

# Bibliometric Analysis of Technology Adoption for Enhancing Employee Well-being

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## ABSTRACT

This research employs bibliometric analysis to explore the intersection of technology adoption and employee well-being. By systematically retrieving and examining scholarly articles from prominent academic databases, the study highlights the evolution of technology in workplaces and its significant impact on employee wellness. Key insights are drawn from a range of bibliometric metrics, including citation analysis and co-occurrence maps, revealing trends, gaps, and emerging themes within the literature. The study demonstrates a critical shift in scholarly focus from traditional employee management practices to the integration of sophisticated technologies aimed at enhancing well-being. The results underscore the potential of technological innovations to improve workplace environments and suggest areas for further exploration, particularly in the realms of big data, e-government, and cross-disciplinary applications.

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## 1. INTRODUCTION

In today's fast-paced and technology-driven workplaces, the well-being of employees stands as a paramount concern for organizations worldwide [1]. The amalgamation of technology and well-being has emerged as a focal point in contemporary organizational research, reflecting a growing acknowledgment of the intricate relationship

between technological interventions and employee welfare [2]. With the advent of advanced technologies, ranging from artificial intelligence to wearable devices, organizations are presented with unprecedented opportunities to enhance the well-being of their workforce [3]. However, navigating the complexities of technology adoption for this purpose requires a nuanced understanding of its implications,

necessitating comprehensive analyses to delineate its impact effectively [4].

Moreover, amidst the evolving landscape of work arrangements and increasing demands on employees, the imperative to prioritize their well-being has garnered heightened attention across industries [5]. Yet, despite the proliferation of research exploring various facets of employee well-being and technology adoption independently, a comprehensive examination integrating both domains remains relatively scarce [3]. Addressing this gap is crucial not only for academic discourse but also for informing practical strategies aimed at fostering healthier and more productive work environments [6]. Consequently, conducting a bibliometric analysis provides a systematic approach to distilling insights from existing literature, offering valuable perspectives on prevailing trends, research gaps, and potential avenues for future inquiry [7], [8].

Hence, this research endeavors to investigate the intersection of technology adoption and employee well-being through a bibliometric lens, aiming to discern patterns, emerging themes, and research trajectories within the scholarly discourse. By elucidating the landscape of existing research, this study seeks to identify key research problems and gaps, thereby laying the groundwork for subsequent empirical investigations. Through the synthesis of bibliometric data, the research aims to contribute to a deeper understanding of how technology can be leveraged to promote employee well-being, facilitating informed decision-making for organizational leaders, policymakers, and scholars alike.

## 2. LITERATURE REVIEW

### 2.1 *Technology Adoption*

Technology adoption refers to the process by which individuals, corporations, and industries start using new technologies. This process involves various sub-processes characterized by sequential states, capturing the evolutionary nature of technology adoption [9]. Scholars have developed different frameworks and models to understand the factors

influencing the acceptance of new technologies, dating back to 1962 [10]. The S-shaped curve of technology adoption provides a structured pattern in the otherwise chaotic world of technology adoption [9]. Technological advancements have significantly impacted work cultures and labor displacements, highlighting the social nature of technological adoption, which can involve resistance and failure [11]. Despite substantial investments in healthcare technologies, the successful adoption rate remains low, often due to the neglect of the human aspect of innovation development and uptake. A psychology-based framework called 'Tech-ISM' aims to address this by focusing on human-centric technology implementation processes in healthcare settings [12].

Technology adaptation in Human Resources involves integrating technology with HR processes to enhance efficiency and effectiveness [13], [14]. This integration, known as Human Resource Information System (HRIS), covers various HR functions like planning, recruitment, training, and data management, enabling quick responses at reduced costs [15]. High Involvement Work Practices (HIWP) and advanced technologies like artificial intelligence are reshaping HR functions, allowing HR professionals to focus on strategic aspects of the organization [16], [17]. IT tools play a crucial role in achieving organizational goals, optimizing work processes, and supporting decision-making through data-driven insights. The adaptation of technologies like robotics and predictive analytics has led to more flexible work patterns but also poses challenges in acquiring skilled employees to navigate the dynamic business landscape.

## 2.2 Employee Well-being

Employee well-being encompasses both hedonic (pleasure-based) and eudaimonic (meaning-based) perspectives, emphasizing positive emotions, personal growth, and a sense of purpose [2]. It is crucial for organizations to prioritize employees' physical, emotional, and mental health by offering flexible work hours, skill development opportunities, fair compensation, and access to healthcare benefits [18]. Well-being initiatives can lead to a productive workplace, increased job satisfaction, and better financial outcomes [19]. Microsoft Viva Insights provides tools to enhance work habits and productivity, such as protecting focus time for individual work [20]. Organizations are increasingly focusing on holistic well-being, recognizing its positive impact on job satisfaction, work productivity, and overall performance [21]. By promoting employee well-being, employers can create a supportive work environment that boosts health, happiness, and productivity.

## 3. METHODOLOGY

### 3.1 Data Collection

The methodology employed in this study involves a systematic retrieval of relevant literature from established academic databases such as PubMed, Scopus, Web of Science, and Google Scholar. The search strategy encompasses a combination of keywords and controlled vocabulary terms related to technology adoption, employee well-being, and associated concepts. The inclusion criteria comprise scholarly articles, conference papers, and reviews published in peer-reviewed journals within a specified timeframe.

### 3.2 Bibliometric Analysis

Following the compilation of the initial dataset, bibliometric techniques are applied to analyze the

collected literature systematically. Bibliometric software such as VOSviewer is utilized to conduct co-citation analysis, co-authorship analysis, and keyword co-occurrence analysis. These analyses provide insights into the structural patterns, thematic clusters, and intellectual networks within the literature corpus, facilitating the identification of central themes, influential authors, and emerging research trends.

### 3.3 Data Processing

The retrieved bibliographic data are processed to generate visual representations, including co-citation maps, co-authorship networks, and keyword clusters. Through iterative refinement and validation, the research team ensures the accuracy and reliability of the extracted data. Additionally, bibliometric indicators such as citation counts, h-index, and impact factor are computed to assess the significance and influence of individual publications and authors within the scholarly domain.

## 4. RESULT AND DISCUSSION

### 4.1 Metrics Data of Literature

Table 1. Research Data Metrics

Metrics Data	Information
Publication years	1978-2024
Citation years	46
Papers	898
Citations	21586
Cites/year	469.26
Cites/paper	24.04
Cites/author	9403.66
Papers/author	488.16
Authors/paper	2.67
h-index	61
g-index	134
hI,norm	42
hI,annual	0.91
hA, index	11
Paper with ACC > =	1,2,5,10,20:362,2 31,108,51,25

Source: Output Publish or Perish, 2024

Table 1 provides an overview of the bibliometric metrics derived from the research data analyzed in this study. The dataset spans publication years from 1978 to 2024, encompassing a total of 898 papers and 21,586 citations. Over the citation period of 46 years, the average citations per year stand at 469.26, with an average of 24.04 citations per paper. Notably, the h-index, a measure of scholarly impact, is calculated at 61, indicating that 61 papers in the dataset have each received at least 61 citations. Furthermore, the g-index, a variation of the h-index that considers the distribution of citations across papers,

is determined to be 134. The  $hI_{norm}$  and  $hI_{annual}$  values, representing the normalized h-index and annual h-index, respectively, are computed at 42 and 0.91, indicating the impact of publications adjusted for factors such as publication age and citation trends. Additionally, the  $hA$  index, quantifying the productivity and impact of authors, is identified as 11. Moreover, the table presents the number of papers with accumulated citations greater than or equal to specific thresholds (1, 2, 5, 10, 20), providing insights into the distribution of highly cited papers within the dataset.

4.2 Top Cited Literature

Table 2. Most Cited Article

Citations	Author and Year	Title
2348	Jacob Bishop, M. Verleger, Embry-Riddle Aeronautical, D. Beach	The Flipped Classroom: A Survey of the Research
1679	S. Galea, R. Merchant, N. Lurie	The Mental Health Consequences of COVID-19 and Physical Distancing: The Need for Prevention and Early Intervention.
1398	Richard M. Steers, L. Porter	Motivation and Work Behaviour
1253	Amy L. Ostrom, A. Parasuraman, D. Bowen, L. Patrício, C. Voss	Service Research Priorities in a Rapidly Changing Context
808	H. Lusic, M. Grinstaff	X-ray-computed tomography contrast agents.
555	John R. Bauer, Jeffrey M. Kenton	Toward Technology Integration in the Schools: Why It Isn't Happening
430	Robert W. Veryzer, B. B. D. Mozota	The Impact of User-Oriented Design on New Product Development: An Examination of Fundamental Relationships*
313	Eurofound	Working Anytime, Anywhere: The Effects on the World of Work
299	J. Pretty	Intensification for redesigned and sustainable agricultural systems
290	L. Fry, Melanie P. Cohen	Spiritual Leadership as a Paradigm for Organizational Transformation and Recovery from Extended Work Hours Cultures

Source: Output Publish or Perish, 2024

Table 2 presents the top ten most cited articles within the research domain, providing insights into the seminal works that have significantly influenced the scholarly discourse. At the forefront, with 2348 citations, is the article by Jacob Bishop et al. (Embry-Riddle Aeronautical, D. Beach) titled "The Flipped Classroom:

A Survey of the Research," which underscores the importance of innovative pedagogical approaches in educational settings. Following closely is the work by S. Galea et al. on "The Mental Health Consequences of COVID-19 and Physical Distancing," emphasizing the urgent need for preventive measures and

early interventions amidst the global pandemic. Additionally, seminal contributions addressing motivation in work behavior by Richard M. Steers and L. Porter, as well as service research priorities in a changing context by Amy L. Ostrom et al., underscore fundamental insights shaping organizational psychology and management research. Furthermore, the table highlights

pioneering studies on technology integration in schools, user-oriented design in new product development, and the impact of flexible work arrangements on the world of work, reflecting the diverse and multidisciplinary nature of research within the field of technology adoption and employee well-being.

4.3 Co-Occurrence Analysis

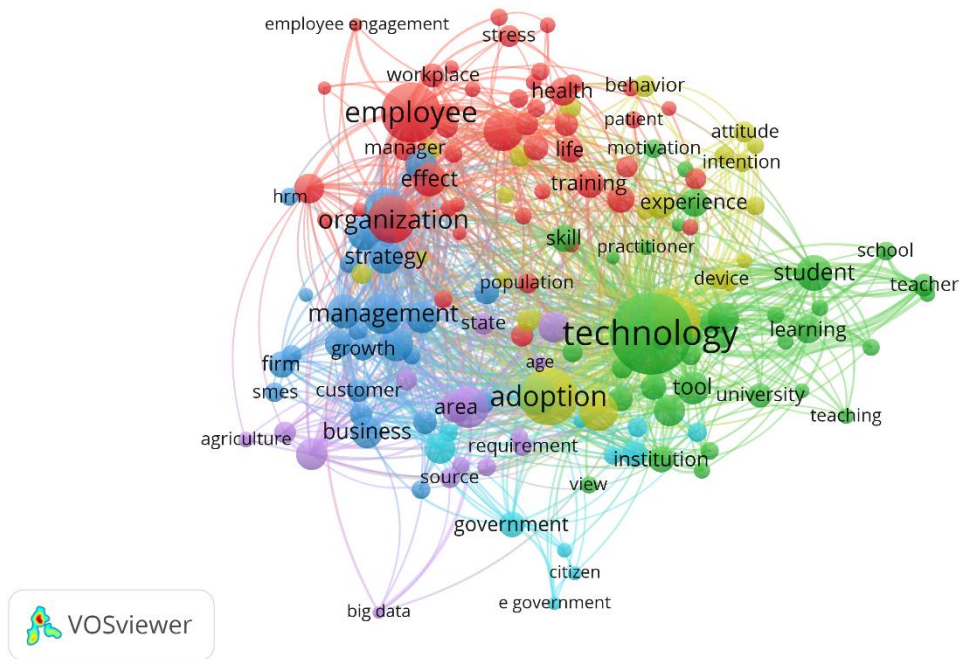


Figure 1. Network Visualization

Source: Data Analysis, 2024

This visualization shows different clusters of related terms, probably based on co-occurrence within a set of documents or articles. Each cluster is typically associated with a distinct thematic area or research topic.

1. Red Cluster: Employee and Organization

This cluster features terms like "employee," "organization," "HRM (Human Resource Management)," "management," and "strategy." This suggests a focus on organizational behavior, human resources management,

employee engagement, and workplace environment.

2. Green Cluster: Technology and Education

Central terms here include "technology," "adoption," "tool," "learning," "teaching," "student," and "university." This cluster likely represents research focusing on the adoption of new technologies in educational settings and how these technologies impact learning and teaching processes.





was possibly a transitional focus towards integrating new dynamics such as technology and globalization effects on businesses.

More recent research appears to emphasize "technology," "adoption," "learning," and "teaching," shown in warmer tones, indicating a focus closer to 2018. This suggests a shift towards digital transformation, the adoption of new technologies in various domains (especially in education), and how these technologies are integrated into everyday practices and strategies. The emergence of terms related to "technology" and its connection to "learning" and "teaching" suggests a significant trend towards educational technology, potentially driven by innovations in digital tools and online learning platforms, which have become increasingly pertinent.

From the second visualization above, there has been a clear trajectory from traditional business and organizational studies towards more technologically driven research themes. The academic focus is progressively shifting towards how technology can enhance learning and operational efficiency, reflecting broader societal and technological advancements. The trend indicates a growing importance of understanding and leveraging technology not just in business and education but also in managing human resources and organizational strategies. This evolution also mirrors global trends towards digital transformation in various sectors, highlighting a need for continuous adaptation and research in these areas.

4.5 Density Visualization



Figure 3. Density Visualization  
 Source: Data Analysis, 2024

In this visualization, the intensity of colors indicates the concentration of research topics within a specific area, with the brightness potentially reflecting the volume of research or the focus

within the dataset. Central areas such as "technology," "adoption," and "teaching" appear in brighter colors. This suggests that there is a significant amount of research or a high concentration of interest in how

technology impacts adoption processes and educational practices. The less bright areas indicate topics that are present in the research landscape but might not have been as extensively explored as the brighter areas. For instance:

1. "Big data" and "e-government", these topics, while currently not as intensely focused upon, represent potential growth areas in research, particularly with the increasing relevance of digital data and government digitalization.
2. "Agriculture" and "business", topics on the periphery like these may suggest emerging or under-represented fields within the broader dataset that could benefit from more extensive exploration, especially in the context of technological integration and sustainability.

**4.6 Suggestions for Future Research**

**1. Integrating Less Explored Areas with Core Topics**

Combining under-researched areas like "big data" with "technology" and "adoption" could provide new insights into how big data is being utilized or

could be better integrated into existing technological processes. Exploring the application of "e-government" in contexts not just limited to government but also in governance models in businesses or educational institutions.

**2. Cross-Disciplinary Research**

There appears to be potential for cross-disciplinary research that brings together "agriculture" and "technology," examining how innovative technologies could revolutionize traditional sectors. Besides that, research on the impact of technology in "business" practices and strategies, especially in how SMEs (small and medium enterprises) can leverage new tools for growth and efficiency.

**3. Emerging Trends**

With the ongoing digital transformation, topics like "big data" are likely to become increasingly significant. Research could focus on issues of privacy, efficiency, and how big data is reshaping industries like healthcare, education, and public administration.

**4.7 Co-Authorship Analysis**

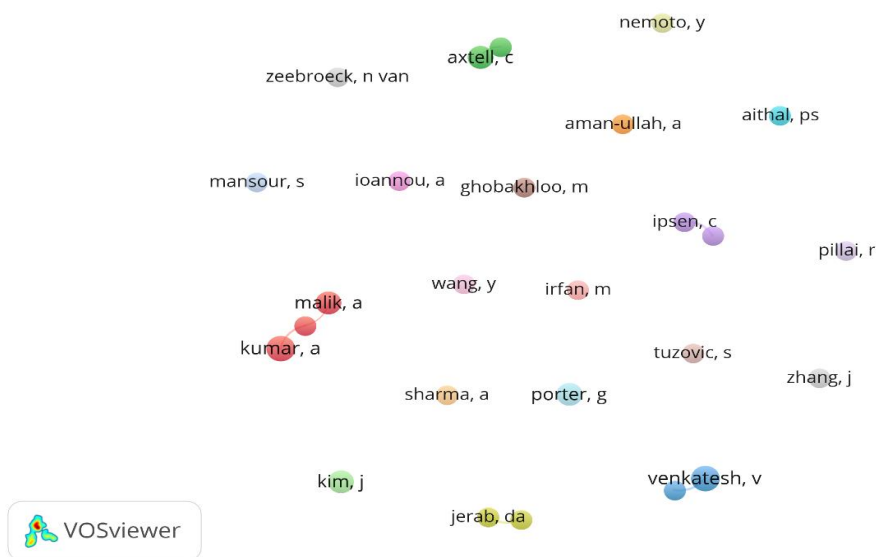


Figure 4. Author Visualization

Source: Data Analysis, 2024



This last figure illustrates how researchers are interconnected based on co-authorship of scholarly works. Each node represents an author, with the size of the node typically proportional to the number of publications or the centrality of the author in the network. Larger nodes may indicate authors who are more prolific or who serve as central figures in their research networks. The different colors of the nodes usually indicate different clusters or groups of authors who frequently collaborate with each other. Each cluster represents a community of researchers that often work together or are connected through a series of collaborative relationships.

Authors such as Malik, A. and Kumar, A. appear to have larger nodes, suggesting they are key figures within their respective clusters. They might be leading multiple research projects or are senior researchers with extensive networks. Some authors, like Nemoto, Y., and Aithal, PS, are located at the periphery with fewer connections. This might indicate that they collaborate less frequently or are newer to the field. Authors grouped together in the same color, such as Malik, A., Kumar, A., and Mansour, S., are likely to be part of the same research group or institution, or they may share common research interests.

## 5. CONCLUSION

The network visualizations analyzed using VOSviewer offer a comprehensive view of thematic clustering, research trends, future research topics, and author collaborations within a specified field. The thematic clustering revealed distinct focal areas such as technology, education, and organizational behavior, and their interactions. Research trends showed a shift from foundational topics like employee management to a focus on technology adoption in education, reflecting a dynamic landscape. Emerging research opportunities were identified in areas like big data, e-government, and technology integration in agriculture and business. The author collaboration network highlighted the interconnectedness of researchers, identifying central and peripheral figures. These insights map the current state of research and guide future academic and collaborative efforts. The study has limitations, including a restricted scope to selected databases and keywords, possibly omitting relevant studies. The bibliometric approach offers quantitative insights but may miss qualitative nuances, relying heavily on accurate metadata and citation information. Future research should expand database scope, integrate qualitative methods, and conduct empirical studies in diverse contexts, focusing on technologies that significantly impact employee well-being and effective conditions for their use.

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