

A Bibliometric Review on Employee Retention and Performance in IT Industry from 1983 – 2023

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Abstract

This bibliometric review examines the intellectual structure, publication growth, and thematic evolution of research on employee retention and employee performance in the IT sector. The review focuses on key concepts such as retention drivers, job satisfaction, organizational support, work engagement, and performance outcomes. The main objective is to identify major research trends, influential authors, institutions, and keywords, and to map how retention–performance relationships have developed over time. Using data extracted from Scopus and Web of Science, the study applies bibliometric techniques including performance analysis, keyword co-occurrence, co-citation networks, and thematic clustering. VOSviewer software were used to visualize scientific patterns. The analysis shows a steady growth of publications, with increasing attention on employee experience, leadership support, flexible work systems, and psychological factors affecting performance. The findings reveal that job satisfaction, work–life balance, and organizational commitment consistently emerge as central themes influencing retention and performance. The review concludes that retention and performance research in IT is shifting toward behavioral, digital, and hybrid-work perspectives.

1. Introduction

Employee retention is very important in the IT sector. Skilled employees change jobs very often. Technology changes quickly in this sector (Bessen, J. 2015). Work environments are highly competitive. These factors create workforce problems. Studies show retention practices affect employee performance (Naz, et al. 2020). Workplace culture also affects employee behavior. Flexible work helps employees stay longer. Employee well-being improves performance levels (Stankevičienė, et al., 2021; Papa, et al., 2020). Companies see retention as a key success factor. It improves productivity and innovation. It also improves service quality. Bibliometric studies show research trends. They identify key authors and themes.

A literature review helps to understand employee retention. It shows how retention affects performance (Kurdi, et al., 2020). Studies give different results on retention factors. Rewards influence employee decisions (Qamar, and Samad, 2022). Leadership plays an important role. Job satisfaction affects retention. Career growth also matters. Research in this area is increasing (Papa, et al., 2020). There is a need to organize knowledge clearly. It is important to identify key themes. Theories and practices are changing over time (Bachtiar, 2023). A structured review gives better understanding. It explains research methods and concepts.

Employee retention and performance are widely studied. But research is not well organized. Many studies are separate and not connected. Large-scale evidence is limited. Few studies use bibliometric methods. Most focus on concepts or data results. They do not show research structure clearly. This bibliometric investigation creates a research gap. It is hard to identify new trends. Some important variables are still not studied. The link between retention and performance needs

clarity. This study addresses this problem. It provides a complete bibliometric analysis. It combines existing research findings. It identifies gaps and future directions (Alsakarneh, et al., 2023). This bibliometric review studies research trends in IT professionals' retentions and job It identifies top authors and institutions (Korsakienė, et al., 2015; Qamar, and Samad, 2022). It also studies countries and journals. The review examines key themes in research. It looks at common keywords. It groups studies into clusters. It studies how research has changed over time (Bachtiar, 2023). It explains the development of ideas. These questions guide the study. They help map the research area. They also identify knowledge gaps.

The main objective is to study global research trends. It focuses on employee retention and performance. It identifies important authors and institutions. It also studies countries and journals. The review examines keywords and themes. It studies links between concepts. It maps the development of research. It shows how ideas have changed over time. The study also identifies research gaps. It suggests directions for future research (Carey, et al., 2012).

2. Methodology

The study employed "Bibliometric" review using Scopus meta data. The Scopus meta data collected using the primary key works, there are Information Technology, Employee Retention and Employee performance (Ryan, J. C. 2021). The Scopus data collected using inclusions and exclusion from the Scopus meta data Figure 1 (Bachtiar, 2023).

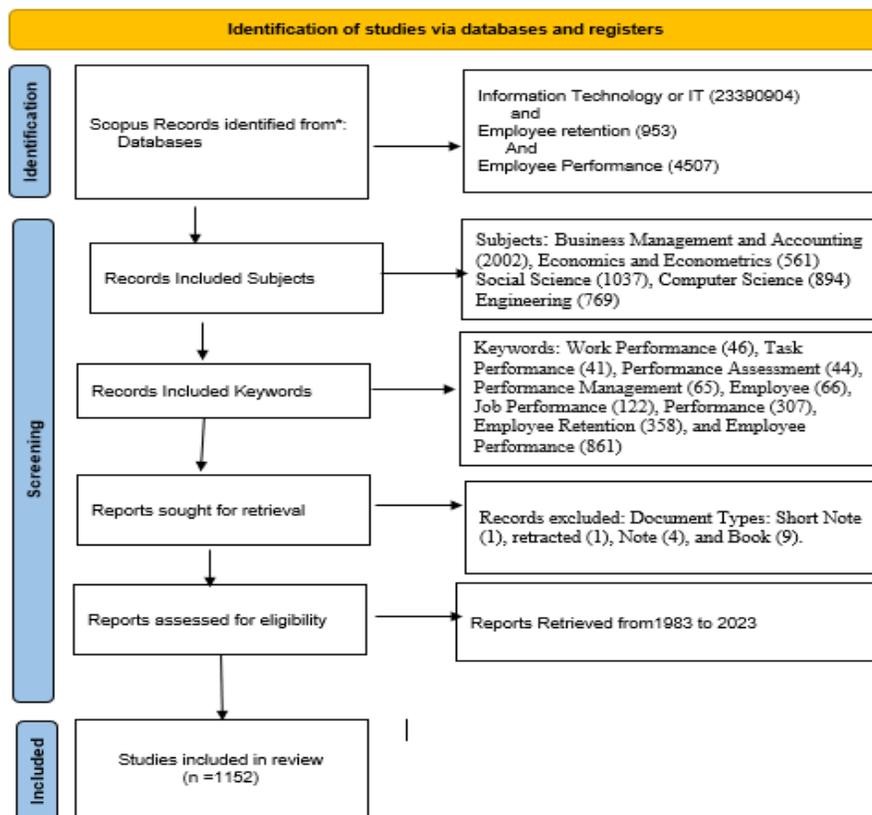


Figure 1 Flowchart illustrating the search process.

The Scopus meta data collected query with inclusion and exclusion are ((TITLE-ABS-KEY(IT) OR TITLE-ABS-KEY(Information Technology) AND TITLE-ABS-KEY("Employee retention") OR TITLE-ABS-KEY("Employee Performance")) AND PUBYEAR > 1982 AND PUBYEAR <

2024 AND (LIMIT-TO (SUBJAREA,"BUSI") OR LIMIT-TO (SUBJAREA,"SOCI") OR LIMIT-TO (SUBJAREA,"COMP") OR LIMIT-TO (SUBJAREA,"ENGI") OR LIMIT-TO (SUBJAREA,"ECON")) AND (LIMIT-TO (EXACT KEY WORD, "Employee Performance") OR LIMIT-TO (EXACT KEY WORD, "Employee Retention") OR LIMIT-TO (EXACT KEY WORD, "Performance") OR LIMIT-TO (EXACT KEY WORD,"Job Performance") OR LIMIT-TO (EXACT KEY WORD, "Employee") OR LIMIT-TO (EXACT KEY WORD, "Performance Management") OR LIMIT-TO (EXACT KEY WORD, "Performance Assessment") OR LIMIT-TO (EXACT KEY WORD, "Work Performance") OR LIMIT-TO (EXACT KEY WORD, "Task Performance")) AND (EXCLUDE (DOCTYPE, "no") OR EXCLUDE (DOCTYPE,"bk") OR EXCLUDE (DOCTYPE,"tb") OR EXCLUDE (DOCTYPE,"sh")). Finally, the Scopus meta collected 1152 documents from 1983 to 2023, it helps to the review analysis (Pico-Saltos, et al.,2021). The Scopus data analysis supporting to understand the documents annual production, type of documents published, top institutions, nations and source pages (Ryan, J. C. 2021). Finally helps to a key word cluster analysis to find the research gap using VOS viewer (Pico-Saltos, et al.,2021).

3. Analysis

In this review analysis study Using Scopus meta. The review analysis focused on annual document publication form the 1983 to 2023, Document Types, Top Nations Documents Published, Top Subject areas Documents Published, Top Affiliation to published Documents, Top Funding Sponsored Institutions, Top key words published, Top source pages documents published (Bachtiar, 2023).

3.1. Annual Documents Publication

Chart 1 explains how research papers are distributed across different years. It focuses on studies about employee retention and employee performance in the Information Technology (IT) sector. The chart covers a long time period, from 1983 to 2023. It shows both the number of publications and their percentage share for each year. Previous studies such as Ryan (2021) and Bachtiar (2023) support this data pattern. The chart helps to understand how academic interest in this topic has changed over time.

The data clearly shows a gradual increase in research publications over the years. In the early period, especially before 2010, very few studies were published. This indicates that employee retention was not a major research focus during that time. The IT sector was still developing, and fewer organizations studied employee-related issues in detail.

After 2010, the number of publications started to increase slowly. This growth became much stronger after 2015. From 2016 onwards, there is a sharp rise in research output. This trend shows that researchers and organizations began to give more importance to employee retention and its effect on performance. Rapid technological changes and high employee turnover in the IT sector may have increased this interest.

The highest number of publications was recorded in 2023, with 16.23 percent of total studies. This is the peak year in terms of research output. The years 2022 and 2021 also show high publication levels, indicating consistent growth in recent years. This continuous increase reflects the growing importance of managing human resources effectively in the IT industry.

The chart 1 highlights a strong upward trend in research on employee retention and performance. It shows that this topic has become a key area of study in recent years. The increasing number of publications

suggests that organizations are more concerned about retaining skilled employees and improving their performance in a competitive and fast-changing environment.

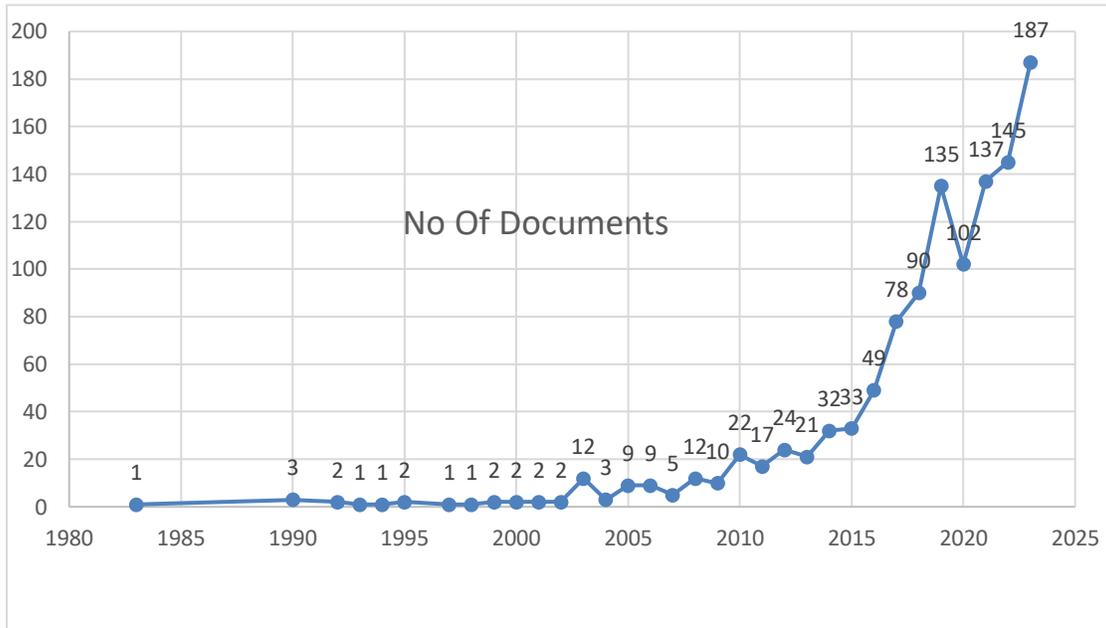


Chart 1: Annual Documents Publication

The steady increase in publications demonstrates the evolving importance of employee retention as a strategic factor influencing employee performance in the IT sector (Pico-Saltos, et al.,2021).

3.2. Document Publication Type

Table 1 presents the distribution of document types related to the topic Employee Retention and Employee Performance in the Information Technology sector. It highlights the major scholarly formats contributing to this research area, including articles, conference papers, reviews, and book chapters (Bachtiar, 2023). This distribution helps understand the nature and depth of academic contributions available in this field.

Table 1: Document Types

S. No	DOCUMENT TYPE	No of Documents	Percent
1	Article	789	68.49
2	Conference Paper	294	25.52
3	Review	44	3.82
4	Book Chapter	25	2.17

The data in Table 1 indicates that research on employee retention and employee performance in the IT sector is predominantly published in the form of journal articles, which account for 68.49% of the total documents. This suggests a strong academic interest supported by peer-reviewed scholarly work (Arora, and Arora, N2024). Conference papers form the second-largest category at 25.52%, reflecting the dynamic and rapidly evolving nature of IT research, where preliminary findings and emerging trends are often shared in conferences. Review papers constitute 3.82%,

indicating that synthesized knowledge and critical evaluations are present but relatively limited. Book chapters contribute 2.17%, showing minimal representation in edited academic volumes (Bachtiar, 2023). Overall, the distribution demonstrates a healthy research landscape dominated by journal publications, supported by conference contributions, which together indicate consistent scholarly engagement with employee retention and performance issues in Information Technology.

3.3. Top Nations Documents Published

Table 2 presents the leading nations contributing to research publications on employee retention and its impact on employee performance in the Information Technology sector. The table highlights the top countries by number of documents published, reflecting global research interest and regional emphasis in this domain. It provides a comparative overview of publication volume and percentage share across major contributing nations (Pico-Saltos, et al.,2021).

Table 2: Top Nations Documents Published

S. No	Country	No of Documents	Percent
1	India	237	20.57
2	Indonesia	206	17.88
3	United States	129	11.20
4	China	72	6.25
5	Malaysia	71	6.16
6	Pakistan	44	3.82
7	Undefined	41	3.56
8	United Kingdom	40	3.47
9	Australia	39	3.39
10	South Africa	29	2.52
11	Turkey	23	2.00
12	Saudi Arabia	21	1.82
13	Netherlands	19	1.65
14	Nigeria	18	1.56
15	Spain	18	1.56

The table 2 shows that India leads the global research output on employee retention and employee performance in the IT sector, contributing 20.57% of total publications. This dominant share indicates strong academic and industry interest in workforce management challenges within India's rapidly growing IT industry. Indonesia follows with 17.88%, demonstrating a similarly high focus on HR-related issues in its expanding technology sector. The United States ranks third with 11.20%, reflecting sustained scholarly engagement from a mature IT market. Countries such

as China, Malaysia, Pakistan, the United Kingdom, and Australia contribute moderate shares, indicating diversified research participation across regions (Qamar, and Samad, 2022).

The presence of “Undefined” sources (3.56%) suggests publications lacking clear geographical attribution. Overall, the distribution reflects both emerging and developed economies recognizing the strategic importance of employee retention in enhancing IT sector performance (Pico-Saltos, et al.,2021). The data underscores global relevance and increasing cross-country interest in employee-related studies.

3.4. Top Subject Areas Covered

Table 3 presents the major subject areas contributing to the bibliometric literature on employee retention and its impact on employee performance in the Information Technology sector. The table highlights the disciplinary spread of research publications, indicating how multiple fields have examined retention-related issues. It provides an overview of the volume and percentage of documents published in each subject area.

Table 3: Top Subject Areas Covered

S. No	SUBJECT AREA	No of Documents	Percent
1	Business, Management and Accounting	620	53.82
2	Computer Science	356	30.90
3	Engineering	321	27.86
4	Social Sciences	296	25.69
5	Decision Sciences	184	15.97
6	Economics, Econometrics and Finance	138	11.98
7	Mathematics	62	5.38
8	Environmental Science	59	5.12
9	Energy	53	4.60
10	Psychology	52	4.51
11	Arts and Humanities	48	4.17
12	Medicine	30	2.60
13	Physics and Astronomy	30	2.60
14	Materials Science	20	1.74
15	Chemical Engineering	15	1.30

Table 3 shows that research on employee retention and performance in the IT sector is predominantly concentrated in *Business, Management and Accounting* (53.82%), reflecting its core relevance to organizational behavior and human resource management. *Computer Science* (30.90%) and *Engineering* (27.86%) also contribute significantly, indicating multidisciplinary attention from technology-focused domains. Substantial inputs from *Social Sciences* and *Decision Sciences* further show that employee-related studies are examined from behavioral, strategic, and

analytical perspectives. Although *Economics*, *Psychology*, and *Mathematics* contribute smaller shares, they highlight diverse methodological and theoretical approaches.

Lower contributions from fields like *Medicine*, *Physics*, and *Materials Science* indicate limited but occasional interdisciplinary interest. Overall, the table suggests that employee retention and performance research in IT is broad-based, crossing both management and technical orientations.

3.5. Top Affiliation Institutions to published Documents

Table 4 presents the top academic and research affiliations contributing to publications on employee retention and its impact on employee performance in the Information Technology sector. The table highlights the leading universities and institutions globally that have actively produced research in this domain. It shows the distribution of documents across affiliations, offering insights into institutions with strong research engagement in employee retention studies.

Table 4: Top Affiliation to published Documents

S. No	AFFILIATION	No of Documents	Percent
1	Bina Nusantara University	23	2.00
2	Amity University	21	1.82
3	Brawijaya University	10	0.87
4	Chandigarh University	10	0.87
5	University Utara Malaysia	9	0.78
6	University Malaysia Terengganu	9	0.78
7	K L Deemed to be University	9	0.78
8	Bharath Institute of Higher Education and Research	9	0.78
9	University of Johannesburg	8	0.69
10	University Teknologi MARA	8	0.69
11	Universities Mercu Buana	8	0.69
12	Sekolah Tinggi Ilmu Administration Puangrimaggalatung	7	0.61
13	Sekolah Tinggi Ilmu Ekonomi AMKOP	7	0.61
14	Aligarh Muslim University	7	0.61
15	University Tun Hussein Onn Malaysia	7	0.61

The data in Table 4 shows that research on employee retention and employee performance in the IT sector is geographically diverse, with significant contributions from universities across Asia and Africa. Bina Nusantara University (Indonesia) leads with 23 publications (2.00%), followed closely by Amity University (India) with 21 publications (1.82%). Other institutions such as Brawijaya University, Chandigarh University, and multiple Malaysian universities show consistent output, indicating growing academic interest in HR practices within IT industries. The

presence of institutions from Malaysia—Universiti Utara Malaysia, Universiti Malaysia Terengganu, Universiti Teknologi MARA, and Universiti Tun Hussein Onn Malaysia—highlights the region’s strong focus on organizational behavior research.

The University of Johannesburg also reflects Africa’s contribution to this domain. Overall, the table indicates that research productivity is spread across several emerging economies, demonstrating global concern and academic engagement in improving employee retention and performance in IT.

3.6. Top Fund Sponsored Institutions

Table 5 presents the leading funding-sponsored institutions contributing to research on employee retention and its impact on employee performance in the Information Technology sector. It highlights the top global agencies supporting scholarly output, showing the number of publications funded and their percentage share. This table helps identify the major financial contributors driving research productivity in this field.

Table 5: Top Funding Sponsored Institutions

S. No	FUNDING SPONSOR	No of Documents	Percent
1	National Natural Science Foundation of China	13	1.13
2	European Commission	7	0.61
3	European Regional Development Fund	6	0.52
4	Ministry of Education of the People's Republic of China	4	0.35
5	Ministry of Higher Education, Malaysia	4	0.35
6	Fundamental Research Funds for the Central Universities	3	0.26
7	Fundação para a Ciência e a Tecnologia	3	0.26
8	National Office for Philosophy and Social Sciences	3	0.26
9	Binus University	2	0.17
10	China Postdoctoral Science Foundation	2	0.17
11	Horizon 2020 Framework Programme	2	0.17
12	Humanities and Social Science Fund of Ministry of Education of China	2	0.17
13	Ministerstvo Školství, Mládeže a Tělovýchovy	2	0.17
14	National Institute for Occupational Safety and Health	2	0.17
15	National Science Foundation	2	0.17

The data in Table 5 indicates that research on employee retention and employee performance in the IT sector is largely supported by international funding institutions. The National Natural Science Foundation of China emerges as the dominant sponsor, accounting for the highest number of publications (13 documents, 1.13%). European agencies, particularly the European Commission

and the European Regional Development Fund, also play a significant role, indicating strong research engagement from the EU. Several Asian institutions, including the Ministry of Education of China and the Ministry of Higher Education, Malaysia, contribute notable support, reflecting growing regional interest in HR and IT-related research. Other contributors such as the National Science Foundation (USA) and specialized agencies show diverse global involvement. Overall, the table suggests that research funding is widely distributed across countries, with China and Europe being the most active regions in supporting IT employee retention studies (Saini, et al., 2022).

3.7. Top Nations Documents Published

Table 6 presents the distribution of published documents by country, showing the global research contribution in the selected area. The results indicate that India leads with 237 publications (20.57%), demonstrating a strong research focus and growing academic interest in the field.

Table 6: Top Source Titles Published Documents

S. No	COUNTRY	No of Documents	Percent
1	India	237	20.57
2	Indonesia	206	17.88
3	United States	129	11.2
4	China	72	6.25
5	Malaysia	71	6.16
6	Pakistan	44	3.82
7	Undefined	41	3.56
8	United Kingdom	40	3.47
9	Australia	39	3.39
10	South Africa	29	2.52
11	Turkey	23	2
12	Saudi Arabia	21	1.82
13	Netherlands	19	1.65
14	Nigeria	18	1.56
15	Spain	18	1.56

Indonesia follows with 206 documents (17.88%), reflecting its active engagement in similar research domains. The United States stands third with 129 publications (11.2%), showing sustained scholarly contribution from a well-established research ecosystem. Asi an countries, such as China (6.25%), Malaysia (6.16%), and Pakistan (3.82%), also exhibit significant output,

highlighting Asia's collective prominence in the topic area. European contributors like the United Kingdom (3.47%), Netherlands (1.65%), and Spain (1.56%) demonstrate moderate involvement. Countries such as Australia (3.39%), South Africa (2.52%), Turkey (2%), Saudi Arabia (1.82%), and Nigeria (1.56%) contribute smaller yet meaningful shares, reflecting the topic's international relevance.

The presence of "Undefined" (3.56%) indicates documents without clear country affiliation, possibly due to missing author information or multi-country collaborations. Overall, the interpretation shows that research output is dominated by Asian countries, especially India and Indonesia, while contributions from Western regions remain steady but comparatively lower. This trend highlights the expanding global interest in the topic, with emerging economies demonstrating strong academic participation.

3.8. Top Source Titles Published Documents

The table 7 presents the source-wise distribution of research publications on the selected topic, highlighting the most active journals, conference proceedings, and publication platforms contributing to the literature. This analysis helps identify the core publication outlets and the disciplinary orientation of the research domain.

At the top position, the Proceedings of the International Conference on Industrial Engineering and Operations Management accounts for 25 documents (2.17%), making it the most significant source of publications. This indicates that a considerable portion of research is being disseminated through conference platforms, reflecting the evolving and application-oriented nature of the field, particularly in areas related to industrial engineering, operations, and management practices.

The second-highest contribution comes from Human Resource Management International Digest with 22 documents (1.91%). This suggests that the topic has strong roots in human resource management literature, emphasizing themes such as employee retention, performance management, and organizational behavior.

Both Lecture Notes in Networks and Systems and Sustainability Switzerland contribute 14 documents each (1.22%), indicating the interdisciplinary nature of the research. While the former reflects a technological and systems-oriented perspective, the latter highlights the growing importance of sustainability and long-term organizational practices in the context of employee-related studies.

The International Journal of Applied Business and Economic Research (13 documents, 1.13%) and International Journal of Advanced Science and Technology (12 documents, 1.04%) further demonstrate the integration of business, economic, and technological dimensions within the research area. Similarly, the presence of International Journal of Mechanical Engineering and Technology (12 documents, 1.04%) indicates that the topic is not confined to management alone but extends to engineering and technical domains, especially in the context of workforce productivity and performance.

Journals such as Journal of Advanced Research in Dynamical and Control Systems and Quality Access to Success (11 documents each, 0.95%) show moderate contributions, reflecting the

relevance of system dynamics, quality management, and organizational efficiency in the research field.

Table 7: Top Source Titles Published Documents

S. No	SOURCE TITLE	No. of Documents	Percent
1	Proceedings of the International Conference on Industrial Engineering and Operations Management	25	2.17
2	Human Resource Management International Digest	22	1.91
3	Lecture Notes in Networks and Systems	14	1.22
4	Sustainability Switzerland	14	1.22
5	International Journal of Applied Business and Economic Research	13	1.13
6	International Journal of Advanced Science and Technology	12	1.04
7	International Journal of Mechanical Engineering and Technology	12	1.04
8	Journal of Advanced Research in Dynamical and Control Systems	11	0.95
9	Quality Access to Success	11	0.95
10	International Journal of Civil Engineering and Technology	10	0.87
11	International Journal of Recent Technology and Engineering	10	0.87
12	Advances in Intelligent Systems and Computing	9	0.78
13	International Journal of Organizational Analysis	9	0.78
14	International Journal of Scientific and Technology Research	9	0.78
15	Personnel Review	9	0.78

Further, sources like International Journal of Civil Engineering and Technology and International Journal of Recent Technology and Engineering (10 documents each, 0.87%) reinforce the observation that the topic has broad applicability across engineering disciplines, where employee performance and retention are critical for project success and operational efficiency.

The remaining sources, including Advances in Intelligent Systems and Computing, International Journal of Organizational Analysis, International Journal of Scientific and Technology Research, and Personnel Review (9 documents each, 0.78%), contribute a smaller yet notable share. These

journals represent a mix of advanced computing, organizational studies, and human resource research, indicating that the topic continues to attract attention from diverse academic perspectives. Overall, the distribution reveals that research on the selected topic is highly fragmented across multiple sources, with no single journal dominating the field. The relatively low percentage contributions of individual sources suggest a wide dispersion of knowledge, which is typical of emerging and interdisciplinary research areas. It also reflects the growing global interest and the involvement of multiple academic disciplines, including management, engineering, technology, and sustainability studies. In conclusion, the table demonstrates that the research field is multidisciplinary, evolving, and widely distributed, with significant contributions from conference proceedings, management journals, and engineering publications. This diversity enhances the richness of the literature but also indicates the need for more specialized and focused research outlets in the future.

3.9. Top Key Words

Table 6 presents the most frequently occurring keywords in research related to employee retention and its impact on employee performance in the Information Technology sector. The table highlights the dominance of themes such as employee performance, retention, job satisfaction, HRM, and motivation.

Table 6: Top Key Words

S. No	KEYWORD	No of Documents	Percent
1	Employee Performance	577	50.09
2	Employee Retention	241	20.92
3	Performance	209	18.14
4	Job Satisfaction	173	15.02
5	Human Resource Management	139	12.07
6	Personnel	95	8.25
7	Job Performance	88	7.64
8	Motivation	58	5.03
9	Employee	49	4.25
10	Personnel Training	49	4.25
11	Personnel Rating	47	4.08
12	Human	45	3.91
13	Performance Management	45	3.91
14	Employee Engagement	44	3.82
15	Information Management	44	3.82

These keywords provide insight into the primary research focus areas and emerging trends within the existing literature. Table 6 indicates that Employee Performance (50.09%) is the most

prominent keyword, showing that performance outcomes remain the central focus of IT-sector research (Qamar, and Samad, 2022). Employee Retention (20.92%) appears as the second most frequent theme, reflecting the industry's concern with retaining skilled employees in a competitive environment. Keywords such as Job Satisfaction, Human Resource Management, Job Performance, and Motivation highlight that organizational behavior and HR practices significantly shape the research domain. The presence of terms like Employee Engagement and Performance Management suggests growing attention to strategic HR initiatives. Meanwhile, keywords such as Personnel Training, Personnel Rating, and Information Management indicate supporting factors influencing retention and performance. Overall, the keyword distribution reflects a strong research emphasis on understanding how HR strategies, employee attitudes, and workplace practices contribute to improved employee performance and retention in the IT industry (Pico-Saltos, et al.,2021).

3.10. Key Word Clustering

In this study, the keyword analysis measured using the VoS viewer. The keyword analysis outcome revealing six clusters in Figure 2. Cluster analysis is a statistical technique used to group related keywords or variables based on shared characteristics or thematic similarity. It helps identify meaningful patterns, research directions, and thematic structures within large datasets. By organizing keywords into clusters, researchers can better understand dominant research themes, conceptual linkages, and evolving trends. This method enhances the clarity of bibliometric reviews and assists in forming focused research models grounded in empirical patterns (Saini, et al., 2022).

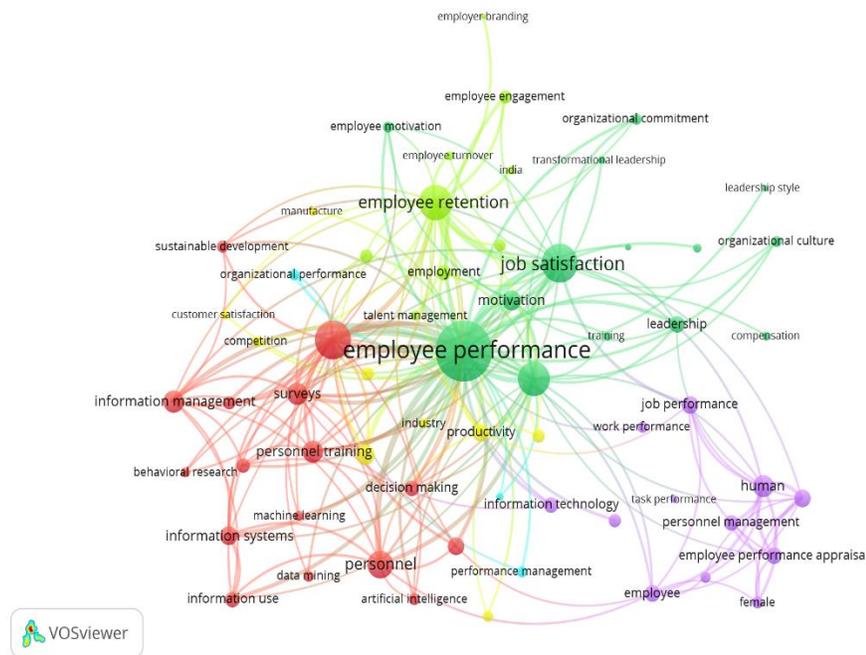


Chart 1: Annual Documents Publication

Cluster-1: Technology-Enabled HR & Knowledge Systems highlights the integration of advanced digital technologies into human resource and organizational knowledge systems. Keywords such

as artificial intelligence, machine learning, data mining, and information systems show a shift toward data-driven decision-making in HR processes. The presence of knowledge management, performance appraisal, and personnel training indicates an emphasis on improving HR efficiency, learning mechanisms, and sustainable workforce development (Singh, et al., 2024). This cluster represents research focused on how technology enhances HR operations, improves decision quality, and promotes sustainable organizational outcomes.

Table 7: Cluster Name with Keywords

Cluster Name	Keywords
Cluster-1: Technology-Enabled HR & Knowledge Systems	Artificial intelligence, Behavioural research, Data mining, Decision making, Human resource management, Human resources management, Information management, Information systems, Information use, Knowledge management, Machine learning, Performance appraisal, Personnel training, and Sustainable development.
Cluster-2: Leadership, Motivation & Workplace Behaviour	Compensation, Emotional intelligence, Employee motivation, Employee performance, Job satisfaction, Leadership, Leadership style, Motivation, Organizational commitment, Organizational culture, Performance, Training, Transformational leadership, and Work environment.
Cluster-3: Employee & Task Performance Assessment	Employee, Employee performance, Female, Human, Information technology, Job performance, Organization, Performance assessment, Personnel management, Task performance, and Work performance.
Cluster-4: Organizational Productivity & Competitive Factors	Competition, Customer satisfaction, Industry, Management, Managers, Personnel rating, Productivity, and Quality control.
Cluster-5: Employee Retention, Engagement & Talent Management	Employee engagement, Employee retention, Employee satisfaction, Employee turnover, Employer branding, Employment, Talent Management.
Cluster-6: Employee & Organizational Performance Management	Employees, Performance management, Organization performance management.

Cluster-2: Leadership, Motivation & Workplace Behaviour reflects studies centered on human behavior within organizations, highlighting how leadership and motivational factors influence employee dynamics. Keywords such as emotional intelligence, leadership style, transformational leadership, job satisfaction, and work environment point toward leadership-driven behavioral

outcomes. The inclusion of employee motivation, performance, organizational commitment, and training indicates research exploring how supportive leadership enhances motivation and strengthens organizational culture. This cluster emphasizes the psychological and behavioral mechanisms that shape workplace performance and employee engagement.

Cluster-3: Employee & Task Performance Assessment focuses on evaluating employee performance and task-related outcomes within organizational settings. Keywords such as employee performance, job performance, task performance, and performance assessment indicate a strong focus on measurement frameworks. The presence of personnel management, information technology, and work performance shows that both human and technological aspects influence productivity (Singh, et al., 2024). This cluster highlights research assessing how employees execute tasks, how performance is measured, and the factors affecting individual work outcomes in various organizational contexts.

Cluster-4: Organizational Productivity & Competitive Factors captures themes related to organizational competitiveness and productivity enhancement. Keywords such as competition, customer satisfaction, productivity, quality control, and personnel rating reflect organizational performance drivers. The inclusion of management, managers, and industry suggests research examining leadership roles, operational efficiency, and market competitiveness. This cluster emphasizes strategic managerial practices and quality improvement measures that strengthen an organization's competitive position and overall productivity outcomes.

Cluster-5: Employee Retention, Engagement & Talent Management focuses on workforce sustainability through employee retention, engagement, and talent management strategies. Keywords such as employee satisfaction, turnover, employer branding, and talent management indicate research dedicated to retaining skilled employees. Engagement and satisfaction highlight psychological and motivational factors influencing workforce stability. This cluster represents studies exploring how organizations build strong employer value propositions, reduce turnover, and maintain a committed workforce through structured HR and branding practices.

Cluster-6: Employee & Organizational Performance Management represents streamlined research on performance management systems at both employee and organizational levels. Keywords such as employees, performance management, and organizational performance management indicate a focus on structured evaluation mechanisms. This cluster highlights how organizations design and implement performance management frameworks to align employee outcomes with organizational goals. It underscores strategic HR practices that monitor, measure, and enhance overall performance effectiveness.

4. Recommendations of the Study

4.1. Organization orientation

Future research in the IT sector should deepen the investigation of how HRM drivers namely Organizational Leadership, Organizational Performance, Transformational Leadership, Employee Performance, and Emotional Intelligence directly shape Employee Engagement and Employee Retention (Papa, et al., 2020; Arora, and Arora, N2024). While the present study confirms strong direct effects, further studies should examine longitudinal patterns to understand how these

relationships evolve over time, especially in rapidly changing digital environments (Bachtiar, 2023).

Additionally, the mediating role of technology-enabled HRIS components, including Decision Making Systems, Artificial Intelligence, Data Mining, and Machine Learning, should be explored using advanced SEM models such as PLS-MGA, hierarchical component models, or time-lagged mediation. These technologies are transforming talent analytics, performance appraisal, and predictive retention modelling, making their integration into HRM frameworks essential (Singh, et al., 2023).

Future studies should also consider:

1. Cross-industry comparisons among IT services, product-based firms, and startups.
2. Examining remote/hybrid work structures and their influence on engagement–retention dynamics.
3. Investigating AI-driven fairness, transparency, and ethical implications in HR decision-making.
4. Moderating roles of mental well-being, digital fatigue, work-life balance, and employee trust in AI systems.
5. Multi-level modelling across team, managerial, and organizational layers.

Such extended approaches will provide deeper insights into building sustainable, technology-driven HR architectures for India’s evolving IT industry.

4.2. Employee orientation

The present study examined how core Human Resource Management (HRM) practices including motivation, job satisfaction, performance appraisal, compensation, training, organizational culture, and work environment—directly influence employee engagement and employee retention (Arora, and Arora, N2024). The mediating role of decision-making factors related to performance assessment, such as managers’ personal ratings, computation mechanisms, organizational productivity metrics, job performance, and task performance, was also assessed (Singh, et al., 2023). Based on these findings, several avenues for further research within the Information Technology (IT) sector are recommended (Papa, et al., 2020).

First, studies may expand the model by incorporating modern digital HR practices, such as AI-supported performance evaluation, automated feedback systems, and predictive analytics for turnover risk. These advanced tools could reveal how technology-enabled decision making alters the relationship between HRM practices and retention outcomes in high-tech environments.

Second, researchers may explore the role of remote and hybrid work arrangements, which have become integral to the IT sector (Qamar, and Samad, 2022). Work environment and organizational culture operate differently in virtual settings, and studying their influence on engagement and retention would provide updated insights aligned with current industry realities.

Third, there is scope to examine team-level and project-based variations, as IT employees often work in agile teams, sprints, and collaborative project cycles (Arora, and Arora, N2024). Differences in team culture, leadership style, and project intensity may significantly shape motivation, job satisfaction, and perceived fairness of performance assessments.

Fourth, further investigations may consider psychological and behavioral moderators, such as resilience, perceived organizational justice, digital competence, and work-life balance preferences. These factors may strengthen or weaken the linkages between HRM variables and employee retention, especially in fast-paced IT roles (Singh, et al., 2023).

Fifth, future studies may adopt longitudinal or experimental research designs to capture dynamic changes in engagement and performance over time, rather than relying solely on cross-sectional data (Arora, and Arora, N2024). Such designs would help identify causal relationships and assess how performance assessment mechanisms evolve during employee career progression.

Finally, researchers may compare Indian IT firms with global IT organizations to identify cultural and structural differences in HRM effectiveness, performance decision-making approaches, and retention strategies (Arora, and Arora, N2024). This comparative perspective would support the development of more inclusive, adaptable HRM models relevant to the global IT industry (Papa, et al., 2020). Future research focusing on digital HR transformation, remote work dynamics, team-based structures, psychological moderators, and longitudinal designs will provide deeper insights into improving employee engagement and retention in the rapidly evolving IT sector (Qamar, and Samad, 2022).

4.3. Moderating Effects (HRIS Technologies)

Although several studies have examined motivation, job satisfaction, performance appraisal, compensation, training, culture, and work environment as determinants of employee outcomes, significant gaps remain in understanding how these factors influence employee engagement and employee retention, particularly in the IT sector (Papa, et al., 2020).

Most existing research has focused on direct HR practices but has not fully integrated the role of technology-driven HR systems (HRIS). With rapid digital transformation, HR functions are increasingly supported by AI, machine learning, data mining, and analytics-based decision making, yet very few studies have explored how these HRIS capabilities moderate or strengthen the relationship between HR practices and employee outcomes. Additionally:

- Prior studies have treated HR variables independently, but there is a lack of integrated models combining motivation, satisfaction, appraisal systems, compensation policies, training, culture, and work environment within a single structural framework.
- Limited research has investigated how AI-enabled HR decision making affects employee engagement and retention.
- In the IT sector, where competition for skilled employees is high, understanding the technology-based moderating effects on HR practices is important but underexplored.
- Few studies have evaluated how data-driven HR decision support enhances fairness, transparency, and employee trust—factors strongly linked to retention.

Therefore, there is a clear gap in developing a modern HR technology-based framework that connects HR practices, technology-driven decision making, and employee outcomes (Singh, et al., 2023). HRIS capabilities are proposed as *moderators* that strengthen or weaken the direct relationships. Moderation Paths:

HRIS Decision Making moderates (Motivation → Engagement & Retention)
Artificial Intelligence moderates (Job Satisfaction → Retention)
Data Mining moderates (Performance Appraisal → Engagement)
Machine Learning moderates (Training & Compensation → Retention)

When HRIS systems are strong, the positive effect of HR practices on employee engagement and retention becomes stronger.

4.4. Moderator as a Performance Assessment

Human resource management plays a central role in shaping employee behavior and organizational outcomes. Key HR practices such as motivation, job satisfaction, performance appraisal, compensation, training, organizational culture, and work environment directly influence employee attitudes and performance. These factors collectively contribute to higher levels of employee engagement and employee retention, which are critical for long-term organizational success. In the present competitive environment, especially in knowledge-driven sectors, understanding how these HR variables interact has become essential.

Despite considerable research on HR practices and employee outcomes, a clear research gap exists. Prior studies often examine these variables independently, without integrating them into a unified framework that simultaneously explains their combined and comparative influence on employee engagement and retention. Additionally, limited empirical work has explored how Performance Assessment variables are such as managers' personal rating, computational assessment systems, organizational productivity measures, job performance, and task performance as moderate these relationships. The impact of modern assessment mechanisms on HR practices and employee outcomes remains insufficiently explored.

The present study proposes a path model wherein key HR practices (motivation, job satisfaction, performance appraisal, compensation & training, culture, and work environment) act as direct predictors of employee engagement and employee retention. Further, Performance Assessment is introduced as a moderator, strengthening or weakening the relationship between HR practices and the two outcomes. This integrated model is expected to provide deeper insights into how HR systems can be strategically aligned to enhance engagement and retain valuable talent in modern organizations.

4.5. Organizational Sustainable Performance Management

Employee Engagement, Employee Retention, and Employee Satisfaction are widely recognized as key drivers of Organizational Sustainable Performance Management. Prior studies have shown that engaged and satisfied employees contribute to higher productivity, innovation, and long-term organizational success (Singh, et al., 2024). However, most existing research has examined these variables independently or in traditional HR frameworks. Limited studies have explored how these three HR outcomes collectively influence sustainable performance, especially in dynamic and technology-driven workplaces (Chae, et al., 2020).

A major research gap exists in understanding how engagement, retention, and satisfaction work together as an integrated path that leads to sustainable performance. The interactions among these variables—such as whether satisfaction strengthens engagement, or whether retention acts as a

mediating outcome—are not clearly explained in current literature. Moreover, past studies have not fully considered the role of moderating factors such as workplace culture, digital HR tools, leadership behaviour, or organizational learning climate in shaping these relationships (Singh, et al., 2023). Another gap is the lack of empirical evidence from developing economies, particularly in the Indian IT sector, where high employee turnover, competitive talent markets, and rapid technological change create unique challenges.

Path Summary

The proposed study follows this path:

Employee Engagement → *Organizational Sustainable Performance*

Employee Retention → *Organizational Sustainable Performance*

Employee Satisfaction → *Organizational Sustainable Performance*

Employee Satisfaction may strengthen the effect of Engagement on Sustainable Performance. Employee Retention may act as a supportive pathway linking Engagement and Satisfaction with long-term organizational outcomes.

Conclusion

This bibliometric review highlights the growing academic interest in understanding how employee retention influences performance in the IT industry. The evidence shows that retention is shaped by HR practices, leadership, organizational support, work culture, and psychological well-being. The review also identifies that performance outcomes in IT depend strongly on employees' satisfaction, engagement, and organizational commitment. Although current studies provide valuable insights, several gaps remain for future inquiry. First, limited research integrates digital work environments, virtual teams, and post-pandemic hybrid work models with retention performance relationships. Second, many studies rely on cross-sectional designs, restricting understanding of long-term behavioral patterns. Third, research is concentrated in specific countries, leaving room for cross-cultural comparison. Fourth, few studies examine mediators such as burnout, emotional fatigue, and technological stress. Future research should adopt longitudinal methods, include diverse geographic contexts, and explore emerging predictors like AI-enabled HR practices, employee well-being analytics, remote-work experience, and evolving skill requirements in the IT sector. Addressing these gaps can strengthen theoretical development and provide actionable insights for IT organizations seeking sustainable retention and high performance.

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