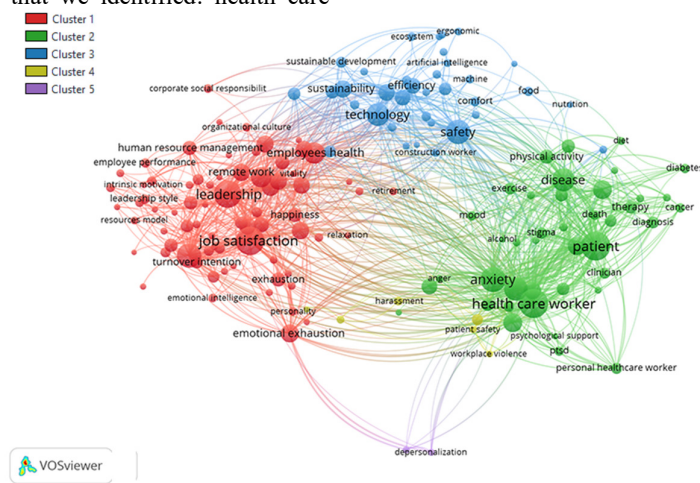


Fig 4. Term co-occurrence map

Source: Author's own elaboration

The red cluster dominates the map. The leading topics in it are:

- employee well-being: job satisfaction, life satisfaction, happiness, flourishing, optimism, vitality, vigor [for example the articles of Cooper, B., Wang, J., Bartram, T. and Cooke, FL. (2019); Darvishmotevali, M. and Ali, F. (2020); Gray, P., Senabe, S., Naicker, N., Kgalamono, S., Yassi, A. and Spiegel, JM. (2019); Greenier, V., Derakhshan, A. and Fathi, J. (2021); Scanlan, JN. and Still, M. (2019)],
- leadership: supervisor, supervisor support, leadership, leadership style, transformational leadership, servant leadership and authentic leadership [for example the articles of Kaluza, AJ., Boer, D., Buengeler, C. and van Dick, R. (2020); Salas-Vallina, A., Alegre, J. and López-Cabrales, A. (2021); Sarwar, H., Ishaq, MI., Amin, A. and Siddiqi, RA. (2020); Tummerts, LG. and Bakker, AB. (2021); Zeike, S., Bradbury, K., Lindert, L. and Pfaff, H. (2019)],
- modern technologies: remote work, remote worker, knowledge worker, communication technology and technostress [for example the articles of Borle, P., Reichel, K., Niebuhr, F. and Voelter-Mahlknecht, S. (2021); Charalampous, M., Grant, C., Tramontano, C. and Michailidis, E. (2019); Papagiannidis, S. and Marikyan, D. (2020); Pfaffinger, KF., Reif, JAM. and Spieß, E. (2022); Wang, B., Liu, Y. and Parker, SK. (2020)],
- human resource management: human resource management, resources theory, job demands resource and resources model [for example the articles of Ho, H. and Kuvaas, B. (2020); Lesener, T., Gusy, B. and Wolter, C. (2019); Ogbonnaya, C. and Messersmith, J. (2019); Peccei, R. and van de Voorde, K. (2019); Radic, A., Arjona-Fuentes, JM., Ariza-Montes, A., Han, H. and Law, R. (2020)].

The terms in the green cluster concern medicine, i.e. diseases, treatment and the health care system [for example the articles of Liu, JL., Zheng, J., Liu, K., Wu, Y. and You, L. (2019); Holland, P., Tham, TL., Sheehan, C. and Cooper, B. (2019); Lawn, S., Roberts, L., Willis, E., Couzner, L., Mohammadi, L. and Goble, E. (2020); Slutsky, J., Chin, B., Raye, J. and Creswell, JD. (2019); Vonderlin, R., Biermann, M., Bohus, M. and Lyssenko, L. (2020)].

The blue cluster is similar in content to the third cluster on the keyword map as it contains terms relating to:

- green economy and sustainability: sustainability, sustainable development, ecosystem, climate

change, utilization, energy, water, food and nutrition [for example the articles of Ahmed, M., Zehou, S., Raza, SA., Qureshi, MA. and Yousufi, SQ. (2020); Amrutha, VN. And Geetha, SN. (2020); Fonseca, LM., Domingues, JP. and Dima, AM. (2020); Singh, SK., Pradhan, RK., Panigrahy, NP. and Jena, LK. (2019); Wang, BJ., Zhang, Q. and Ciu, F. (2021)],

- technology: Internet, digital technology, artificial intelligence, smartphone, construction industry, construction worker, machine [for example the articles of Bhavan, A., Chauhan, P., Hitkul, null. and Shah, RR. (2019); Bianchi, V., Bassoli, M., Lombardo, G., Fornacciari, P., Mordonini, M. and Munari, ID. (2019); Lu, YQ., Zheng, H., Chand, S., Xia, W., Liu, Z., Xu, X., Wang, L., Qin, Z. and Bao, J. (2022); Parker, SK. and Grote, G. (2022); Sherafat, B., Ahn, CR., Akhavian, R., Behzadan, AH., Golparvar-Fard, M., Kim, H., Lee, Y-C., Rashidi, A. and Azar, ER. (2020)].

The terms in the fourth cluster are related to workplace violence: harassment, workplace bullying and workplace violence [for example the articles of Ahmad, S., Sohal, AS. and Cox, JW. (2020); Hayat, A. and Afshari, L. (2021); Rasool, SF., Wang, M., Tang, M., Saeed, A. and Iqbal, J. (2021); Ross, V., Mathieu, SL., Wardhani, R., Gullestrup, J. and Kølves, K. (2021); Zhou, X., Rasool, SF. and Ma, D. (2020)]. The last cluster contains only two terms and has no diagnostic significance from the point of view of the research issues.

In accordance with the results of the scientometric analysis based on the visualization of author keywords co-occurrence and terms co-occurrence, it can be assumed that several research contexts are currently involved. Below we have presented the research areas, along with the paths to find publications for each of them.

1. The essence of employee well-being (concept, subcategories, models, consequences)
<https://www.webofscience.com/wos/woscc/summary/83a4aa10-5dd9-45cb-8b56-5e2ce705b851-01203f4ab6/relevance/1>
2. Health care
<https://www.webofscience.com/wos/woscc/summary/71920c32-2795-477f-8300-21e1afbe2091-01204588df/relevance/1>
3. HRM and leadership
<https://www.webofscience.com/wos/woscc/summary/6ea0c2e8-3bf9-4c37-9fb4-25ec593bdc7e-01204fd845/relevance/1>
4. Other aspects of organizational life

- <https://www.webofscience.com/wos/woscc/summary/f6917a89-69be-4819-adc3-548e38d828f5-01204cfa0f/relevance/1>
5. Modern technology
<https://www.webofscience.com/wos/woscc/summary/0ed90662-8ef0-4c77-bb1b-94ac0587e498-0120cc90ab/relevance/1>
 6. Green economy and sustainable development
<https://www.webofscience.com/wos/woscc/summary/2df1ae9f-5033-4b48-99f3-f92caad15259-0120572f69/relevance/1>

The first of these are already well-established in science. The two areas indicated at the end of the list are the latest contexts of interest for scientists analyzing the issue of employee well-being. In Table 3, we have presented the values of the number of publications, shares, and citations for each of the defined research areas.

Table 3: Numerical characteristics of research areas related to EWB

Research topic #	The first publication indexed in WoS	Number of papers in WoS	Number of papers from the period 01.01.2019-21.09.2024	Share of papers from the period under review in the total number of articles in a given topic	Share in the analyzed set*	Number of citations during the analysis period	Average citation rate for a paper
		a	b	b:a	b:10,641	c	c:b
1	1934 Zimmermann	3,568	2,025	57%	19%	28,109	13.88
2	1977 Frankenhaeuser	3,233	1,882	58%	18%	23,771	12.63
3	1947 Porterfield	1,236	890	72%	8%	12,798	14.38
4	1990 Moen	2,303	1,420	62%	13%	20,637	14.53
5	2006 Beas	197	183	93%	3%	3,551	19.40
6	1999 Menzies	188	150	80%	1%	2,298	15.32

* Some papers cover multiple topics and may therefore appear more than once in searches we defined.

Source: Author's own elaboration

The earliest research areas analyzed in the context of employee well-being are general issues, then the context of HRM and leadership. Subsequently, publications in the WoS database appeared in the areas of health care, technology in general, and references to other aspects of organizational life. The last chronological issues are modern technologies and green economy paired with sustainable development.

More than a thousand publications in the database appeared in the areas of general knowledge, health, HRM and other issues related to the organization. However, taking into account the number of papers published in the period covered by the analysis (01.01.2019-21.09.2024), it can be stated that the literature on HRM and leadership is developing more dynamically than that covering other issues related to the organizational perspective.

In turn, comparing the number of papers published in the period under consideration with the number of all those published in a given research aspect, it can be stated that the areas of modern technologies, green economy, sustainable development, HRM and leadership are very interesting for scientists. They constitute a small share in all publications in the field of employee well-being, but they show a high increase in the number of publications in recent years. The same is true for the average citation rate of publications from these three areas, which exceeds an average of 14 citations per article (the highest value concerns modern technologies: 19.40).

Based on the analyses conducted, we hypothesize that in the coming years it will still be possible to observe scientists' interest in all aspects of employee well-being defined in the paper, both those most firmly established in science (the essence of employee well-being, health, HRM and leadership, and other organizational aspects) and the youngest

(modern technologies and green economy, coupled with sustainable development). Taking into account the increase in the number of publications in recent years and the average level of citations in individual research areas, we also assume that the highest relative increase in the number of publications will be visible in relation to the last two areas.

Conclusions

This study is not without limitations. First of all, information was extracted from the Web of Science Core Collection database, which means that other databases, such as Scopus or Dimensions, were not analyzed. In the future, it would be worth conducting a similar study using data from other bibliographic databases.

Secondly, only articles and review articles were accepted for the analysis, skipping books or conference materials.

Thirdly, the articles in languages other than English were omitted. In the case of comparative studies, including cross-cultural studies, which we mentioned in the previous point as potentially worth considering in the future, it would be worth including references published in other languages in the analysis.

Fourthly, we used one of the programs for scientometric analysis (VOSviewer), and within its capabilities, two tools: author keywords co-occurrence analysis and terms co-occurrence analysis. In order to determine the potential for further research, one can use the bibliographic coupling tool, also available in VOSviewer.

Referring to the first question posed in this study (Q1: Representatives of which fields of science conduct research on the issue of employee well-being?), it should be stated that most studies related to employee well-being were recorded in the following research areas: Psychology (4,048), Business Economics (3,650), Public Environmental Occupational Health (2,857), Environmental Sciences Ecology (1,200), Social Sciences Other Topics (1,104), Engineering (971), Educational Research (873), Health Care Sciences Services (829), Nursing (780) and Science Technology Other Topics (695). In total, 93.84% of all studies were published in them.

Referring to the second question (Q2: In what contexts do scientists consider the issue of employee well-being?), it can be assumed that – in accordance with the results of the author keywords co-occurrence analysis – these are: well-being, mental health, burnout, job satisfaction, technologies,

sustainable development, green economy, health care system, organizational life, violence, the effects of low well-being in employees.

Referring to the third question (Q3: What research topics constitute the potential for the development of research on employee well-being in the coming years?), based on both analyses (author keywords co-occurrence analysis and terms co-occurrence analysis), it can be assumed that the greatest potential for a dynamic increase in the relative number of studies and publications is in the research contexts defined by us as: modern technologies and green economy paired with sustainable development. It should be emphasized, however, that the remaining five areas defined by us are still interesting for scientists and in the coming future they will deepen their knowledge in these areas.

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