



Article

Employee Engagement for Sustainable Organizations: Keyword Analysis Using Social Network Analysis and Burst Detection Approach

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Abstract: The issue of sustainability is a vital long-term goal for organizations and as such has formed the basis of much academic research over the last two decades. Organizational sustainability is defined as the ability for an organization to accomplish a range of economic, environmental, and human performance objectives. As one of the most studied topics in organizational science, employee engagement at work is seen as a critical component to achieving sustainable organizational success. In order to better understand the employee engagement discourse, this study examined the keywords that appear in the titles and abstract of the employee engagement research domain using the burst detection and social network analysis techniques. A total of 1406 employee engagement relevant articles that were published from 1990 to 2015 were included and investigated in the study. The results revealed the fading, emerging, and central themes within the employee engagement domain.

Keywords: employee engagement; keyword analysis; burst detection; social network analysis

1. Introduction

In order to become more sustainable, an increasing number of organizations have been proactive in dealing with the issues that arise from rapid globalization, increasingly competitive markets, constant organizational change, and talent retention in order to achieve their business goals [1]. Having received a great deal of interest from the realms of both business and academia the topic of sustainability has, for the two decades, been perceived as being a vital long-term goal for organizations [2,3]. In a 2011 survey involving more than 2800 managers and executives from 113 countries, the results showed that 67% of respondents regarded sustainability as being a critical issue for organizations' seeking a competitive advantage in today's market place and that 70% of organizations view the issue of sustainability as being a key component of their management agendas [4].

Organizational sustainability is defined as an organization's ability to make a positive contribution to "sustainable development by delivering simultaneously economic, social, and environmental benefits—the so-called triple bottom line" [5]. In other words, sustainable organizations possess the capability to simultaneously accomplish economic, environmental, and human performance [3]. Although the three dimensions need to be considered in a balanced manner, the social dimension of organizational sustainability is often given less attention when compared to the economic and environmental dimensions of sustainability [2,3]. The social dimension (i.e., human dimension) of

organizational sustainability is considered as being the processes that generate social health and improve the well-being of organizational employees [2,6]. Although there might be diverse array of components to the human dimension (e.g., equity, philanthropy, and employee engagement) [2,4], given that a pivotal mechanism for understanding the human dimension of sustainability is the ability for employees to thrive or be engaged in the workplace [2], employee engagement at work could be considered to be a core component of the human dimension of organizational sustainability. Employee engagement at work is one of the most studied topics in organizational science [7,8] and forms a critical and fundamental component to the ongoing sustainable success of organizations [9]. Since the concept of engagement was first introduced by Kahn in 1990 [10], many scholars have placed considerable effort conceptualizing the term engagement. Although there have been various definitions offered, the most popular and widely used definition of employee engagement is “a positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption” [11]. In conjunction with this, it has also included the issues of work engagement, job engagement, and role engagement [12,13]. In this instance, studies have shown that employee engagement has a strong and positive relationship with income growth, stock price, individual job performance, and overall financial performance of an organization [9,14–16]. That is, since engaged employees tend to have an energetic and enthusiastic attitude towards their work, and are often deeply committed to their work [17,18], they might be expected to perform their respective tasks in a more capable manner, which could lead to an enhanced individual or group performance as well as a strong foundation from which organizational sustainability can take place [12].

As a result of the positive influences engagement has had on organizations, much effort has been made by researchers to examine and understand the notion of employee engagement. In light of these empirical studies, organizations are now beginning to focus more seriously on providing their employees the help and assistance they need to become more actively engaged in their work. To get a sense of the employee engagement discourse, in this study, we used the burst detection and social network analysis (SNA) techniques to construct, visualize, and investigate the keywords that appear in the 1406 article published in the employee engagement research domain. In order to examine and discuss the relationship between employee engagement and organizational sustainability, the following two research questions were answered:

RQ1. What keywords are identified from the keyword networks in the employee engagement research domain?

RQ2. How are the identified keywords in the employee engagement research domain related to organizational sustainability?

2. Methodology

2.1. Data

The data for the study was collected from the Web of Science (WoS) database [19]. Thus, in order to retrieve all relevant employee engagement studies, the following research query was entered into the WoS search engine:

Searched for topic: (“work engagement” OR “employee engagement” OR “job engagement” OR “role engagement” OR “personal engagement”) Time span: 1990–2015; Coverage: all databases.

The search query retrieved 1406 publications that appeared in 187 outlets. Among them, 1257 (89.40%) were journal articles, 61 (4.34%) meeting abstracts, 38 (2.70%) were reviews, 27 (1.92%) were editorial material, 11 (0.78%) were book reviews, 9 (0.64%) were proceeding papers, 2 (0.14%) were book chapters, and 2 were biographical items.

2.2. Tools Used in Conducting Research

To construct the keyword networks, we used the VOSviewer (Centre for Science and Technology Studies, Leiden University, Leiden, The Netherlands) application [20]. The VOSviewer [20] was used to construct the journal bibliographic coupling because it provides an easy way to construct and visualize the networks directly from the WoS data. By using this application, two types of keyword co-occurrence networks were constructed: (1) the title keyword co-occurrence network; (2) the abstract keyword co-occurrence network. The keyword co-occurrence network is created when the keywords co-appear and form relationships within the engagement network.

The study also examines the issue of emerging and fading themes within the employee engagement domain by analyzing the author-supplied keyword co-occurrence network. Understanding these networks is particularly useful for ascertaining the kind of knowledge that is created in a domain [21,22]. To identify the emerging and fading themes, the burst detection algorithm implemented in the Science of Science Tool [23] was used. In this instance, the algorithm allows the researcher to detail the appearance of a topic in a documented stream of information through a “burst of activity” which grows in frequency as a particular topic or keyword emerges [6]. This is an important component of the study, as the keywords and titles of the articles are the best place to look for trends in a domain [24].

2.3. Knowledge Infrastructure and the SNA Technique

Since the authors of [25] first sought to rank America’s top 1000 scientists, much has been done to understand the field of knowledge infrastructure. Initial efforts in the field included an examination of the bibliometric world by calculating scientific citation practices [26] and the ranking of scientific literature [27]; however, it was not until [28] was written that a detailed assessment for studying scientific communities from a network perspective was first carried out. Since then, an increasing array network orientated studies has been conducted. Pivotal to this has been the implementation of the SNA technique which has been widely used a means of conceptualizing the relationships that exist within groups by providing a detailed and systematic means of mapping informal networks and the relationships that exist within them [29]. Moreover, SNA, compared with studies that are based on individual perceptions, provides a richer, more objective means of examining the influence of individuals and relationships among a particular network, as it avoids personal biases [30]. Its appeal has seen it used in the arrangement of scholastic areas including management and organizational studies [31], information technology [32–35], sociology [35], international trade [36], and marketing [37]. As a popular tool, SNA provides an effective way to examine the keyword co-occurrence network for the employee engagement domain. In this instance, SNA maps the network when the keywords (or nodes) of employee engagement co-appear and form relationships (or links). By building a picture of the network, one is therefore able to ascertain how knowledge is transferred across the employee engagement domain [21].

3. Results

3.1. Semantic Networks

Emerging and Fading Themes (Burst Detection)

As part of the burst detection analysis the three types of keywords analyzed were (1) author-supplied keywords; (2) keywords appearing in the abstract; and (3) keywords appearing in the title of the articles. The results from the burst detection algorithm demonstrate the frequency, the length of usage, or both with which a particular topic or keyword emerges.

The top 30 latest bursting and disappearing topics (in the author-supplied keywords) are shown in Table 1. In the case where no end date is noted, the keyword is defined as still active. In the field of employee engagement today, the author-supplied keywords that remain relevant in 2015

include support (2013–today), perceive (2013–today), supervisor (2013–today), servant (2014–today), mediation (2014–today), develop (2014–today), workaholic (2014–today), CSR (2015–today), and share (2015–today). In Table 1 below, the term weight is applied to the keywords. In this instance, weight represents the weight of a burst word between its lengths; therefore, a higher weight could be a result of the longer length of usage, the higher frequency, or both. For example, the word ‘support’ has the highest weight of 3.001476, meaning that the word ‘support’ has appeared more frequently in the author-supplied keywords of the articles included in our study. The top 30 latest bursting and disappearing topics (in the abstracts and titles) for the supplied keywords are also shown in Table 1.

Table 1. The top 30 latest bursting and disappearing author-supplied topics.

Author Supplied				Abstract				Title			
Word	Weight	Start	End	Word	Weight	Start	End	Word	Weight	Start	End
share	2.715476	2015		turn	4.637259	2015		change	3.04291	2015	
CSR	2.192607	2015		trait	4.078944	2015		corporate	2.179121	2015	
workaholic	2.275462	2014		workaholic	3.871959	2014		influence	2.097739	2015	
develop	2.780356	2014		degree	5.844432	2014		association	2.86861	2015	
mediation	2.207636	2014		human	3.971013	2013	2013	differential	2.433204	2014	
servant	1.923196	2014		advance	3.849541	2012	2012	workaholic	2.729481	2014	
autonomic	1.967753	2013	2013	ident	4.705741	2012	2012	combine	2.314696	2014	
career	2.680976	2013	2013	independence	3.679669	2012	2012	adapt	2.046059	2014	
supervisor	2.151058	2013		wellbeing	4.084555	2012	2012	impact	2.881913	2014	
adapt	2.301708	2013	2013	Bakker	3.696665	2011	2012	daily	3.306699	2014	
perceive	1.920352	2013		conceptual	3.710562	2011	2011	servant	2.314696	2014	
HRM	2.487244	2013	2013	response	3.613955	2010	2010	exploratory	1.810843	2014	
human	1.998374	2013	2013	face	3.75205	2008	2008	office	2.239392	2014	
member	1.967753	2013	2013	challenge	3.76013	2008	2008	follow	1.951375	2014	
support	3.001476	2013		situation	4.263329	2007	2010	product	2.256296	2013	
physical	2.584234	2012	2012	general	4.810572	2006	2009	team	2.740503	2013	
ergonomic	2.800629	2012	2012	Utrecht	5.6845	2006	2008	qualities	3.421401	2013	
therapies	1.967709	2012	2012	scale	5.063631	2006	2007	autonomic	2.318883	2013	
ident	1.874888	2012	2012	burnout	10.28246	2006	2007	survey	2.591387	2013	
wellbeing	2.356475	2012	2013	exhaust	5.379206	2005	2007	support	3.134642	2013	
stress	2.731086	2011	2011	dedication	7.154425	2004	2008	practice	3.065501	2013	2013
action	2.319829	2011	2011	lack	4.015737	2003	2007	meaning	2.460724	2013	2013
multi	1.962539	2010	2012	complaint	3.980277	2002	2010	demand	1.965005	2013	2013
exhaust	1.916399	2010	2011	best	4.221951	2002	2008	promotion	3.262056	2013	2013
leadership	2.206522	2010	2010	Maslach	8.160617	2002	2008	context	2.18756	2013	2013
problem	2.573381	2010	2011	inventory	7.316431	2002	2007	social	2.258694	2013	2013
reward	2.050866	2010	2011	vigor	5.767682	2002	2007	hospital	2.209024	2013	2013
familiarity	2.737844	2009	2011	author	4.438992	2001	2008	implication	2.336646	2013	2013
medic	2.404339	2009	2009	cynic	7.052629	2001	2007	review	1.823706	2013	2013
market	1.957179	2009	2010	base	3.6586	2001	2002	commit	2.820585	2012	2013

The results from the study showed us that the most significant emerging abstract keywords include degree (2014–today), workaholic (2014–today), trait (2015–today), and turn (2015–today). While other keywords that are no longer relevant today include Maslach (2002–2008), burnout (2006–2007), and inventory (2002–2007). From a title perspective, the results emphasize the fact that there are many keywords that have emerged as highly relevant. The longest in terms of duration include support (2013–today) and survey (2013–today), while more recent important keywords include workaholic (2014–today) and change (2015–today).

3.2. Keyword Co-Occurrence Network

For the purpose of this research, two types of keyword networks were constructed: (1) title keywords and (2) abstract keywords.

3.2.1. Title Keyword Network

In the title keyword network, a total of 3279 keywords were analyzed, but only the 100 most important keywords that co-appeared a minimum of 5 times were included in the analysis. In Figure 1,

node size represents the number of occurrences a particular keyword was included in the network, while links represent the co-occurrence relationship that exists between the keywords.

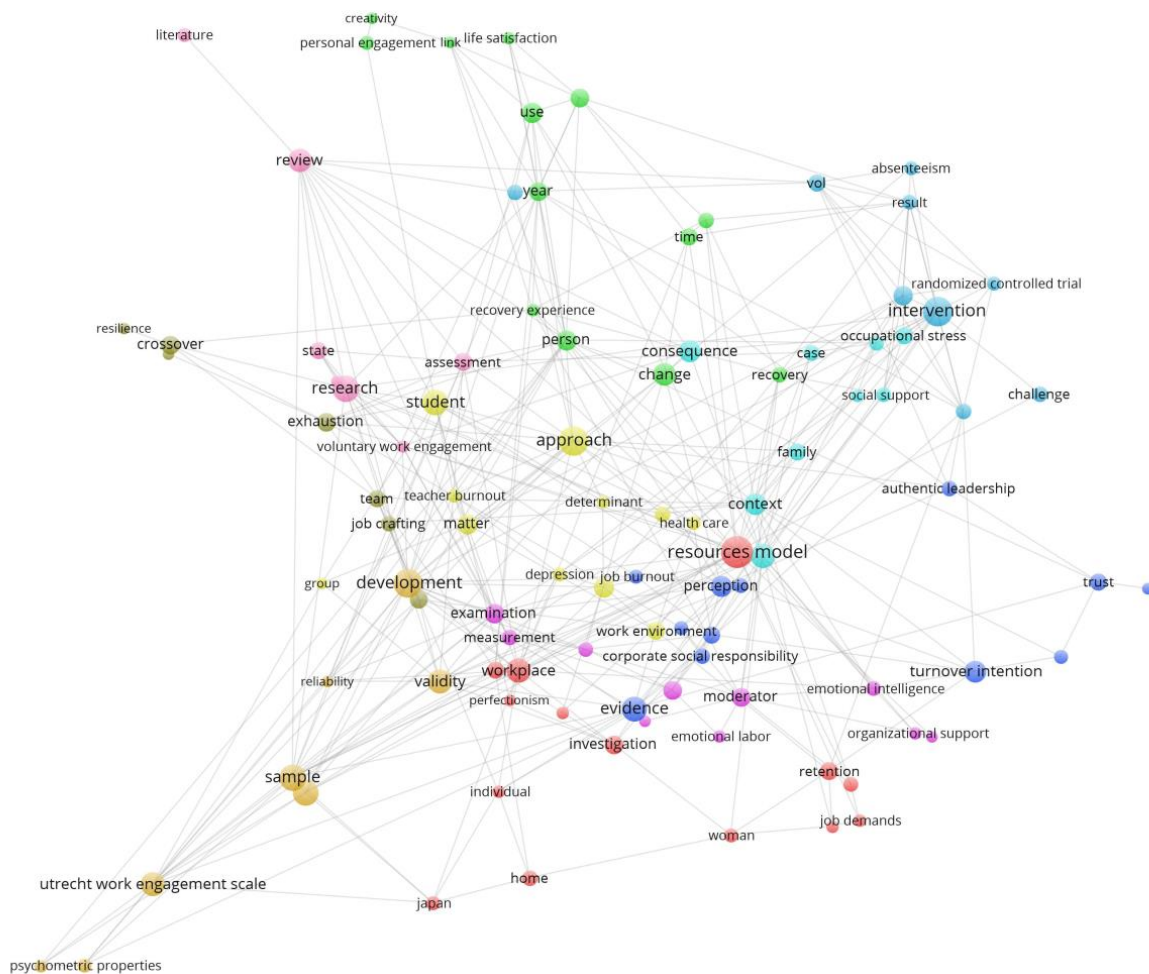


Figure 1. Title keyword network.

Based on co-occurrence relationships, these 100 words are grouped into 10 clusters as represented by the colors of the nodes with each cluster consisting of related issues. Cluster 1 (red nodes) is dominated by resources model and work place. In Cluster 2 (cyan nodes), the major keywords were context, family and social support. In Cluster 3 (green nodes) person, change, time and year were important. In Cluster 4 (yellow nodes), student, approach, and teacher burnout were significant. In Cluster 5 (brown nodes), development, validity, sample, and Utrecht work engagement scale were important. In Cluster 6 (blue nodes), turnover intention, corporate social responsibility, evidence, and perception were dominant. In Cluster 7 (light blue nodes), intervention and result were important. In Cluster 8 (dark brown nodes), team and job crafting were most important. In Cluster 9 (pink nodes), research, assessment, and review were important. Finally, in Cluster 10 (purple nodes), moderator, examination, and measurement were significant.

3.2.2. Abstract Keyword Network

In the abstract keyword network a total of 18,675 keywords were analyzed, but only the 200 most important keywords that co-appeared a minimum of 20 times were included in the analysis.

In Figure 2, the 200 keywords were grouped into 3 clusters. In Cluster 1 (red nodes), the most significant abstract key words were hypothesis, resource, job resource, job demand, and practical implication. In Cluster 2 (blue nodes), questionnaire, burnout, Utrecht work engagement scale,

measure, scale, and nurse were important. Finally, in Cluster 3 (green nodes), employee engagement, management, personal engagement, method, and intervention were dominant.

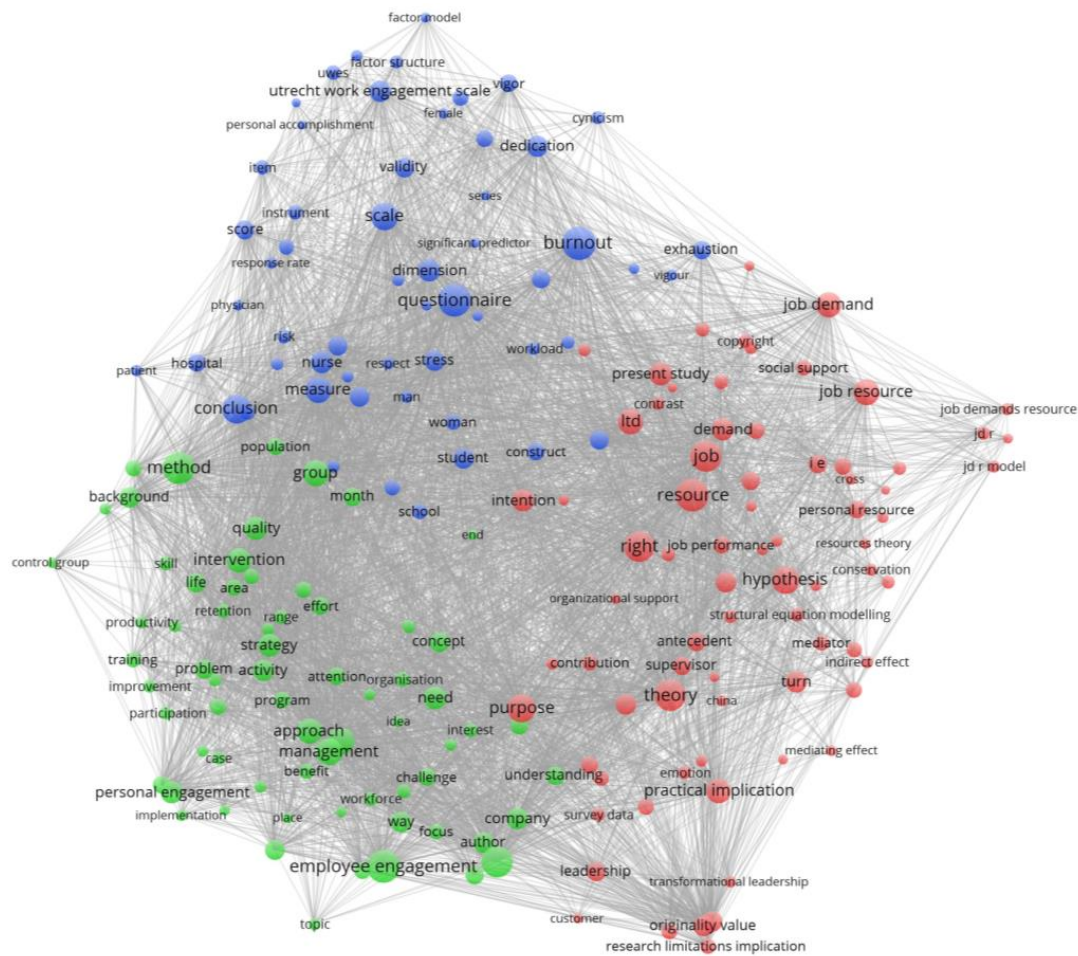


Figure 2. Abstract keyword network.

4. Discussion

In an attempt to better understand the employee engagement discourse, keywords appearing in the employee engagement research domain using the burst detection and social network analysis techniques were examined in this study. By incorporating these research methodologies, the study specifically examined three types of keywords: (1) author-supplied keywords; (2) keywords appearing in the abstract; and (3) keywords appearing in the title of the articles.

With regard to the first research question (RQ 1), the results from the burst detection technique showed that the author-supplied keywords that remain relevant and were weighted higher in 2015 include support (2013–today), supervisor (2013–today), develop (2014–today), mediation (2014–today), workaholic (2014–today), share (2015–today), and CSR (2015–today). The most significant emerging abstract keywords include degree (2014–today), workaholic (2014–today), trait (2015–today), and turn (2015–today). Finally, from a title keyword perspective, the results demonstrate that there are a lot of keywords that have emerged as highly relevant. The longest in terms of duration include support (2013–today), team (2013–today), and survey (2013–today), while more recent important keywords include workaholic (2014–today), impact (2014–today), change (2015–today), and corporate (2015–today).

Regarding the first and second research questions (RQ1 and RQ2), the keywords that emerged from the burst detection technique findings represent important research topics as well as business

interests in the field of employee engagement. In recent years, much has been done to examine the mediating effects of employee engagement as an essential component to positive organizational change [12]. In conjunction with this have been efforts to better understand the relationship that exists between supervisor/co-worker/organizational support as well as CSR and future well-being and performance by using the job demands-resources model of employees' work engagement [38–41]. Understanding these issues has undoubtedly contributed to organizations achieving higher levels of sustainable development in [1,9]. Additionally, a great deal of research has investigated the various components of engagement and the impact that working hard (i.e., employees' work engagement and workaholism) has on employee well-being [40–43]. One notable point in this regard is the fact that the keyword CSR (i.e., corporate social responsibility) is included as a recent emerging and relevant topic. The issue of CSR has grown in importance with many organizations adopting a range of initiatives that improve not only operational performance [44,45] but also the relationships that firms have with their community and stakeholders [46]. CSR practices are also used to respond to environmental and societal challenges so that more sustainable performance outcomes are achieved. Given that CSR is closely related to organizational sustainability, organizations have planned and implemented many different CSR strategies to engage their employees [9,47]. This has been interpreted as an indication of the penetration CSR values into the organizational culture of these companies and of symptoms of the success of the process by which the CSR strategy is integrated into sustainable organizational behavior practices [48]. Another important point is that the keyword workaholic is included across all of three aspects of keywords (i.e., author-supplied, abstract, and title keywords) as the latest bursting topic. This indicates that researchers have placed a great deal of importance on clarifying the differences that exist between employees' work engagement and workaholism. It also implies that organizations that are interested in achieving greater employee engagement as a means of enhancing their sustainable development practices must clearly understand the concept of employee engagement and appropriately apply it to the workplace. From a methodological perspective, research efforts are primarily based on survey-based approaches (such as those that examine employee perceptions). In this instance, studies have endeavored to define employee engagement as being a distinctive concept. They have also examined the impact that engagement has on employee well-being and the overall performance of an organization [49].

Furthermore, in regards to RQ2, the keywords identified from the burst detection technique are supported and explained in the keyword co-occurrence network (see Figures 1 and 2). As described in the introduction, the terms employee engagement, personal engagement, and work engagement have emerged as an important means of conceptualizing the ideology of engagement. Many of the keywords that were identified in the title and abstract keyword networks relate to the antecedents or consequences of employee engagement: (a) antecedents including corporate social responsibility, organizational support, authentic and transformational leadership, emotion, job resources, personal resources, and social support; and (b) consequences including job performance, creativity, turnover intention, and absenteeism [38,50]. Based on these antecedents and consequences, employee-engagement-related research has been conducted in workplace settings using the job demands-resources model in a family or social support context by proposing and testing research hypotheses. In order to measure the concept of employee engagement, the questionnaire-based Utrecht work engagement scale was developed and successfully tested using a range of samples (e.g., nurses and teachers). Studies have also examined the relationships that exist between employee engagement and relevant precursors (such as CSR and job crafting) and/or issues such as turnover intention and job performance in order to validate the engagement measurement and its influences on organizational performance. The issue of job performance can be conceptualized in several ways such as an examination of overall performance, in-role performance characteristics including task performance or extra-role performance such as organizational citizenship behavior (OCB), and financial performance [12]. Based on the results, organizations have placed a lot of effort into planning, designing, and implementing appropriate management interventions (e.g., employee retention strategy and training) with active employee

participation in an attempt to develop more sustainable organizations. The results of the title keyword network also showed why CSR is clustered with turnover intention, perception, burnout, evidence, and trust. According to Ferreira and Real de Oliveria [51], CSR consists of internal and external dimensions. In this instance, internal CSR practices have a direct relationship with an employee's psychological and physical working environment (e.g., general justice perceptions and organizational ethics), which has been empirically shown to influence both employee well-being (e.g., job satisfaction, health, and emotion) and organizationally relevant outcomes (e.g., turnover, burnout, absenteeism, trust, organizational citizenship behavior, and job performance) [51–53]. That is, employees prefer to work for a company that is socially responsible. Employees who approved of and participated in organizational CSR practices tend to feel more engaged in their jobs and, as a consequence, view CSR involvement as contributing to not only their own personal development but also the pride that they have in their organization [9,52]. In this regard, CSR is a vital tool to recruit, retain, and engage employees [9]. In addition, given its relevance to the concepts of employee engagement and sustainability, the emergence of the term burnout from the title and abstract keyword networks is an important aspect of discussion. As Shuck [13] notes, there are four primary approaches to conceptualizing engagement: need-satisfying, burnout-antithesis, satisfaction-engagement, and the multidimensional approach. The burnout-antithesis approach regards employee engagement as containing the exact opposite dimensions to employee burnout. According to Maslach, Schaufeli, and Leiter [54], burnout is defined as having three sub-dimensions: exhaustion, cynicism, and inefficacy, which under the Maslach burnout inventory (MBI) measurement can be regarded as the direct opposite of employee engagement. Additionally, the results of the meta-analysis conducted by Cole, Walter, Bedeian, and O'Boyle [55] revealed that the Utrecht work engagement scale, which contains the three sub-dimensions vigor, dedication, and absorption displays the polar opposite dimensions to that of the MBI measurement. Given the problems associated with employee burnout, it is imperative that organizations look to implement a wide range of policy initiatives that alleviate employee burnout, enhance and maintain employee engagement, and, as a consequence, make a positive contribution to organizational sustainability.

5. Conclusions

This research has made a concerted effort to clearly identify the issue of organizational sustainability in the employee engagement domain. In order to do so, the SNA and burst detection techniques were utilized to examine three types of keywords that were extracted from the WoS database. These were author-supplied keywords, abstract-based keywords, and keywords identified in the title of the articles. The results from the burst detection technique showed that, of the three different groupings, the terms workaholic and CSR were particular visible, while the longest in terms of duration were support, team, and survey.

By examining the keywords of the employee engagement domain for sustainable organizations, this study has made a number of key contributions to the field. Firstly, this study sheds light on the emerging trends in the field of employee engagement—in particular, the important role that CSR plays in establishing not only more engaged staff but also more sustainable organizational economic outcomes. It was also found that workaholic is included in all three aspects of keywords. This demonstrated the significance of workaholicism in the workplace and the need for organizations to not only identify the issue but also manage it correctly, thereby allowing employees to make a meaningful and sustainable contribution to the organization.

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