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ARAŞTIRMA MAKALESİ | RESEARCH ARTICLE

A View of Agile Management: A Bibliometric Analysis

Çevik Yönetim Perspektifi: Bibliyometrik Bir Analiz

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Özet

Bu çalışma, çevik yönetimin modern bir yönetim yaklaşımı olarak örgütlerdeki rolünü ve literatürdeki konumunu incelemektedir. Çevik yönetim, kökenlerini yazılım geliştirme alanında 2001 yılında yayımlanan Agile Manifesto'dan almakla birlikte, günümüzde farklı sektörlere yayılmış ve stratejik bir yetkinlik olarak görülmeye başlanmıştır. Geleneksel yönetim yaklaşımlarının stabilite, hiyerarşik yapı ve katı planlama gibi özelliklerine karşılık, çevik yönetim; esneklik, hızlı adaptasyon ve sürekli iyileştirme ilkelerini öne çıkarmaktadır. Bu bağlamda çalışma, çevik yönetimin kavramsal temelleri, klasik yaklaşımlardan farkları, temel ilkeleri, örgütsel dönüşümle ilişkisi ve güncel literatürdeki eğilimleri tartışmaktadır. Ayrıca, bibliyometrik analizlerin işaret ettiği araştırma yönelimleri ele alınarak çevikliğin disiplinler arası etkisi vurgulanmaktadır. Çalışma, çevik yönetimi sadece bir proje yönetim aracı olarak değerlendirmek yerine aynı zamanda belirsizlik ve değişim ortamlarında örgütlere dayanıklılık ve sürdürülebilir rekabet avantajı sağlayan bir yönetim paradigması olarak ele almaktadır.

Anahtar Kelimeler: *Örgütsel Çeviklik, Çevik Yönetim, Yönetim, Bibliyometrik*

Abstract

This study delves into the significance of agile management as a modern managerial paradigm and its standing in the existing body of literature. Rooted in the Agile Manifesto of 2001 within the software development sector, agile management has since expanded its origins, manifesting as a strategic capability applicable across diverse industries. Unlike traditional management approaches, characterized by stability, hierarchical structures, and rigid planning, agile management prioritizes adaptability, rapid responsiveness, and ongoing improvement. This paper examines the conceptual foundations of agile management and delineates its differences from classical management frameworks. It explores core principles that define agile methodologies, their role in facilitating organizational transformation, and prevailing trends observed in the literature. Furthermore, bibliometric analyses are presented to illuminate emerging research directions and underline the interdisciplinary impact of agility. In conclusion, agile management should be regarded as a project-centric methodology and a comprehensive managerial paradigm enabling organizations to cultivate resilience and maintain a sustainable competitive edge in uncertain environments and rapid change.

Keywords: *Agile management, Organizational agility, Management, Bibliometric.*

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1. INTRODUCTION

Organizations today must navigate a terrain that significantly alters traditional operational paradigms, particularly regarding volatility, uncertainty, complexity, and ambiguity (VUCA). The combination of global competition, digital transformation, and rapidly changing consumer expectations has made it increasingly challenging for traditional management models to provide sustainable solutions. The rigid hierarchical and bureaucratic structures that once provided stability have now become obstacles to adaptability and responsiveness. It is time to rethink our approach and embrace flexibility for a more dynamic future. As a result, there is a growing demand for new paradigms that enable organizations to thrive in rapidly changing environments. One of the most notable responses to these challenges is agile management.

Agile management emerged in the early 2000s in software development but has since spread to various industries. It emphasizes flexibility, collaboration, customer focus, and iterative learning. By viewing uncertainty as an opportunity, agile management enables organizations to innovate, adapt, and maintain a competitive advantage. Today, agility serves as a holistic framework for organizational transformation. Agile management is increasingly vital in today's fast-paced environment, driven by digital transformation. Emerging technologies like AI, big data, and cloud platforms have intensified the urgency for organizations to innovate swiftly and adapt to complex changes. Agile practices facilitate this by aligning technology with customer needs, minimizing risks, and speeding up time-to-market. Additionally, agile management fosters a shift in leadership and organizational culture from command-and-control to empowerment and shared responsibility.

The practice of agility has experienced rapid expansion, accompanied by a significant increase in the corresponding academic literature. Over the last decade, agile management has emerged as a central paradigm within management and organizational studies. The rapid evolution has catalyzed diverse research across various domains, including software engineering, healthcare, manufacturing, and public administration. However, the literature remains fragmented, with studies scattered across multiple disciplines and contexts. Consequently, there is a pressing need to systematically map, analyze, and synthesize these contributions to elucidate prevailing themes, identify research gaps, and uncover emerging trajectories.

This study intends to explore the conceptualization and evaluation of agile management within the framework of management studies in the social sciences. It aims to analyze the existing body of work to identify the significance and implications of agile methodologies in business contexts. The literature emphasizes the impact of agile practices on organizational performance and highlights their potential as effective instruments for navigating the complexities inherent in modern business environments. Bibliometric analysis offers a systematic approach to understanding the evolution of agile management. Analyzing publication patterns, citation networks, and thematic clusters, bibliometric methods provide valuable insights into the field's development, current state, and potential future directions. These approaches allow scholars to go beyond individual case studies and analyze broader trends in the global academic discourse. Therefore, bibliometric analysis is a methodological tool to position agile management within the larger context of management research.

The aim of this study is twofold. First, it explores agile management as a modern approach by analyzing its conceptual foundations, principles, and impact on organizational transformation. Second, it employs bibliometric analysis to evaluate the development of scholarly interest in agile management, identify dominant themes in the discourse, and suggest possible directions for future research. This paper enhances our understanding of agile management by combining theoretical discussion with systematic bibliometric evidence. It highlights its role as a transformative paradigm for organizations operating in uncertain and dynamic environments.

2. THEORETICAL FRAMEWORK: A VIEW OF AGILE MANAGEMENT

2.1. Conceptualization and Historical Roots of Agile Management

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In today's volatile and uncertain market conditions, organizations implementing agile management principles harness adaptability and responsiveness, gaining a significant competitive advantage. Agile management presents a robust approach that enhances flexibility within the business ecosystem. This methodology's extensive applicability and various benefits further highlight its critical role in modern organizational strategies. In contrast to traditional organizational structures, which often embody an inward focus marked by a fixed mindset and a tendency to protect existing advantages while prioritizing shareholder returns, agile frameworks encourage an outward orientation. These agile frameworks promote a growth mindset, aiming to generate new competitive advantages and create value for customers and employees. By integrating agile principles, organizations can innovate continuously and respond swiftly to market dynamics, ensuring sustainable success. Agile management is increasingly recognized as a transformative paradigm in contemporary organizational studies. Initially focused on software development, it has expanded into broader managerial contexts, promoting adaptability, collaboration, and ongoing value creation. Agile management is seen as a mindset and strategic orientation that promotes, rather than just a set of practices or tools (Conforto et al., 2014; Denning, 2018). Emerging as a response to classical management, agile management emphasizes feedback and innovation, aiming to meet customer needs (Rigby et al., 2018). Viewed through a historical lens, agility has expanded beyond software engineering, being embraced across various industries and evolving into a comprehensive managerial philosophy.

Its key feature is flexibility in uncertain environments, enabling rapid, adaptable decision-making. Interest in agile management has surged since 2010, linking it to innovation and resilience within managerial processes (Augustine et al., 2021). This approach redefines how firms coordinate, strategize, and create value, serving as a critique of classical management and responding to globalization and digitalization challenges (Peters, 2018; Rigby et al., 2020).

Agile management originated in the software development industry with the release of the Agile Manifesto in 2001. The manifesto addressed the shortcomings of the traditional waterfall model, which was rigid and struggled to keep up with changing customer needs (Dingsøyr et al., 2012). The Manifesto highlighted key values: individuals and interactions, working software, customer collaboration, and responsiveness to change. Over time, the scope of agility has extended beyond IT into various sectors, including healthcare, manufacturing, and education, evolving into a broader managerial philosophy centered on innovation, adaptability, and continuous learning (Conforto et al., 2016; Denning, 2018). Initially a response to vertical hierarchies and heavy documentation, the Agile Manifesto has fostered rapid decision-making and execution across various industries since 2010 (Schuster & Sutherland, 2012; Dikert et al., 2016; McKinsey & Company, 2018).

In summary, agile management has evolved into a robust managerial philosophy and framework to optimize flexibility and adaptability in rapidly changing business landscapes. The fundamental principles of agile management include a strong focus on customer satisfaction, a proactive approach to change, a commitment to continuous improvement, and the promotion of collaborative teamwork (Beck et. al., 2001). Organizations that integrate agile management principles tend to be future-oriented, responsive to external shifts and opportunities, and driven by outcomes that deliver tangible solutions for their customers. This agility enhances operational efficiency and fosters innovation and resilience in uncertainty.

2.1.1. Distinctions from Classical Management Approaches

Classical management approaches, rooted in Taylorism and Weberian bureaucracy, prioritized efficiency, predictability, and hierarchical structures. While effective in stable environments, these principles often struggle in today's volatile and complex business contexts (Birkinshaw, 2018). Agile management fundamentally differs from traditional approaches, emphasizing flat organizational structures, iterative planning, and decentralized decision-making. Rather than relying on rigid long-term strategies, agile organizations favor short planning cycles, feedback loops, and the flexibility to respond

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to emerging challenges (Rigby, Sutherland, & Noble, 2018). Moreover, leadership shifts from a command-and-control model to one focused on facilitation and empowerment. This allows organizations to remain resilient and continuously adapt to changing market conditions.

Agile management represents a significant shift from traditional management theories that shaped the twentieth century. Classical approaches focused on strict managerial control, high efficiency, bureaucratic stability, and rigorous oversight. In earlier periods, when historical changes occurred more slowly and information was limited, organizations could succeed using these methods. However, in today's rapidly changing environment, the rigid managerial structures deeply rooted in our economic systems are gradually being replaced (Highsmith, 2013). The current era calls for embracing the advantages of agile management, highlighting the need for quick adaptation to change, fostering collaboration, and encouraging continuous learning and development (Denning, 2019).

2.1.2. Bureaucratic vs. Flat Structures

Classical management systems, such as Max Weber's, emphasize hierarchical authority and centralized management, which can struggle with change (Koppman, 2016). In contrast, agile management fosters team autonomy and encourages horizontal organization. This shift leads to flatter, network-based organizational structures, enhancing transparency and speeding up decision-making processes. Research indicates that these agile structures are particularly effective in fast-changing industries (e.g., health, IT, education, and automotive), where speed and collaboration are crucial (Birkinshaw & Gibson, 2019).

2.1.3. Rapid Adaptation and Managing Uncertainty

One of the most significant contributions of agile management is its capacity to function effectively in VUCA (Volatile, Uncertain, Complex, Ambiguous) environments. Unlike classical management models, which perceive unpredictability as a risk to be minimized, agile management incorporates uncertainty as a natural condition. It views it as an opportunity for experimentation and growth (Denning, 2018).

Empirical studies indicate that agile practices succeed in perceiving emerging opportunities and threats in the environment, responding rapidly to change, and converting a wide range of challenges into innovation. They transform uncertainty from a daunting threat into an advantage for strategic action. They also enable firms to secure sustainable competitive advantage during crisis periods characterized by disruption (Mergel, 2016; Teece, Peteraf, & Leih, 2016).

One of the most salient features distinguishing agile management from earlier management theories is its ability to succeed under conditions of uncertainty. Empirical research shows that firms implementing agile management exhibit greater resilience and faster recovery during crises, and that they make better use of market feedback to develop new strategies (Gurbaxani & Dunkle, 2019). The philosophy of agile management views uncertainty not as a threat, but as an opportunity for progress and renewal. This perspective is particularly advantageous in digitalization processes where ambiguity and volatility prevail (Teece, Peteraf, & Leih, 2016). By turning adaptability and experimentation into organizational routines, agile management leverages uncertainty as a source of competitive advantage (Joiner, 2019).

2.1.4. Flexibility in Planning and Decision-Making

Planning is described as an indispensable management function for businesses. As part of a management strategy, planning processes also vary according to the form of management. Traditional planning methods rely on long-term forecasts, detailed upfront specifications, and processes that do not accommodate change. In traditional management processes, making forward-looking projections becomes difficult when volatility is present (Serrador & Pinto, 2015). In agile management, by contrast, planning is approached as an adaptable process characterized by short feedback cycles and adjustments in decision-making according to the situation. In the agile process, decision-making is decentralized, granting authority to work teams and managers while organizations aim to reduce delays and increase

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responsiveness. This flexibility balances strategic organization and operational responsiveness (Conforto et al., 2014).

2.1.5. Transformation of Leadership Logic

The key difference between traditional and agile management lies in the approach to leadership. In traditional models, leadership is characterized by control mechanisms prioritizing supervision, compliance, and efficiency (Uhl-Bien & Arena, 2018). In contrast, agile management promotes leadership that facilitates work, empowers team members, and encourages experimentation. Agile leaders function as coaches and mentors, helping to remove obstacles and enabling teams to take ownership of outcomes (Joiner, 2019).

2.2. Core Values and Principles of Agile Management

The philosophy of agile management is based on values and principles that distinguish it from traditional approaches. Articulated initially by software developers in the "Agile Manifesto", these principles have since been applied across various organizational contexts. Contemporary studies do not merely view these values as operational guidelines; instead, they see them as an integrated whole encompassing culture, strategy, and the processes used to implement those strategies (Rigby et al., 2020). Additionally, this body of work emphasizes the importance of flexibility within systems, collaboration among cross-functional teams, and the continuous creation of value. Together, these elements form the foundation of agile organizations.

2.2.1. Flexibility, Customer Orientation, and Continuous Improvement

One of the core principles of agile management is flexibility. Accordingly, agile management must focus on and meet customer expectations and needs. In traditional—i.e., classical—management theories, the customer is a passive recipient. However, what is required is to be flexible throughout the firm's life cycle and integrate customer input. In organizations that renew and transform themselves, continuous improvement encourages organizational learning and increases the capacity to implement strategy over time (Serrador & Pinto, 2015). Such flexibility is a technical advantage and a powerful strategy that delivers sustainable competitive advantage and value creation.

2.2.2. Cross-Functional Teams and Iterative Processes

Agile management emphasizes the importance of strong communication among experts from different specializations. It argues that a holistic decision-making mechanism renders decision processes more effective. In this way, a collective work environment and innovative ideas can develop (Paasivaara et al, 2018). Through sprints and iterative reviews, work teams can establish priorities, enabling them to address problems or requests without interruption. Iterations create a cadence within long planning cycles (Hoda, Noble, & Marshall, 2013).

2.2.3. Speed, Adaptation, and Value Creation

Speed is one of the foremost priorities today for both firms and consumers. In particular, technological change and transformation are highly likely to render markets volatile. Agile organizations retain the ability to pivot when necessary and, through short solution-development cycles, can rapidly create value (Conboy & Carroll, 2019). According to research, organizations that adopt agile practices shorten time-to-market, increase customer satisfaction, and strengthen sustainable competitive advantage (Denning, 2019). By strongly linking speed with adaptability and value creation, speed helps ensure that organizational efforts remain effective in uncertain markets (Rigby et al., 2020).

2.3. Organizational Transformation and Agile Management

There is a strong link between organizational transformation and agile management. Agile management catalyzes profound organizational transformation. Agility is not only about creating a project or adapting to changing conditions; it also contributes to the restructuring of cultures and

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processes to meet the needs of the global economy (Denning, 2018). This transformation also leads to changes in strategic leadership and value creation (Rigby et al., 2018).

2.3.1. Link with Digital Transformation and Innovation

Driven by digital transformation and innovation, demand for agile management is rising. As industries adopt disruptive technologies such as artificial intelligence, big data, and cloud computing into their business practices, the need for approaches that support rapid innovation and flexible adaptation is growing (Gurbaxani & Dunkle, 2019). A literature review shows that firms integrating agile practices into their digital strategies shorten time-to-market and attain superior innovation capacity (Teece, Peteraf & Leih, 2016). Agile practices—defined by iterative experimentation and feedback cycles—offer a natural fit for digital innovation initiatives. Furthermore, it is argued that organisations' quick adoption of emerging technologies enables them to meet customer expectations and minimise the risk of large-scale failures.

2.3.2. Effects on Organizational Culture and Structure

Organizational transformation under agility requires significant cultural realignment. Traditional cultures grounded in control and predictability are replaced with values of collaboration, openness, and trust. Agile cultures emphasize psychological safety, continuous learning, and shared accountability (Denning, 2019). Structurally, transformation involves flattening hierarchies, empowering autonomous teams, and decentralizing decision-making (Paasivaara et al., 2018). Such structural changes increase transparency, facilitate faster environmental response, and foster stronger cross-functional collaboration. In tandem with these changes, it is also necessary to explain the competitive implications of the VRIO scale: V (Valuable)—speed, customer alignment, and the resulting quality directly create value; R (Rare)—a guided learning culture and well-functioning cross-functional teams generate advantage; I (Inimitable)—when team cadence, team-specific behavioral patterns, and data practices become organizational routines, they are difficult for rivals to imitate; and O (Organized)—clarifying roles and authorities and activating a facilitative leadership role enable the firm to capture this value, thereby increasing firm value.

2.4. Agile Management in Contemporary Literature

Agile management has transformed from a software engineering model to a methodology in managerial and organisational studies. Particularly after 2010, it has frequently been addressed in innovation, culture, strategy, and governance (Conboy & Carroll, 2019). In cultures prioritising innovation, agility offers both time and efficiency benefits. Decision-making processes accelerate, and internal communication becomes more effective. The transformation of agility from software engineering into a management strategy has become a driving force in competitive environments. Examining both national and international literature reveals the limitations of agile management. Specifically, its implementation can be challenging in terms of scaling, achieving cultural alignment, or managing budget costs (Denning, 2018).

2.4.1. Trends Highlighted by Bibliometric Analyses

In recent years, particularly within the framework of bibliometric analyses, it has been observed that research has increased steadily over the last decade. In clusters of academic studies, topics integrated into various fields—such as leadership agility, agile management systems, and digital transformation—have come to the forefront (Conforto et al., 2016). Earlier bibliometric research primarily centered on software engineering; however, recent studies are increasingly being conducted across diverse fields such as healthcare, the public sector, and manufacturing (Stettina & Hörz, 2015). These findings also reveal the fragmentation among sectors described as multidisciplinary, thereby pointing to the need for conceptual integration (Foschiani, Röber & Oesterle, 2021).

2.4.2. Agile Management's Growing Role Across Domains

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There are several sectors to which agile management has spread beyond software engineering. The first of these is the healthcare field, which has developed significantly. During the global COVID-19 pandemic in 2019, the capacity for rapid response to crises increased notably. A similar process has also taken place in the public sector. In the public domain, the growing importance of the principle of transparency, accountability, and the ability to respond quickly to problems or demands has all been observed to improve through agile management (Mergel, 2016). In manufacturing and education, agile management has contributed to fostering innovation, reducing complexity, and enhancing the capacity for alignment between organizations and stakeholders (Paasivaara et al., 2018). However, while cross-sectoral applications enhance adaptability, attention has also been drawn to the risks of superficial implementation arising from organizational inertia.

2.4.3. Scholarly Debates and Future Directions

Although agile management has gained popularity recently, it remains a contested issue within academic circles. Most criticisms emphasize that organizations have not sufficiently internalized the agile management approach, adopting it only superficially or even symbolically. This is because, unless agile management is embraced across the entire organization, it cannot deliver the intended benefits (Rigby, Elk & Berez, 2020). When large-scale transformation is sought within organizations, problems related to leadership and leadership alignment, and the inadequacy of existing governance mechanisms, constitute barriers to sustaining agility (Dikert, Paasivaara & Lassenius, 2016). Looking toward the future, agile management increasingly focuses on planning by associating itself with themes such as sustainability, organizational resilience, and ethical governance (Joiner, 2019). While bibliometric studies in the literature show that agility will continue to spread across disciplines, scholars highlight the necessity of ensuring sectoral compatibility. In other words, management approaches that disregard sector-specific contexts will remain confined to theoretical discussions in the literature and will not be able to generate practical applications (Conboy & Carroll, 2019).

3. BIBLIOMETRIC ANALYSIS

An in-depth analysis of the distribution chart (refer to Fig. 1), categorized by Web of Science, reveals a prominent concentration of articles within the "Management" field. This indicates that project management and organizational processes are predominantly addressed in these studies, highlighting the critical role these areas play in contemporary research. The "Business" category closely follows the one, which illustrates the substantial overlap between business-oriented research and management disciplines, underscoring the interconnectedness of these fields.

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Figure 1: Distribution of Studies by WOS Categories

Source:https://a8f59890210bb2a36cc265c34c80a801c14e01d5.vetisonline.com/wos/woscc/analyze-results/a920abc5-28dc-498a-94b3-9b33ea896521-0175e7879b

In addition, the distribution chart (refer to Fig.1) reflects a robust representation of computer science-related categories, particularly in specialized areas such as "Computer Science Software Engineering," "Computer Science Information Systems," and "Computer Science Theory Methods." These subfields indicate a significant emphasis on technical aspects, contributing to advancing knowledge in these domains. Moreover, other disciplines, including information science, engineering, and operations research, are represented but to a lesser extent, demonstrating the interdisciplinary nature of this research landscape. Notably, there is a strong focus on technology management, software engineering, and information systems, revealing the intricate interplay between management practices and technological innovation.

The field is predominantly approached from a management and business perspective while seamlessly integrating vital components from technology and computer science. This results in a rich tapestry of interdisciplinary studies that address contemporary challenges and advancements.

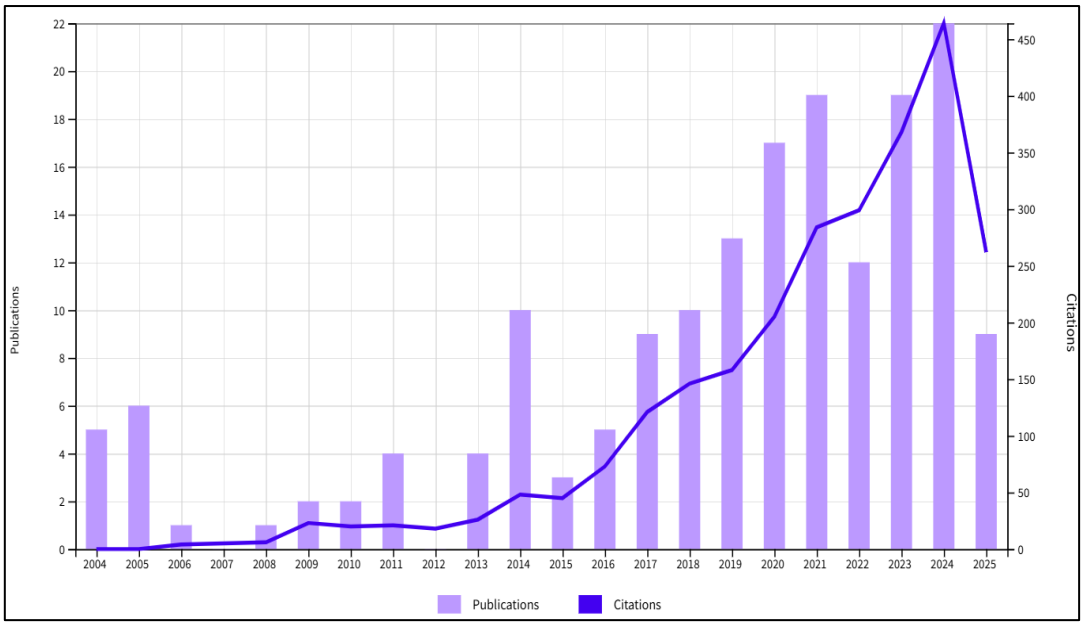

Figure 2: Number of Publications and Citations

Source:https://a8f59890210bb2a36cc265c34c80a801c14e01d5.vetisonline.com/wos/woscc/citation-report/a920abc5-28dc-498a-94b3-9b33ea896521-0175e7879b (E.T. 26.08.2025)

This graph (refer to Fig.2) shows trends in the number of publications (bars) and citations (lines) over the years. While the number of publications remained relatively low and fluctuating between 2004 and 2010, a significant increase was observed from 2011 onwards, particularly in 2014 and beyond, reaching its peak in 2024 (22 publications and 464 citations). The number of citations has also increased over time, peaking in 2024. This demonstrates a significant academic impact and visibility of recent studies, highlighting a growing interest and emphasis within the field. Additionally, one could assert that the surge in the volume of publications corresponds with an uptick in citation rates; as the number of published works expands, so does the frequency with which others reference these studies. This dynamic reflects the lively discourse within the discipline and underscores the relevance and importance of ongoing research contributions. In contrast, the earliest publication recorded in the database is titled

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"Agile Project Management," which was authored by Maurer, F., Cohn, M., Griffiths, M., Highsmith, J., Schwaber, K., Kruchten, P. It was presented at the 4th Conference on Extreme Programming and Agile Methods (XP Agile Universe 2004) in 2004.

Table 1. Most Cited Academic Studies

Bibliographic Records	***Citations***
Conforto, E. C., Salum, F., Amaral, D. C., da Silva, S. L., & de Almeida, L. F. M. (2014). Can agile project management be adopted by industries other than software development? *Project Management Journal, 45*(3), 21–34.	192
Hoda, R., & Murugesan, L. K. (2016). Multi-level agile project management challenges: A self-organizing team perspective. *Journal of Systems and Software, 117*, 245–257.	139
Fernandez, D. J., & Fernandez, J. D. (2008). Agile project management: Agilism versus traditional approaches. *Journal of Computer Information Systems, 49*(2), 10–17.	135
Cooper, R. G., & Sommer, A. F. (2018). Agile-Stage-Gate for manufacturers: Changing the way new products are developed. *Research-Technology Management, 61*(2), 17–26.	115
Augustine, S., Payne, B., Sencindiver, F., & Woodcock, S. (2005). Agile project management: Steering from the edges. *Communications of the ACM, 48*(12), 85–89.	109

Source:https://a8f59890210bb2a36cc265c34c80a801c14e01d5.vetisonline.com/wos/woscc/citation-report/a920abc5-28dc-498a-94b3-9b33ea896521-0175e7879b (E.T. 26.08.2025).

The author keyword Cloud (refer to Fig. 3) visually highlights the field's key concepts, showing that the terms "project management-51", "agile project management-39", "agile-39" are the most frequently emphasized and focused topics in research. Furthermore, terms such as "agile," "scrum," and "risk management" stand out as important subheadings within the context of agile management, demonstrating that the field's focus is on core components such as software development processes, agile methodologies, and risk management.

Figure 3: Author Keywords Word Cloud

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Figure 4: Keywords Plus Word Cloud

The largest and most prominent word in the Keywords Plus word Cloud (refer to Fig. 4), "software development," demonstrates its centrality in this field. Subsequent concepts such as "model," "performance," "framework," "challenges," and "work" reveal that software development processes are focused on factors such as efficiency, structure, challenges, and workload. Furthermore, words like "success," "teams," "innovation," "leadership," and "governance" indicate that technical, managerial, and organizational factors are prioritized in software projects.

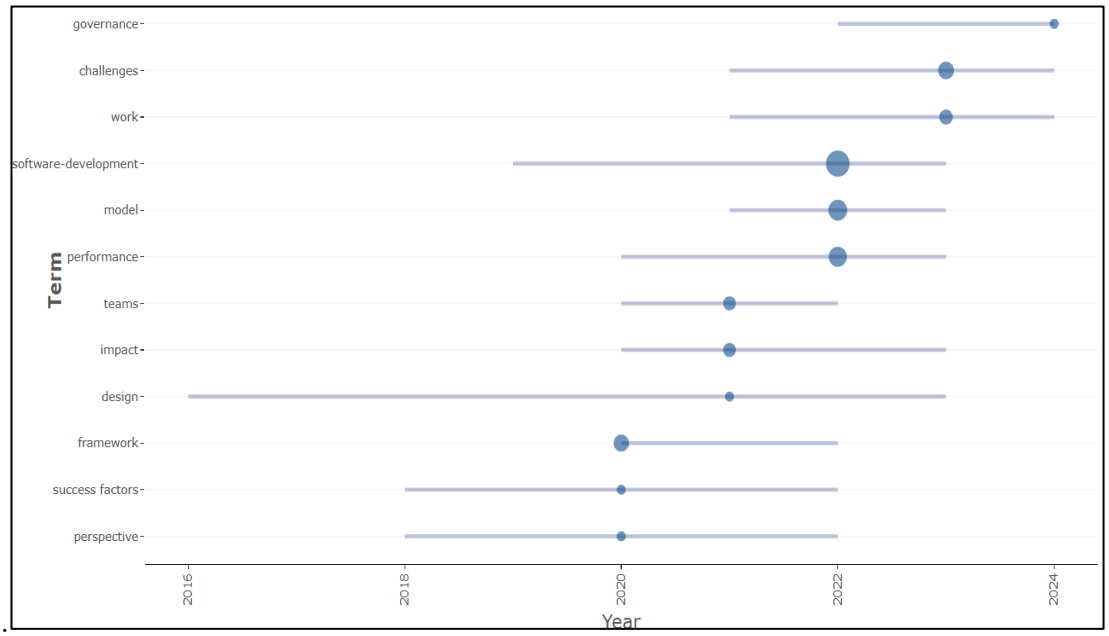

Figure 5: Trend Topics

The trend topics chart (refer to Fig. 5) illustrates the temporal distribution and density of prominent "trend topics" (key concepts) within the academic literature, categorized by year. Beginning in 2016, concepts such as "design," "framework," and "perspective" emerged prominently. Notably, after 2021, topics including "software development," "model," "performance," "challenges," and "governance" gained considerable attention, with "software development," particularly prevalent in 2022, becoming central to the field. This progression reflects an evolution in research interests from initial design concepts to a focus on software development processes and governance-related themes.

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Furthermore, the recent intensification of concepts such as "governance" and "challenges" indicates that contemporary studies increasingly address strategic and organizational dimensions.

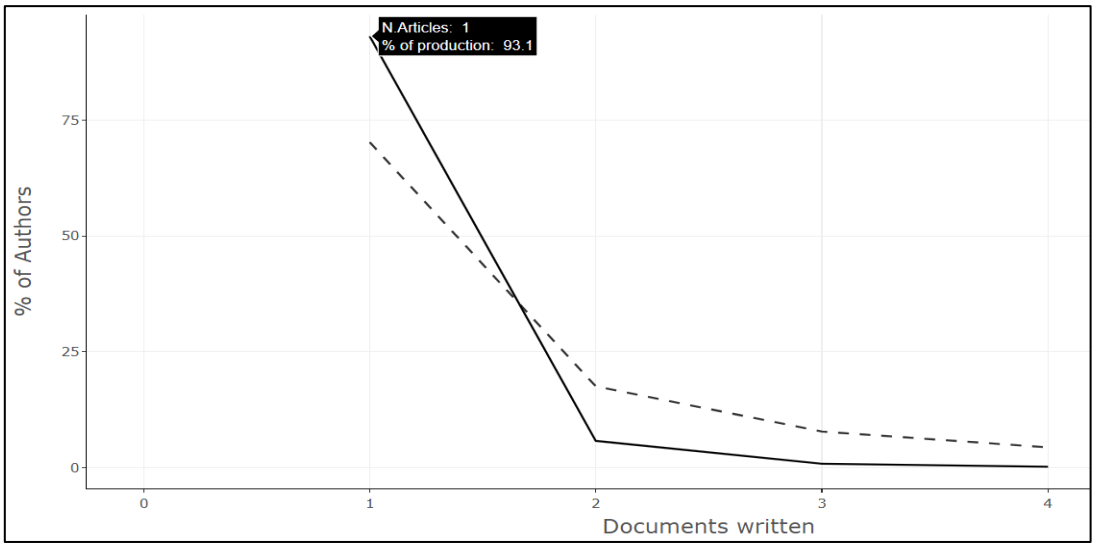

Figure 6: Lotka's Law

Lotka's Law is a fundamental bibliometric principle that explains the distribution of scientific productivity and author contributions within specific research domains. First introduced by Alfred J. Lotka in 1926, describes the relationship between the number of authors and their publication output. It indicates that a minority of researchers generate the majority of academic publications, while the vast majority contribute only a few. This manifests as a highly skewed distribution in academic productivity, underscoring the substantial impact that prolific authors have on the accumulation of scientific literature.

Extensively observed across various fields, Lotka's Law provides valuable insights into the dynamics of research and authorship patterns. It is often used in bibliometric analyses to assess research impact, optimize resource allocation, and strategize publication efforts. The implications of Lotka's Law highlight the necessity of acknowledging both high-output researchers and the more extensive cohort of authors who contribute infrequently, thereby enriching our understanding of scholarly communication (Huber, 2001). Specifically, this law states that the distribution of authorship is inversely proportional to the volume of publications produced, indicating that a majority of authors contribute only a limited number of articles, while a smaller fraction of authors accounts for a disproportionate share of total output (Aytaç et al., 2025). Data reveal that 93.1% of authors publish a single article, with the percentage of authors producing two articles plummeting to 5.8%. Furthermore, the incidence of authors with three publications is a mere 0.9%, and for those with four, it drops even lower to 0.2%. This is a typical example of Lotka's Law confirms that "few authors produce many, while many authors produce little" in scientific productivity (see Fig. 6 for visual representation).

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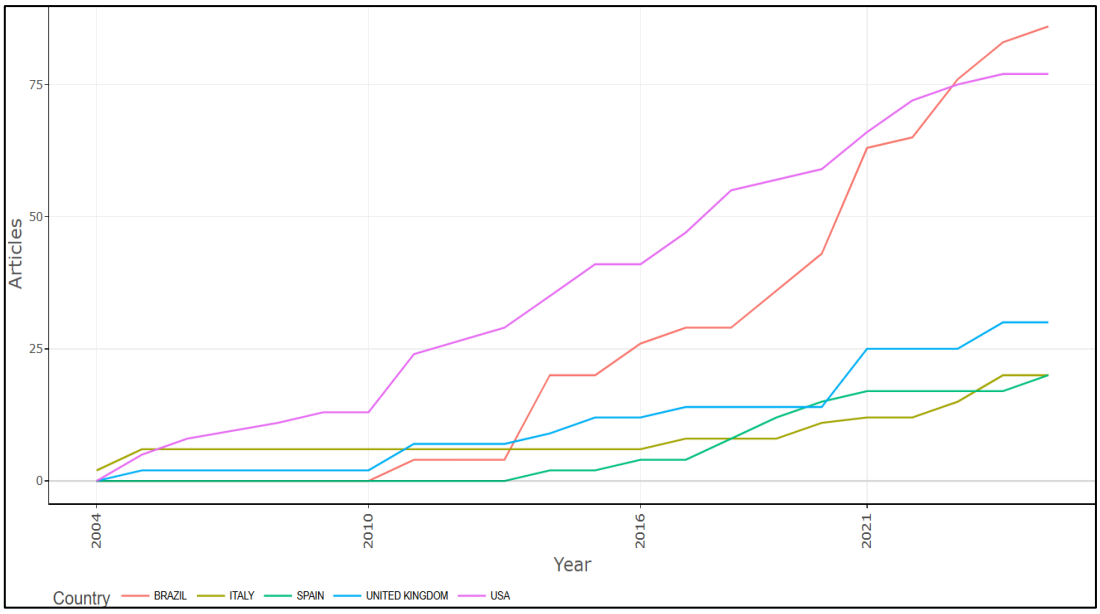

Figure 7: Countries' Publication Performance

The countries' publication performance chart (refer to Fig. 7) compares the academic publication output of five countries over time, from 2004 to 2024. The US (purple line) maintained its long-term leadership and showed a steady increase until 2020. However, Brazil (red line) surpassed the US, particularly after 2015, with a rapid increase, and has become the country with the most publications in recent years. Spain (blue line) showed a moderately steady increase, while the UK (yellow) and Italy (green) exhibited lower but more stable publication trends. The chart demonstrates that Brazil's rise and the US's long-term leadership shape academic production in this field.

Figure 8: Most Cited Countries

The chart of the countries most cited (refer to Fig. 8) shows the scientific impact of countries based on their total citation counts. The United States has the highest impact by far, with 807 citations, followed by Brazil (267), Spain (149), and New Zealand (139). Germany and Italy, with equal citations (122), demonstrate their influence in Europe, while Sweden, Ireland, the United Kingdom, and Portugal have made more limited but significant contributions. This distribution demonstrates that the Americas (especially the United States and Brazil) have a strong leadership role in the relevant academic field. In contrast to European countries have a balanced but secondary role.

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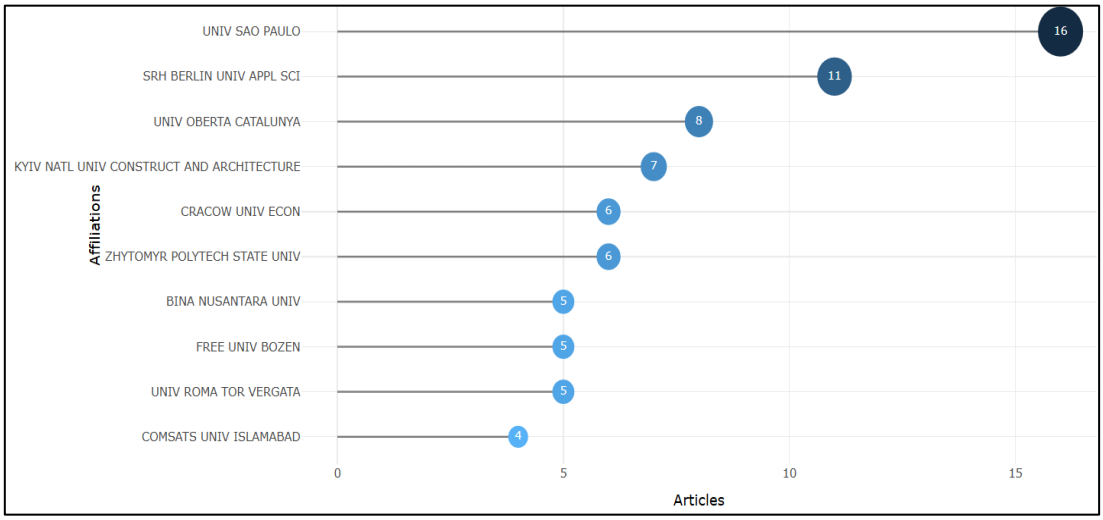

Figure 9: Most Productive Institutions

The chart (refer to Fig. 9) shows the most productive academic institutions by publication count. The University of São Paulo has the most publications, with 16 articles, and is clearly ahead. It is followed by SRH Berlin University of Applied Sciences (11 articles) and Universitat Oberta de Catalunya (8 articles). The top 10 universities include universities from Europe, South America, and Asia, demonstrating the high international academic interest in the subject. The universities' contributions demonstrate the existence of interdisciplinary and global collaborations.

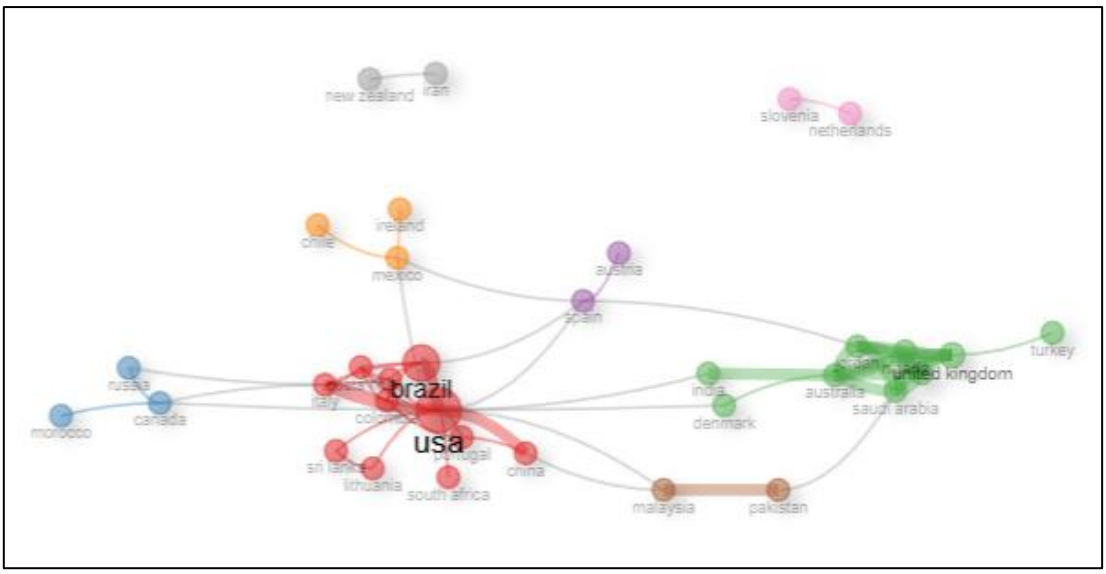

Figure 10: Countries Collaboration Network

The countries' collaboration network chart (refer to Fig. 10) shows the most central actors: The US and Brazil cluster (Red) have the largest nodes, meaning they engage in the most international cooperation. This cluster includes countries such as Italy, Portugal, Colombia, China, and South Africa, and appears to be linked to the US-Brazil axis. This suggests a cooperation structure centered primarily on the Americas. The UK-Focused Cluster (Green) includes countries such as the UK, India, Turkey, Australia, and Saudi Arabia. This cluster represents more European-Asian cooperation and has a high density of internal connections. The Iran-New Zealand Cluster (Gray): These countries, isolated from other clusters, appear to cooperate only with each other. Because they are disconnected, they have more

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limited international interactions. Slovenia-Netherlands (Pink): Another small cooperation cluster, with weak external connections. Pakistan-Malaysia (Brown Cluster): These two countries, which have intense cooperation, work primarily among themselves and are less connected to other clusters. Other Connections (Orange, Blue, Purple): Countries such as Ireland, Mexico, and Chile have smaller, but potentially bridging roles. Countries like Russia, Morocco, and Canada appear more independent or less centrally linked.

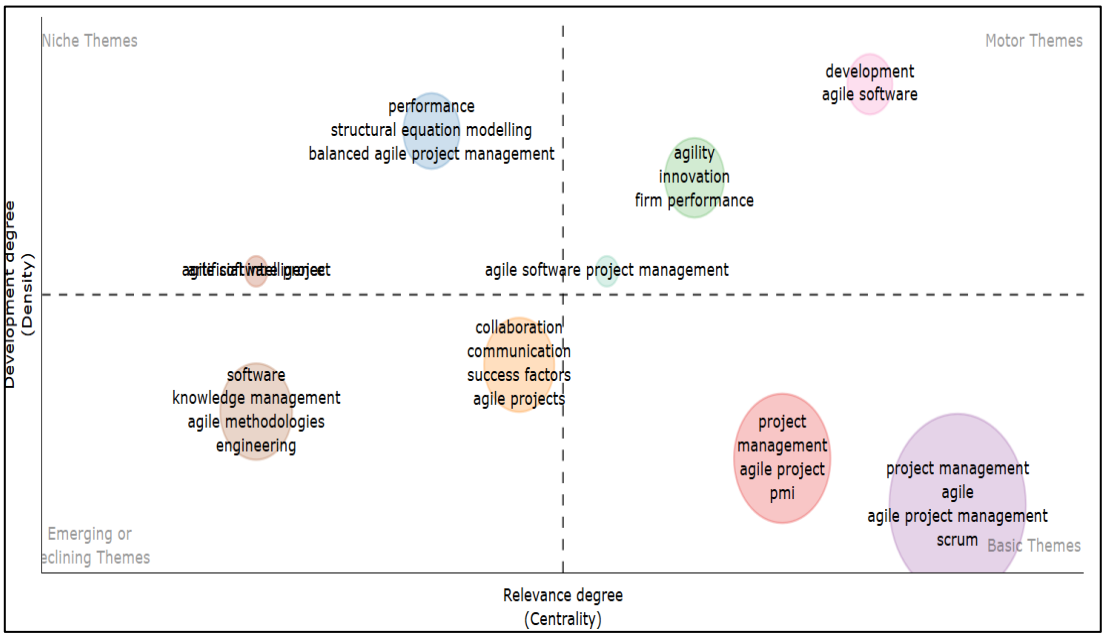

Figure 11: Thematic Map

This thematic map (refer to Fig. 11) was created using thematic mapping, a method used in bibliometric analysis, and depicts clusters of concepts in two dimensions. The map is divided into four central regions:

Upper Right Quadrant (Motor Themes): This region's themes are central and developed topics. In other words, they are the field's driving force (motor). Terms like "development" and "agile software" are here. This indicates that agile methods are a mature and central research topic in software development processes.

Upper Left Quadrant (Niche Themes): The themes in this region are highly developed but not central. The topics "performance," "structural equation modeling," and "balanced agile project management" are included here. These represent specific areas thoroughly studied methodologically, but less frequently covered in the general literature.

Lower Left Quadrant (Emerging or Declining Themes): These themes are non-central and underdeveloped. Terms such as "software," "knowledge management," "agile methodologies," and "engineering" are found here. These represent important themes from the past, but are currently declining, and new areas are still under development.

Lower Right Quadrant (Basic Themes): These central themes are underdeveloped. They can be considered fundamental building blocks for the literature. The topics "project management," "agile," "scrum," and "agile project management" are included here. Although these topics form the basis of many studies, their methodological or content depth is more limited.

4. CONCLUSION

Within the scope of this study, a bibliometric analysis was conducted to reveal the general trends, content focuses, and productivity structures of scientific publications related to the subject of

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"Agile Management." Based on a search conducted in the title field of the Web of Science database as of 26.08.2025, 173 publications were included in the analysis, which was carried out using Bibliometrix, an R-based bibliometric analysis tool. The findings indicate that agile management has become a significant focus of academic attention, particularly since 2014, and that the number of publications and citations has remarkably increased until 2024. Most of the publications fall under "management" and "business," demonstrating that agile management is regarded not only as a technical application but also as an organizational, managerial, and strategic transformation process. In addition, a considerable number of studies are also situated within subfields of computer science, such as "computer science software engineering" and "information systems," reinforcing the interdisciplinary nature of the subject.

Keyword analyses revealed that concepts such as "agile," "agile management," "project management," "scrum," "software development," and "risk management" are the most frequently used and most prominent themes in the literature. In this context, agile management is an important tool for enhancing flexibility in software development processes, managing uncertainties, and strengthening customer orientation.

The trend topic analysis showed that the literature on agile management has undergone thematic transformation over the years. While concepts such as "design" and "framework" were prominent before and up to 2016, more comprehensive and strategic themes such as "governance," "challenges," and "software development" have gained prominence, especially after 2021. This tendency indicates that agile management has begun to be addressed not only at the operational but also at the strategic level.

The productivity analysis conducted within the framework of Lotka's Law revealed that most researchers publishing in agile management (93.1%) have contributed with only a single publication. This finding suggests that the field is still developing and that many researchers have approached the topic in a limited scope.

Brazil and the United States were clear leaders in terms of academic productivity. In particular, Brazil has recently become the most active producer in the field, with a rapid rise. At the same time, the United States occupies the position of the country with the most tremendous impact in terms of citations. The country collaboration network indicates strong collaboration among countries in the Americas, while European and Asian countries tend to operate more within regional clusters.

At the institutional level, the productivity of institutions such as the University of São Paulo, Germany, Spain, and China draws attention. This demonstrates that agile management has global academic relevance and has become a research priority across different geographies.

Finally, thematic map analysis revealed that studies in agile management are clustered around four main themes. Motor themes such as "agile software" and "development" are at the center of the field, while niche themes such as "balanced agile project management" and "structural equation modeling" provide a basis for detailed and advanced studies. Core themes such as "agile management" and "scrum" constitute the foundation of a broad literature, while emerging themes still carry research potential.

This analysis demonstrates that agile management transcends the confines of the software industry; it represents a multidimensional framework that can be applied across diverse fields, including organizational management, leadership, and innovation. The evolution of this discipline is anticipated to accelerate, especially as it intersects with advanced management paradigms such as strategic leadership, digital transformation, and artificial intelligence in management practices. In this context, prioritizing emerging themes, developing interdisciplinary perspectives, and creating structures conducive to international collaboration may serve as pivotal strategies that will enhance the scholarly discourse in the literature.

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