

REVIEW ARTICLE

Factors Influencing Employee Creativity in Higher Education: A Bibliometric Analysis, Systematic Literature Review, and Future Research Directions

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ABSTRACT

Despite extensive research on employee creativity and its impact on employee and organizational outcomes in management, there is a scarcity of studies examining this topic in higher education. The limited research focusing on education suggests a prevalent lack of employee creativity among educational institutions. To address this research gap, we conducted a systematic analysis of empirical studies on the factors influencing employee creativity in higher education published up to November 2024, employing a combination of bibliometric and content analysis methods. Our findings provide a comprehensive overview of the field, identifying influential works and analyzing scholarly communication among them. Furthermore, the study clarifies the research network's central themes and structural characteristics on employee creativity in higher education. We conclude by discussing future research directions, aiming to foster a deeper understanding and advancement of employee creativity within higher educational settings.

Keywords: Employee Creativity; Bibliometric Analysis; Systematic Literature Review; Research Trends; Higher Education

1. Introduction

Employee creativity is a key driver of organizational innovation ^[1], organizational success ^[2], effectiveness ^[3], and vitality ^[4], and is particularly important in today's rapidly changing and highly competitive environment ^[5]. Organizations must continuously adapt and innovate to remain competitive, making the stimulation and cultivation of employee creativity a core challenge for leaders ^[6,7]. Therefore, a deep understanding of the antecedents, processes, and outcomes of employee creativity is essential to the successful operation of organizations in complex and dynamic environments.

However, the literature on employee creativity in higher education is still in its infancy, and relevant contributions are scarce and fragmented. In addition, existing studies discuss the importance of employee

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creativity in business ^[8]. While few studies attempt to analyze in depth the factors influencing employee creativity from a higher educational perspective. As a result, the literature on the causes and factors influencing the formation of employee creativity in the field of higher education is significant but lacks systematicity ^[9]. To the best of our knowledge, there have been few attempts to organize and conceptualize the factors influencing employee creativity in the context of higher education in an overarching framework, and theoretical contributions have been limited. Therefore, there is a need for literature review papers that can provide a broader understanding of employee creativity.

The purpose of this paper is to explore the relationship between employee creativity and its related areas by using aspects of employee creativity as a concept in the literature. The research questions are:

- i. How has the research on the factors influencing employee creativity evolved, and what are the main findings of the literature?
- ii. What frameworks of employee creativity have been proposed, and how do they relate to each other?
- iii. What recommendations does the literature suggest for managing employee creativity?

To answer the first question, we conducted a bibliometric literature review. This allowed us to synthesize and organize information about the main factors influencing employee creativity in the field of higher education. In addition, the current research will analyze for the first time the literature's evolution and highlight key themes and research areas.

As for the second and third research questions, we built on the results of the primary literature to create a theoretical framework to help managers understand and promote employee creativity. Through this framework, we analyze the leading causes affecting employee creativity, aiming to help managers understand how employee creativity develops and why it improves. The main contribution of this study is to synthesize the fragmented literature on employee creativity and use the results of the review exercise to provide organizations with a comprehensive framework for understanding and promoting the factors that influence employee creativity in higher education. Finally, by reviewing the existing literature, we have identified areas of research that have not been investigated and provided recommendations for future research.

2. Methodology

In this research, we employed a systematic literature review (SLR) approach, as outlined by Tranfield et al. ^[10], in conjunction with a bibliometric analysis to thoroughly assess the factors influencing employee creativity. The primary goal of this study was to offer valuable insights into contemporary research while uncovering emerging themes within this field.

2.1. Study selection process and methods

The article selection process followed the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines, as recommended for SLRs ^[11]. PRISMA has extensions tailored for specific types of reviews, such as scoping reviews and individual participant data, broadening its applicability in various fields, including education ^[12]. The PRISMA protocol assists systematic reviewers in transparently reporting the rationale for conducting the review, the methodologies used by the authors, and the results of their findings. Figure 1 explains the methodological process.

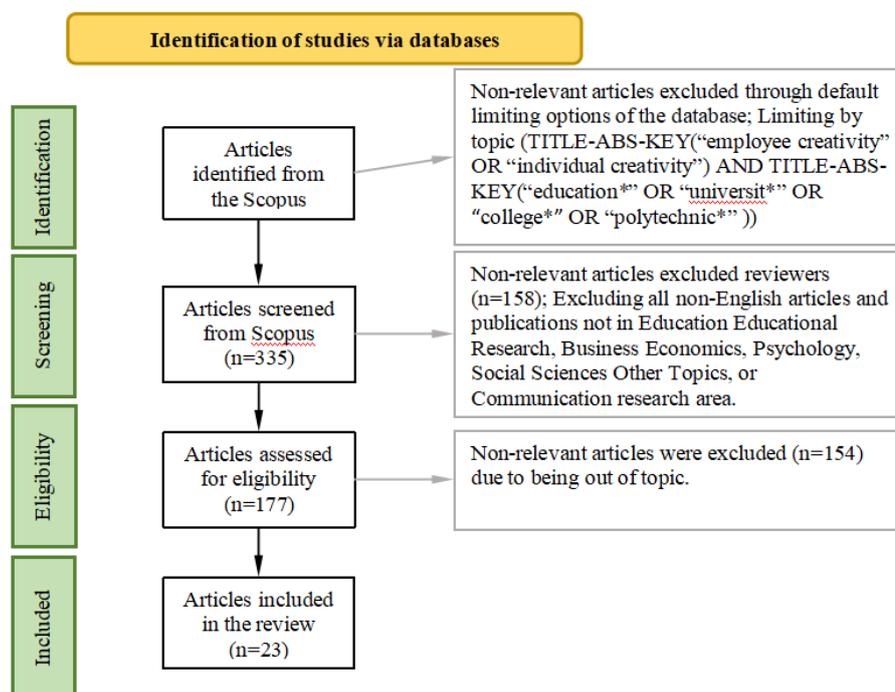


Figure 1. PRISMA flow diagram

Source: Authors' compilation.

In the first stage of this research, we initiated the process by identifying relevant search terms within the Scopus database. The Scopus database is known for its extensive coverage of multidisciplinary content. Its content is seamlessly integrated and readily available to all users [13]. Scopus stands out as a prominent database for bibliometric analyses and systematic reviews, as Pizzi et al. [14] highlighted, renowned for its reliability and widespread use in academic investigations.

The selection of search terms was grounded in the core concepts of the research question. The primary focus of the review necessitated terms capturing employee creativity itself. Based on seminal work in the field [15,7,16] and preliminary scoping searches, the key concepts "employee creativity" and "individual creativity" were identified as the most prevalent and directly relevant descriptors in the literature. To specifically target the higher education context, a core interest of this review, relevant organizational descriptors were included: "education*" (to capture variations like education, educational), "universit*" (university, universities), "college*" (college, colleges), and "polytechnic*" (polytechnic, polytechnics). These institutional terms were chosen as they comprehensively represent the primary types of higher education institutions. The finalized search string is: TITLE-ABS-KEY ("employee creativity" OR "individual creativity") AND TITLE-ABS-KEY ("education*" OR "universit*" OR "college*" OR "polytechnic*"). This search yielded an initial set of 335 papers.

The screening process primarily relies on "inclusion" and "exclusion" criteria. The scope of the article selection is confined to the areas of education, educational research, business economics, psychology, social sciences, other topics, and communication. Various document types, such as books, book chapters, conference proceedings, reports, review articles, and errata, in non-education and non-management fields were excluded from the results (see Figure 1 for PRISMA flow diagram). The focus was exclusively on articles published in English. Additionally, the search strategies were tailored to a broader time frame, with the extension encompassing data from 1900 up to November 2024 (including early access), that is, all the years available in the database at the time of the study. A total of 177 articles were considered for inclusion.

The remaining 177 publications were assessed for eligibility. This process involved a meticulous manual review. Our research team carefully screened the titles and abstracts of each paper to ascertain their relevance to the factors influencing employee creativity. A total of 158 articles were excluded for diverse reasons, including a focus on employee creativity outcomes rather than factors influencing employee creativity, an emphasis on the intention of students' creativity rather than a specific focus on teachers' creativity, or categorization as literature reviews rather than empirical studies. Subsequently, only 23 articles met the criteria for inclusion in the present study (see Figure 1 for PRISMA flow diagram).

A meticulous quality appraisal is essential in systematic reviews to ensure the reliability and validity of included studies. Rossi's Iron Law of Evaluation ^[17] emphasizes that neglecting quality assessment can lead to biased conclusions. The evaluation of study quality, often synonymous with "internal validity" ^[18], is crucial for minimizing biases introduced by the research team. This process lacks a standardized approach, necessitating tailored criteria based on the specific type of literature being reviewed. Criteria were grounded in core dimensions of research rigor emphasized in systematic review methodologies, focusing on their reasonableness and defensibility ^[19] and creativity-specific literature ^[7,15,16]. Five key questions were formulated to target critical validity threats:

Q1: Does the research topic specifically examine employee creativity?

Q2: Is the presentation of research content clear and comprehensible?

Q3: Has the research methodology been executed thoroughly and with adequacy?

Q4: Has the interpretation of the results been conducted effectively?

Q5: Has the study appropriately addressed the overarching research questions?

Following Petticrew and Roberts' guidance ^[18], the articles underwent a numerical rating system based on predefined quality criteria for the five questions above. A score of 1 indicated full compliance with a criterion, 0.5 indicated partial compliance, and 0 indicated non-compliance. Total scores ranged from 0 to 5. Articles scoring above 3.5 were designated as high quality, those with ratings between 2 and 3 were classified as medium quality, and those below 1.5 were labeled as low quality. Only articles within high and moderate-quality categories were retrieved for in-depth analysis. As a result, all the 23 remaining articles were eligible for evaluation, with 19 classified as high quality and 4 as moderate.

2.2. Bibliographic data analysis

Bibliometric analysis, mainly through tools like Biblioshiny in R Studio, facilitates a detailed exploration of research trends and patterns across various fields ^[20]. This method allows researchers to analyze bibliographic components such as authorship, geographical origins, and keyword co-occurrences, effectively addressing pertinent research questions. The following sections elaborate on key aspects of bibliometric analysis.

3. Results

3.1. Results of the bibliometric analysis

3.1.1. Trend of publication

Figure 2 illustrates the annual publication pattern of research articles on factors influencing employee creativity. From the figure, the number of publications in the literature related to creativity shows a certain degree of fluctuation and a general increasing trend between 2018 and 2024, but not a linear increment. Specifically, the number of publications was 2 in 2018 and increased to 3 in 2019, which is not a significant

increase but shows an expansion of research interest or results. 2020 and 2021 both have publications. The decrease in this period may be related to changes in the direction of academic resource investment at that time, shifts in research focus, or a slowdown in international scholarly exchanges (e.g., the COVID-19 pandemic). There was a significant rebound after 2022, with a significant increase in the number of publications of 5 in that year compared with the previous two years. This may imply that the creativity research topic received renewed attention during this period or that new methodologies and theoretical frameworks emerged, stimulating research output. 2023 reaches 7 articles, the highest of the years listed so far, suggesting that research in the field reaches a new peak this year. 2024's 4 articles are lower than those in 2023 but still higher than those in the early years (2018-2021), suggesting that the overall research fervor in the field is still at a high level compared to earlier years.

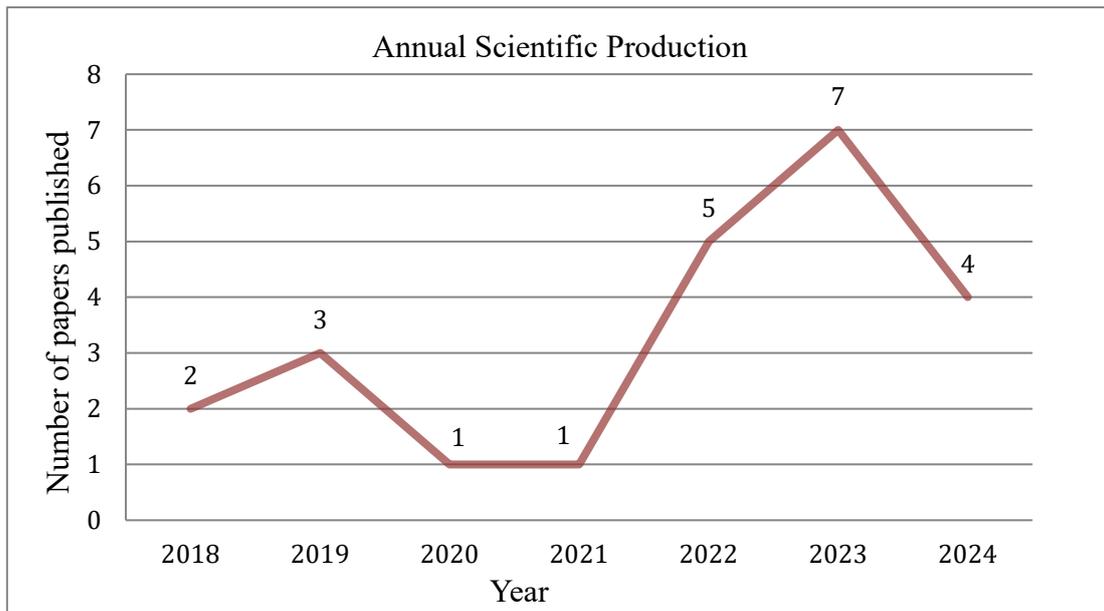


Figure 2. Trend of publication

Source: Authors' compilation.

3.1.2. Most globally cited articles

Table 1 shows the most influential articles on the factors influencing employee creativity. These articles stand out for their wide range of influence, which is evident through their significant number of citations, emphasizing their respected status in the academic field. The paper titled “Perceptions of Organizational Politics, Knowledge Hiding, and Employee Creativity: The Moderating Role of Professional Commitment,” written by Malik et al. ^[21] and published in *Personality and Individual Differences*, is the most cited work in the field. It has accumulated 176 citations, further highlighted by an annual citation rate of 29.33.

Table 1. Top 10 most globally cited articles on factors influencing employee creativity

Rank	Title	Authors (Year)	DOI	Source	Total Citations	Total Citations per Year
1	Perceptions of organizational politics, knowledge hiding, and employee creativity: The moderating role of professional commitment	Malik et al. (2019)	10.1016/j.paid.2018.05.005	Personality and Individual Differences	176	29.33
2	The effects of knowledge sharing on individual creativity in higher education institutions: Sociotechnical view	Lee (2018)	10.3390/admsci8020021	Administrative Sciences	78	11.14
3	Exploring the effect of transformational leadership on individual creativity in e-learning: A perspective of social exchange theory	Zhang et al. (2018)	10.1080/03075079.2017.1296824	Studies in Higher Education	56	8
4	The mediating effect of knowledge sharing among intrinsic motivation, high-performance work system, and authentic leadership on university faculty members' creativity	Hassan & Din (2019)	10.5267/j.msl.2019.2.013	Management Science Letters	21	3.5
5	Direct and indirect effects of servant and ethical leadership styles on employee creativity: the mediating role of organizational citizenship behavior	Hanaysha et al. (2022)	10.1108/AGJSR-04-2022-0033	Arab Gulf Journal of Scientific Research	15	5
6	Nexus of Strategic Thinking, Knowledge-oriented Leadership, and Employee Creativity in Higher Education Institutes	Alzghoul et al. (2023)	10.26668/businessreview/2023.v8i4.1107	International Journal of Professional Business Review	14	7
7	Fueling the Creative Spark: How Authentic Leadership and LMX Foster Employees' Proactive Orientation and Creativity	Sumanth et al. (2023)	10.1177/15480518231180064	Journal of Leadership and Organizational Studies	10	5
8	Understanding employee creativity from the perspectives of grit, work engagement, person-organization fit, and feedback	Gonlepa et al. (2023)	10.3389/fpsyg.2022.1012315	Frontiers in Psychology	7	3.5
9	The influence of leaders' positive and implicit followership theory of university scientific research teams on individual Creativity: The mediating effect of individual self-cognition and the moderating effect of proactive personality	Wang & Liang (2020)	10.3390/su12062507	Sustainability (Switzerland)	7	1.4
10	The impact of transformational leadership style and employee creativity on organizational innovation in universities during the COVID-19 pandemic	Ngo et al. (2022)	10.18488/73.v10i1.2234	Humanities and Social Sciences Letters	6	2

Source: Authors' compilation.

3.1.3. Leading journals

Table 2 provides significant findings about the most cited journals in the area of factors that influence the study of employee creativity. The five journals with the most significant citations are Personality and Individual Differences (176 citations), Administrative Sciences (78 citations), Studies in Higher Education (56 citations), Management Science Letters (21 citations), and Arab Gulf Journal of Scientific Research (15 citations). Among these journals, Personality and Individual Differences is a leading publication. This statistic emphasizes its key role as a significant channel for disseminating research in this field.

Table 2. Top 5 most globally cited journals

Journals	Publisher	h_index	g_index	m_index	Total Citations	Number of Publications	PY_start
Personality and Individual Differences	Elsevier	1	1	0.167	176	1	2019
Administrative Sciences	MDPI	1	1	0.143	78	1	2018
Studies in Higher Education	Routledge	1	1	0.143	56	1	2018
Management Science Letters	Growing Science	1	1	0.167	21	1	2019
Arab Gulf Journal of Scientific Research	Emerald Publishing	1	1	0.333	15	1	2022

Source: Authors' compilation.

3.1.4. Most productive countries

Table 3 presents the top seven countries contributing to this research area. It is worth noting that China tops the publications ranking with 5 articles, the highest output in the table. It is closely followed by Pakistan (4 articles) and Indonesia (3 articles), while India, Malaysia, UAE and USA each have 2 articles. This ranking shows that China is relatively more active in producing literature in this particular research area. Although China has the highest number of publications, Pakistan has the highest number of citations (180). Meanwhile, Average Article Citations may reflect, to some extent, the quality of the output or the degree of academic resonance. Pakistan is far ahead in this dimension, with an average of 45 citations per article. Despite having the highest output, China has an average of 21 citations per article, which is considerably lower than Pakistan but still higher than most other countries except Malaysia.

Table 3. Top 7 most productive countries

Countries	Number of Articles	Countries' Scientific Production	Total Citations	Average Article Citations
China	5	12	63	21
Pakistan	4	13	180	45
Indonesia	3	17	9	4.5
India	2	5	4	2
Malaysia	2	4	21	21
United Arab Emirates	2	4	19	9.5
United States	2	3	7	7

Source: Authors' compilation.

3.1.5. Most influential authors

Table 4 illustrates the prominent authors who have significantly contributed to studying factors affecting employee creativity. Among them, Khan MM has an h-index and g-index of 2, indicating that at least 2 papers have gained some degree of sustained attention. The total number of citations is 178, which is much higher than others, indicating that his existing papers have gained significant academic recognition. The number of Publications is only 2, but the total number of citations is high, which shows that his research may be a hot topic or of good quality. PY_start=2019, an early start year compared to others, gives more time for his results to be cited by academia. Another author, Hanaysha JR, has an h-index and g-index of 2, which is the same as Khan MM, but the total number of citations is 19, which is lower than Khan MM. This suggests that although 2 of the articles gained some citations, the total impact is not as prominent as Khan MM's.

PY_start=2022, with a late start and insufficient time accumulation, perhaps affects the total number of citations, but there has been a certain amount of the h-index and g-index of other scholars that are not as high as those of Khan MM. The other scholars have an h-index and g-index of 1, each participating in one article in the field.

Table 4. Top 10 most influential authors

Authors	h_index	g_index	m_index	Total Citations	Number of Publications	PY_start
Hanaysha JR	2	2	0.667	19	2	2022
Khan MM	2	2	0.333	178	2	2019
Ahmed WS	1	1	0.5	2	1	2023
Al-Ansi AM	1	1	0.5	4	1	2023
Al-Husseini S	1	1	1	6	1	2024
Al-Kasasbeh O	1	1	0.5	14	1	2023
Algraibeh KM	1	1	0.5	14	1	2023
Alzghoul A	1	1	0.5	14	1	2023
Amosun TS	1	1	0.5	7	1	2023
Dilawar S	1	1	0.5	7	1	2023

Source: Authors' compilation.

3.1.6. Author's keywords analysis

Table 5 illustrates a co-occurrence network that represents the interconnections between concepts within the domain of factors that influence employee creativity research.

Table 5. Co-occurrence network of the author's keywords

Node	Cluster	Betweenness	Closeness	PageRank
individual creativity	1	5.000	0.077	0.131
knowledge sharing	1	8.000	0.100	0.124
social exchange theory	1	0.000	0.056	0.072
employee creativity	2	12.000	0.111	0.244
organizational citizenship behaviour	2	0.000	0.071	0.069
servant leadership	2	0.000	0.071	0.069
university	2	0.000	0.071	0.069
creativity	3	0.000	1.000	0.111
intrinsic motivation	3	0.000	1.000	0.111

Source: Authors' compilation.

The network uses nodes to symbolize these concepts, while edges represent instances where these concepts appear together in a shared context. These nodes are classified into different Clusters, while the Betweenness, Closeness, and PageRank values are calculated. The metrics are analyzed to provide a preliminary insight into the position and function of each concept in the knowledge structure or literature network.

Nodes can be categorized into different clusters based on their assigned cluster values. For instance, Cluster 1 contains three nodes: employee creativity, knowledge sharing, and social exchange theory. Cluster 2 contains four nodes: employee creativity, organizational citizenship behavior, servant leadership, and university. Cluster 3 contains two nodes: creativity and intrinsic motivation.

Betweenness represents the importance of a node as a “mediator” or “bridge” in the network. The higher the value, the more likely the node is to be located on the shortest path between other nodes, acting as a bridge for information flow or structural holes. In this case, nodes labeled as knowledge sharing show the highest betweenness values, indicating their key role in connecting different concepts in the network.

Closeness represents the inverse of a node’s average distance from all other nodes in the network; the more significant the value, the more likely a node is to reach out to other nodes in the network quickly. It is worth noting that both “creativity” and “intrinsic motivation” have a closeness of 1.000 in Cluster 3, which is an extremely high value, meaning that both nodes maintain a very high degree of closeness to other nodes in the network structure. This is an extremely high value, meaning these two nodes maintain high proximity to other nodes in the network structure. Among the other nodes, the highest proximity centrality belongs to “employee creativity” in Cluster 2 (0.111) and “knowledge sharing” in Cluster 1 (0.100). These nodes are also relatively accessible to other nodes in their respective sub-networks and belong to the more central concepts.

The PageRank score assigned to a particular node can be employed to indicate the probability that a random walk in the network will terminate at that particular node. Nodes with higher PageRank values are of greater importance in the network. Nodes indicating employee creativity, knowledge sharing, and individual creativity exhibit the highest ranking values, thus indicating their importance in the network.

3.1.7. Thematic map analysis

In Figure 3, the thematic map serves as a vital tool for understanding the current research landscape and identifying future trends across various fields. By categorizing research themes based on centrality and density, it highlights the significance and evolution of these themes [1]. Centrality reflects the importance of a theme within the research community, indicating how much attention it receives. Density measures the intensity of connections within a theme, showcasing its development over time.

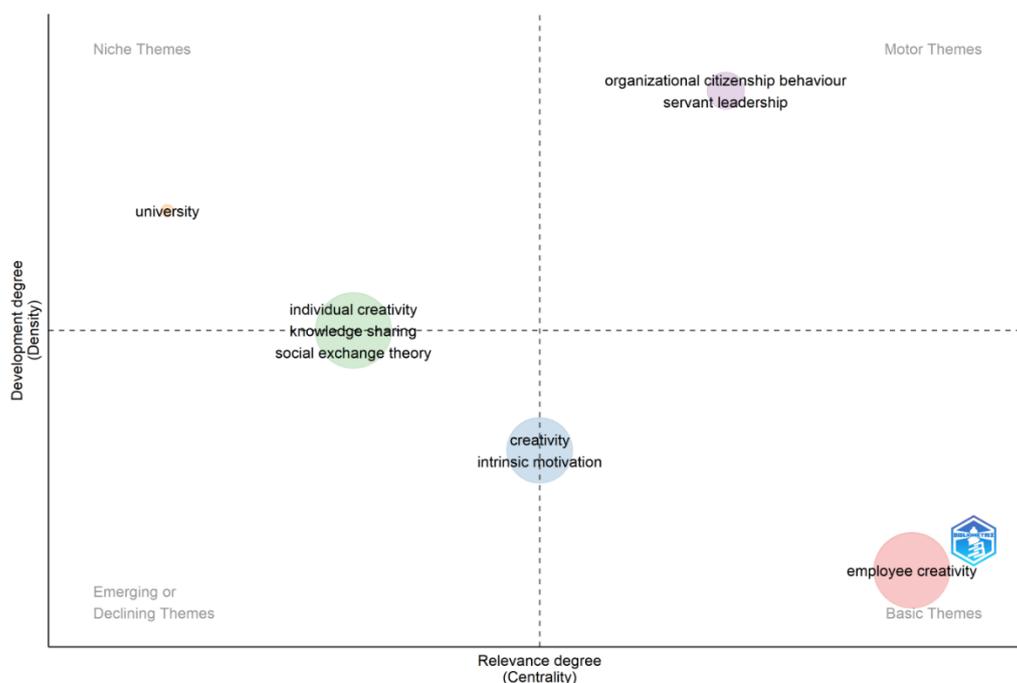


Figure 3. Thematic map of author’s keywords (Source: Authors’ own creation using Biblioshiny)

Source: Authors’ compilation.

Motor Themes in the upper right quadrant are characterized by high research volume and significance. Researchers and institutions tend to focus on Motor Themes because of their relevance and potential impact on the industry or discipline. These themes represent established and central aspects of the research field. Important keywords in this quadrant include organizational citizenship behaviour and servant leadership. This quadrant highlights the centrality of organizational context intervention. The reason why scholars continue to focus on such topics is mainly because they not only respond to core issues in organizational practice but also have a profound impact on the development of management theory and applied research. The current consensus shows that creativity is a joint product of leadership behavior and employee autonomy.

Niche Themes in the upper left quadrant are areas of research where research activity is low compared to Motor Themes. These themes may not have received widespread attention, but they are still important. They are usually characterized by a specialized area of interest. University belongs to the keywords of this quadrant. Individual creativity, knowledge sharing, and social exchange theory have a lower degree of development but a higher degree of relevance than university. The literature in this quadrant provides a unique perspective on the contextual and theoretical boundaries of employee creativity research, especially in exploring individual motivations, relationship mechanisms, and institutional support paths in knowledge-based organizations, and has important supplementary and deepening significance.

Basic Themes in the lower right quadrant indicate significant themes but are still in a state of growth and require further attention and research. Basic Themes are not as established as Motor Themes, but show promise for future growth and impact. They represent areas where research interest grows and may become more prominent over time. Keywords identified within this quadrant include employee creativity. Moreover, creativity and intrinsic motivation have a higher degree of development and a lower degree of relevance than employee creativity. Existing literature explains the theoretical nexus between mature concepts such as “employee creativity” and “intrinsic motivation”, and explores their mechanism of action in different industries, organizational structures, and cultural backgrounds, which will help to promote this field from its initial stage to theoretical maturity, and further expand the depth and breadth of employee creativity research.

Emerging or Declining Themes in the lower left quadrant are those with low research activity and may be new, emerging, or losing relevance in the research field. Research on these areas is either beginning to gain momentum or is declining. It is essential for researchers to pay close attention to emerging themes as they may become more important in the future. Our analysis has determined that none of the keywords fall within this quadrant.

3.2. Results of systematic literature review

A thorough examination of the extensive literature retrieved from the Scopus database was conducted to consolidate the most significant findings from the existing body of research. The main objective was to identify the key factors influencing employee creativity, as shown in Table 6. The most recurring factors in the given list were Knowledge Sharing (7 times), Intrinsic Motivation (5 times), and Organizational Citizenship Behavior (3 times). Some of the other leadership and organization-related factors appeared twice, and most of the remaining factors appeared only once. Subsequently, Table 7 shows that five themes have been identified as underlying factors affecting employee creativity.

Table 6. Summary of frameworks on employee creativity

Studies: Authors/Year	Frameworks on employee creativity			
	Independent variables	Mediators	Moderators	Dependent variables
Malik et al. (2019)	Perceived Organizational Politics	Knowledge Hiding	Professional Commitment	Employee Creativity
Lee (2018)	Social Factors, Technical Factors	Knowledge Sharing		Individual Creativity
Zhang et al. (2018)	Economic Reward, Transformational Leadership, Self-Efficacy	Knowledge Sharing		Individual Creativity
Hassan & Din (2019)	Intrinsic Motivation, High-Performance Work System, Authentic Leadership	Knowledge Sharing		Employee Creativity
Hanaysha et al. (2022)	Ethical Leadership, Servant Leadership	Organizational Citizenship Behavior (OCB)		Employee Creativity
Alzghoul et al. (2023)	Strategic Thinking		Knowledge-Oriented Leadership	Employee Creativity
Sumanth et al. (2023)	Authentic Leadership	Proactive Work Orientation	Leader-Member Exchange	Employees' Creative Performance
Gonlepa et al. (2023)	Grit	Work Engagement	Person-Organization Fit, Feedback	Creativity
Wang & Liang (2020)	Leaders' Positive and Implicit Followership Theory (LPIFT) in a University Scientific Research Team	Individual Creative Role Identity, Individual Creative Self-Efficacy, Individual Willingness to Create Knowledge	Proactive Personality	Individual Creativity
Ngo et al. (2022)	Transformational Leadership	Employee Creativity	Intrinsic Motivation	Organizational Innovation
Al-Husseini (2024)	Top Management Support	Knowledge Sharing, Knowledge Acquisition, Absorptive Capacity		Employee Creativity
Siswanto et al. (2022)	Behavioral Leadership	Intrinsic Motivation, Individual Creativity		Individual Creativity, Organizational Innovation

Studies: Authors/Year	Frameworks on employee creativity			
	Independent variables	Mediators	Moderators	Dependent variables
	Organizational Justice	Leadership Styles		Employee Creativity
Hanaysha (2023)	Participative Leadership, Authoritarian Leadership	Organizational Citizenship Behavior		Employee Creativity
Singh & Phoolka (2024)	Training Programs	Work Engagement		Employee Creativity
Makumbe (2022)	Organizational Cultural Typologies			Employee Creativity
Nelwan et al. (2024)	Servant Leadership	Organizational Citizenship Behavior		Employee Creativity
Muzafary et al. (2021)	Intrinsic Rewards for Creativity	Knowledge Sharing, Intrinsic Motivation		Employee Creativity
Yasmeen et al. (2023)	Ambidextrous HR Systems	Ambidextrous Learning, Organisation-Based Self-Esteem	Leader-Member Exchange Quality	Employee Creativity
Suwanti (2019)	Intrinsic Motivation	Knowledge Sharing		Employee Creativity
Dulla et al. (2023)	Co-Worker Support, Supervisory Support, Resource Allocation, and recognition	Intrinsic Motivation	Gender Stereotypes	Employee Creativity
Zhao et al. (2022)	Ambidextrous HR Practices	Psychological Capital	Leader-Member Exchange Quality	Individual Creativity
Hassan & Asif (2024)	Knowledge Sharing	Organizational Identification		Employee Creativity

Table 6. (Continued)

Source: Authors' compilation.

Table 7. Summary of literature review

Studies: Authors/Year	Factors influencing employee creativity				
	Leadership and management	Organizational environment and cultural structure	Individual psychology and motivation	Interpersonal and social interaction	Human resources, training, and incentives
Malik et al. (2019)		✓		✓	
Lee (2018)				✓	
Zhang et al. (2018)	✓		✓	✓	✓
Hassan & Din (2019)	✓	✓	✓	✓	

Studies: Authors/Year	Factors influencing employee creativity				
	Leadership and management	Organizational environment and cultural structure	Individual psychology and motivation	Interpersonal and social interaction	Human resources, training, and incentives
Hanaysha et al. (2022)	✓	✓			
Alzghoul et al. (2023)	✓				
Sumanth et al. (2023)	✓		✓		
Gonlepa et al. (2023)	✓	✓			✓
Wang & Liang (2020)	✓		✓		
Ngo et al. (2022)	✓				
Al-Husseini (2024)	✓		✓	✓	✓
Siswanto et al. (2022)	✓		✓		
Jaboob et al. (2023)	✓	✓			
Hanaysha (2023)	✓	✓			
Singh & Phoolka (2024)					✓
Makumbe (2022)		✓			
Nelwan et al. (2024)	✓	✓			
Muzafary et al. (2021)			✓	✓	✓
Yasmeen et al. (2023)		✓	✓		✓
Suwanti (2019)			✓	✓	
Dulla et al. (2023)			✓	✓	✓
Zhao et al. (2022)		✓	✓		
Hassan & Asif (2024)		✓		✓	

Table 7. (Continued)

Source: Authors' compilation.

3.2.1. Leadership and management

A leader's style, values, and interactions directly shape the team and organizational climate. When leaders encourage employees to express themselves freely, give recognition and support, and provide a clear vision and goals, employees are more likely to be intrinsically motivated and engage in creative thinking. On

the contrary, an autocratic and conservative leadership style inhibits risk-taking and attempts to innovate. Zhang et al. [26] and Ngo et al. [27] emphasized that Transformational Leadership has a significant impact on increasing employee creativity. Ul Hassan and Din [28] and Sumanth et al. [29] drew attention to this phenomenon by emphasizing how Authentic Leadership significantly affects employee creativity. Nelwan et al. [30] also emphasized Servant Leadership's role in enhancing Servant Leadership's importance in improving employee creativity. Leader-Member Exchange Quality related variables have also become one of the focuses of scholars' attention in influencing employee creativity [31,32]. Overall, leadership and management factors stimulate employees' creative potential by creating an inclusive and inspiring environment.

3.2.2. Organizational environment and cultural structure

Organizational cultures that are fair and cohesive and encourage knowledge sharing and reciprocal collaboration contribute to Psychological Safety [32], allowing employees to develop new ideas without fear of being mistreated or judged negatively. Hanaysha [33,34] and Nelwan et al. [30] showed that Organizational Citizenship Behavior significantly improves employee creativity. When organizational structures and systems (e.g., high-performance work systems, dual human resource practices) provide employees with resources, flexibility, and opportunities for growth, they are more willing to explore and experiment with their creativity.

3.2.3. Individual psychology and motivation

The engagement of individuals in creative activities is significantly influenced by various psychological factors, including intrinsic motivation [28,35-37] and proactive personality traits [38]. These factors not only enhance participation but also foster a continuous cycle of exploration and innovation. Confidence in one's grit [39], creative role identity [38], and absorptive capacity [40] increase the likelihood of engaging in continuous exploration, experimentation, and iteration, ultimately leading to more innovative ideas and solutions. Higher levels of intrinsic motivation correlate with improved cognitive and functional outcomes, particularly in challenging environments.

3.2.4. Interpersonal and social interaction

Social interactions such as supportive co-workers and supervisors, feedback environments, and gender stereotypes affect individuals' psychological safety and social capital. Knowledge sharing significantly enhances organizational creativity, leading to improved work performance [41]. Research indicates that adequate knowledge sharing fosters innovative behaviors, particularly in environments that encourage collaboration and communication, which shows that knowledge sharing positively affects employee creativity [26]. When team members are willing to share knowledge, give constructive feedback, and eliminate bias, individuals are more likely to receive multiple sources of information, inspiration, and emotional support to stimulate creativity; conversely, knowledge hiding or stereotypical bias reduces the creative climate. Malik et al. [21] examined those who take a defensive stance as more security conscious and inclined to adopt knowledge hiding. Moreover, they believed that since creativity is risky and may produce negative results, they would avoid creativity, which in turn proves that a person who exhibits a higher level of knowledge hiding is less creative.

3.2.5. Human resources, training, and incentives

The relationship between economic rewards [26] and intrinsic rewards [36], adequate training programs [42], and resource allocation [35] significantly influences employee creativity and engagement. When employees perceive that their organization recognizes and values their creative input, they will increase their

engagement (Work Engagement) ^[39,42], utilize the acquired knowledge and skills more actively (Knowledge Acquisition) ^[40], engage in Ambidextrous Learning ^[31], and thus continuously generate new ideas and solutions. When organizations demonstrate a commitment to fostering creativity, employees are more likely to engage actively in their work, acquire new knowledge, and generate innovative ideas.

4. Discussion and future research directions

4.1. Discussion

The current study contributes to the existing knowledge of the factors influencing employee creativity by providing a comprehensive overview of the topic. This study used bibliometric analysis to analyze 23 articles extracted from the Scopus database. The analysis of the employee creativity data revealed a fluctuating increase in the number of publications related to education, management, and psychology since 2018. The significant increase in the number of published works, especially in 2023, indicates a growing global interest in the factors that influence employee creativity. This surge highlights different managers' high levels of interest and reveals the scientific community's recognition of efforts to enhance employee creativity.

This study used bibliometric analysis to conduct an extensive survey of the most influential articles, journals, countries, and authors of factors affecting employee creativity (RQ1). Notably, *Personality and Individual Differences* emerged as the most widely cited journal globally, accumulating 176 citations. In addition, Malik et al.'s globally most cited article, "Perceptions of Organizational Politics, Knowledge Hiding, and Employee Creativity: The Moderating Role of Professional Commitment, was also published in *Personality and Individual Differences*". In addition, this study identifies Malik et al. as a distinguished and influential author in the field of employee creativity determinants research.

In our analysis, we employed geographic location as a factor to gain a deeper understanding of the field of study. As the focus on innovation in the field of higher education has expanded over the years, the need to enhance employee creativity has become more apparent, stimulating academic exploration of employee creativity. Temporal analysis shows that China and Pakistan have the most research on factors affecting employee creativity (Table 3). It also proves that employee creativity in developing countries has received more attention.

Key themes influencing employee creativity (RQ2) research were effectively identified through keywords in the bibliometric analysis and systematic literature review. By analyzing the keywords in the bibliometric analysis, we revealed five prominent themes in the research on the determinants of employee creativity: leadership and management, organizational environment and cultural structure, individual psychology and motivation, interpersonal and social interaction, and human resources, training, and incentives. These identified key themes support and reinforce the results obtained through the authors' keyword analysis to support and strengthen the results obtained through the authors' keyword analysis.

The first theme, leadership and management, consists of 13 studies highlighting the critical role of leadership and management in enhancing employee creativity. This includes transformational leadership, authentic leadership, servant leadership, ethical leadership, authoritarian leadership, participative leadership, behavioral leadership, knowledge-oriented leadership, leadership style, leader-member exchange, leader-member exchange quality, top management support, leaders' positive and implicit followership theory (LPIFT), and strategic thinking. This theme receives the most incredible amount of attention.

The second theme, organizational environment and cultural structure, has been explored in 10 studies, including perceived organizational politics, organizational cultural typologies, organizational justice,

organizational citizenship behavior (OCB), person-organization fit, organizational identification, high-performance work system, ambidextrous HR systems, ambidextrous HR practices, and playing an important role in improving employee creativity. Malik et al. [21] pointed out that this is an important influence on employee creativity.

Individual psychology and motivation are the third theme, which is contributed to by 11 related studies. The studies emphasized the key role of self-efficacy, intrinsic motivation, and absorptive capacity in improving employee creativity [26,29,40]. Notably, three studies [26,31,38] investigated the direct relationship between self-efficacy and employee creativity. It did not refine the indirect relationship and influence mechanism between them [43].

The fourth theme, Interpersonal and social interaction, highlights that the study emphasized the key role of social factors, social support, and knowledge management behaviors. A total of 9 studies were included in this theme. It is noteworthy that studies on knowledge sharing included eight, but only one was focused on knowledge hiding. The support and interaction of organizational members are important influences on employee creativity.

Human resources, training, and incentives have developed into the fifth theme impacting employee creativity, including seven related research studies. Gonlepa et al. [39] examined how grit, work engagement, person-organization fit, and feedback influence creativity in the workplace, while Singh and Phoolka [42] also examined how work engagement influences employee creativity.

In summary, Tables 5 and 6 illustrate the distinctive clusters resulting from the two independent analyses. The bibliometric analysis produced four clusters, while the systematic literature review produced five distinctive clusters. An in-depth analysis revealed some shared thematic content that existed between them, particularly the emphasis on strategies to improve employee creativity. Factors influencing employee creativity are organized around several key themes, including leadership and management, Organizational environment and cultural structure, Individual psychology and motivation, Interpersonal and social interaction, and Human resources, training, and incentives. Notably, the theme of leadership and management received much attention from researchers, with 13 studies. Among them, the theme of Individual psychology and motivation is the only influencing factor related to the internal elements of the individual, while the remaining factors mainly reflect the role of the external or social interactions. Therefore, extra attention should be paid to and in-depth exploration of internal factors related to the intrinsic elements of the individual in this field. These established themes highlight the major areas affecting employee creativity, demonstrating the multifaceted approaches that are critical to improving employee creativity. The implications of these findings are far-reaching.

4.2. Future research directions

Thematic maps have been used to identify fundamental gaps and potential directions for future employee creativity (RQ3) research. Based on Figure 3 and Table 7, we delve further into these findings, explaining their implications for future research avenues.

The inclusion of Table 8 serves as a strategic tool for guiding future research directions across various fields. Presenting suggested areas for exploration under each sub-theme enhances the understanding of existing gaps and opportunities for further investigation. This structured approach not only aids researchers in identifying specific topics but also fosters interdisciplinary collaboration.

Table 8. Potential directions for future research

Research Themes	Specific Gaps	Future Research Agendas
Leadership and management	<p>Most of the recent research focuses on the impact of a single leadership style (e.g., transformational leadership, servant leadership) on creativity, and there is still a lack of in-depth investigation into the interaction and dynamic transformation process of different leadership styles. In addition, the impact of leadership behaviors on employee creativity at different levels and in multicultural contexts has not been sufficiently studied.</p>	<ul style="list-style-type: none"> - Cross-cutting Effects of Multiple Leadership Styles: To explore the combined effects of different leadership styles (e.g., transformational, empowering, servant) coexisting in the same organization on employee creativity and the dynamic effects of adjustments and shifts in leadership styles on creative performance over time. - Cross-cultural and cross-level research: Examining the differences and generalizability of leadership styles' impact patterns on creativity across national cultural contexts and organizational levels (e.g., middle managers, first-line supervisors). - Contextual Moderation and Boundary Conditions: To identify the impact of contextual factors such as organizational strategy, industry characteristics, team size, and technological maturity as moderating variables on the effectiveness of leadership interventions on creativity.
Organizational environment and cultural structure	<p>Studies have yet to be conducted on the impact of organizational culture evolution on creativity in dual organizations (exploration and exploitation) and in the process of digital transformation.</p>	<ul style="list-style-type: none"> - Cultural Mechanisms of Dualistic Organizations: An in-depth study of how combining different cultural orientations (e.g., flexibility oriented vs. stability oriented) enhances or inhibits employee creativity in dualistic organizations that simultaneously pursue efficiency and innovation. - Digital and Virtual Work Contexts: To explore the impact of organizational cultural characteristics (e.g., information transparency, online trust) on employees' creative thinking in the context of virtual teams and telecommuting in the digital era. - Longitudinal Evolution Study: A longitudinal research design examines the path of change and key intervention points of organizational culture on employee creativity during transition periods (e.g., mergers and acquisitions, strategic realignment).
Individual psychology and motivation	<p>Much research on individual psychological factors and creativity has focused on foundational variables such as intrinsic motivation and personal characteristics. However, there is still a lack of systematic exploration of integrative models of multiple psychological resources (e.g., psychological capital, resilience, and creative self-identity synergized with absorptive capacity). In addition, research on the dynamic effects of psychological attributes on creativity across life cycle stages, career stages, or identity backgrounds (e.g., academic researchers vs. industrial researchers) has yet to be deepened.</p>	<ul style="list-style-type: none"> - Complex Psychological Resource Integration Model: To explore how multiple psychological elements (self-efficacy, creative self-identity, and psychological capital) interact with each other to form a complex incentive mechanism for creativity. - Career Stage and Individual Differences: To examine whether there are differences in the paths of creativity between employees' psychological traits in early and late careers and to identify psychological mechanisms that are time, experience, and context-sensitive. - Interdisciplinary perspective: Integrating psychological research with neuroscience and cognitive science to explore how brain science evidence supports the role of psychological factors in creativity stimulation, thus enriching the theoretical model.
Interpersonal and social interaction	<p>The complex effects of negative social phenomena (e.g., knowledge hiding and informal group exclusion) have not yet been adequately investigated in different cultural contexts and team structures. In addition, the mechanisms by which the structural features of social networks (information mediation, structural holes, weak ties, and strong ties) influence employee creativity are still poorly understood.</p>	<ul style="list-style-type: none"> - Double-edged effects of negative social interactions: in-depth study of the potential dual effects of knowledge concealment and social exclusion on creativity to promote or inhibit creativity, and analysis of contextual and affective moderating variables. - Social network analysis: Using social network analysis methods, we investigate how different network structural features (e.g., structural location of team members, multiple sources of knowledge) shape creativity behavior at the individual and group levels. - Cross-Level Interaction Research: To explore how social

Research Themes	Specific Gaps	Future Research Agendas
Human resources, training, and incentives	<p>Current research in human resources, training, and incentives emphasizes the immediate impacts of training and incentives on creativity. Nevertheless, it overlooks the long-term effects and adaptive mechanisms of these strategies. Understanding the optimal mix of economic and non-economic rewards and differentiated incentive strategies across various team rewards and individual rewards remains underexplored.</p>	<p>capital, social norms, and interaction quality at the individual, team, departmental, and organizational levels synergize to influence creativity, providing a more comprehensive multilevel model.</p> <ul style="list-style-type: none"> - Research on incentive combination strategies: Explore the optimal combination of monetary incentives, non-material incentives, growth-oriented training, and resource allocation, and study the differences in the effectiveness of targeted incentive programs in different functional departments (R&D, marketing, production). - Long-term and Dynamic Analysis: Exploring the long-term path of creativity cultivation through continuous incentives and training requires a multifaceted approach considering various organizational and individual factors. Future research can leverage longitudinal tracking studies and field experiments to understand how incentive strategies evolve alongside organizational changes and technological advancements.

Table 8. (Continued)

Source: Authors' compilation.

5. Limitations and recommendations

The decision to focus solely on the Scopus database for analyzing factors influencing employee creativity research offers a structured and consistent approach, minimizing discrepancies that may arise from using multiple databases. This method allows for a comprehensive examination of journal articles, which are often more rigorously vetted than other document types. This method provides a comprehensive view of the factors influencing employee creativity. This approach ensured data collection and analysis consistency, minimizing potential discrepancies that could arise from combining different databases. However, it is important to note that our decision does not minimize the potential advantages of adopting a multi-database approach, and we encourage future researchers to explore this avenue for complementary insights. Additionally, the analysis in this study clearly focused on journal articles while excluding a range of other types of documents, such as conference papers, reviews, book chapters, books, and conference reviews. Future studies may strategically incorporate key book chapters and landmark conference papers, or be supplemented with dedicated narrative reviews to make up for the lack of theoretical depth, especially with regard to the definition and historical development of core constructs.

Our study has certain methodological limitations that are worth considering. First, while comprehensive, our keyword search method may have missed relevant articles using different terms. To enhance future research efforts, it is recommended that the snowball method and expert consultation can also be used as core supplementary strategies to minimize the risk of retrieval omissions. Second, our findings may have been affected by biases in interpreting and categorizing articles into different clusters or themes. Other researchers may interpret or categorize articles differently despite our rigorous efforts to maintain objectivity and consistency. Future research could consider using more structured content analysis methods or computational assisted techniques as a supplement or verification tool to improve transparency and objectivity. Additionally, the relevance of the themes identified in our systematic literature review may change over time, so it is critical that researchers continually monitor the research landscape to keep up with developments and identify new avenues of inquiry.

This study focused on integrating and categorizing the relationships among existing frameworks and themes, but did not conduct an in-depth critique of the contradictions in existing theories (existing research is mainly based on Social Exchange Theory and Conservation of Resources theory). Future research can prioritize comparative analyses of these theoretical frameworks by elucidating the application and contribution of existing literature to the theory, focusing on theoretical review and critique.

6. Implications

This study offers important theoretical, methodological, and practical implications. Theoretically, the current study systematically synthesized the fragmented antecedent factors of employee creativity and identified five core research themes: leadership and management, organizational environment and culture, individual psychology and motivation, interpersonal and social interaction, and human resources, training, and incentives. By articulating the internal logic among these themes, it constructs a preliminary multi-level framework (individual, team, organizational), thereby enhancing conceptual clarity and structural coherence in the field. Another key contribution is its movement beyond isolated variables to reveal underexplored theoretical gaps. For instance, it highlights the lack of research on the dynamic interplay of leadership styles (such as transformational and servant leadership), the cultural–creative nexus under dual organizational logics and digital transformation, and the integration of psychological resources (like resilience, self-efficacy) across life and career stages. These gaps define specific targets for theoretical advancement. Moreover, through dynamic theme analysis, the study refines core constructs (like knowledge sharing), foregrounds neglected negative interactions (such as knowledge hiding and informal group exclusion), and introduces emerging perspectives on social network structures as creativity mechanisms. The five themes and identified gaps thus form a coherent research agenda, not merely a list, clarifying not only essential dynamic processes (such as leadership transformation and cultural evolution) but also contextual contingencies (like team structure and cultural background) and synergistic mechanisms (for example, interactions among leadership, psychology, and incentives). Therefore, this study not only consolidates existing knowledge but also advances a more integrative and predictive theoretical framework for employee creativity by systematically addressing key gaps and mapping future research directions.

The main methodological implication of this study is to systematically integrate the procedural rigor of PRISMA with the in-depth conceptual deconstruction afforded by content analysis. The PRISMA guideline ensures the objectivity and traceability of literature acquisition and screening, while the content analysis method enables us to go beyond surface metrics, theme extraction, and theoretical gap identification for the included literature. This study used R Studio to analyze research trends, which improved the efficiency and accuracy of manual literature sorting. The integration allows the study to map overarching patterns and emerging trends, significantly enhance the value of systematic literature reviews in theoretical construction and direction guidance, and provide a powerful mixed-method framework for the integration in this field.

The impact of our research is important and relevant to various stakeholders, including researchers, industry leaders, and policymakers. Researchers can use these findings to deepen their understanding of the factors influencing employee creativity, focus on salient themes to reveal unexplored research, and pave the way for future investigations. This study has significant implications for industry leaders, providing valuable insights that can inform guidance aimed at improving their employee creativity. Colleges and universities can allocate resources more effectively by focusing on the determinants that significantly impact employee creativity. Based on the identified determinants, these findings can guide higher educational institutions to develop more informed and targeted strategies for enhancing employee creativity. In addition to this, higher educational institutions can use these findings to promote long-term value creation and, ultimately, the long-

term success of higher educational institutions by integrating strategies to enhance employee creativity with higher educational institutions' development strategies. In addition, policymakers can also benefit from our study as it provides them with insights into the comprehensive research landscape of the determinants of enhancing employee creativity, which can inform the formulation of effective enhancement of employee creativity.

7. A final thought

This study identified five thematic areas and distilled the following key research directions. First, within the leadership and management theme, future research could explore the dynamic interactions and temporal effects of coexisting leadership styles (such as transformational, servant, and empowering), particularly how style shifts influence creativity during organizational change. Second, in the theme of organizational environment and culture, research should examine how the cultural mechanisms of dualistic organizations influence creativity in target organizations and assess the adaptive thresholds of virtual teams in the context of digital transformation. Third, in terms of individual psychology and motivation, key directions include exploring the synergistic effects of psychological capital, creative self-identity, and resilience on creativity, as well as exploring the changes in psychological characteristics at different career stages. Fourth, in the field of interpersonal and social interaction, future research needs to further research under what conditions knowledge hiding hinders or enhances creativity, and how social network structures (such as structural holes, connection strength) promote the spread of creativity. Fifth, future research on human resource training and incentives may focus on determining the optimal economic/non-economic return ratio in different work contexts and understanding the diminishing and reactivation effects on creativity of long-term training interventions. Emerging issues may include, but are not limited to, how to achieve dynamic coordination between leadership and culture under competitive demands for creativity and efficiency. Which network structures can mitigate knowledge hiding effect on creativity in remote work? Do different generations require distinct psychological incentive models of creativity enhancement? These directions provide a targeted framework to deepen theoretical understanding and guide practical innovations in employee creativity.

8. Conclusion

The bibliometric analysis and systematic literature review investigated the factors affecting the enhancement of employee creativity, intending to identify key contributors, patterns emerging from past research, and potential future directions for knowledge growth (Table 8). The study evaluated a total of 23 scholarly publications between 2018 and 2024 (7 years). Notably, this study highlights China as the most productive country in the field, Pakistan as the most influential country, and Malik as the lead author. *Personality and Individual Differences* is the most widely cited journal in terms of factors influencing employee creativity. The most cited article globally is "Perceptions of Organizational Politics, Knowledge Hiding, and Employee Creativity: The Moderating Role of Professional Commitment" by Malik et al. ^[21]. A systematic literature review has identified five key themes as fundamental factors influencing employee creativity. In addition, the salient themes highlighted in the thematic map provide valuable insights for shaping future research directions. These findings enhance the theoretical underpinnings of employee creativity, have substantial implications for real-world applications, provide academics with guidance for valuable discovery-unexplored research, guide industry sectors in focusing on practices to enhance employee creativity, and provide policymakers with a basis for developing effective policies to enhance employee creativity.

Conflict of interest

The authors declare no conflict of interest

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