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The confluence of project and innovation management: Scientometric mapping

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Abstract

The convergence of research between innovation management (IM) and project management (PM) has been increasingly noted. To address and reflect this rapid intersection, this study conducts a visualised bibliometric review of 521 articles from 2003 to 2023, sourced from WOS, Scopus, and PubMed. Through publication metric analysis, disciplinary distribution, collaborative networks, and keyword mappings, research synergies and landmarks are identified. Academic advancements, dominant research themes, and frontier fields within the domain are recognised. This pioneering cross-disciplinary exploration offers insights for industry professionals and researchers. Key findings include predominant subjects (management, engineering, and business), significant research landmarks (Stage-Gate system, dynamic capabilities), dominant research themes (innovation initiatives, methodologies, practical applications), and emerging frontier fields (artificial intelligence, agile product management, new product development approaches). A three-stage evolution framework of PIM is proposed, aiding in understanding managerial and organisational adaptations amidst technological and societal changes.

Keywords: *Bibliometric Review; Innovation Management; Project Management; Scientometric Mapping*

1. Introduction

Innovation management (IM) and project management (PM) are intrinsically linked and intertwined, requiring a blend of market insights and technical expertise within structured frameworks(Silva and Gil, 2013). Projects now extend beyond operational enhancements to encompass new product development, entrepreneurship, and strategic initiatives (Davies, 2014).

The adoption of PM is driven by the imperative to identify success factors, especially amidst industry competition and shifting consumer preferences (Honorato and De Melo, 2023). To navigate these challenges, organisations increasingly integrate innovative PM strategies to maintain market competitiveness (Young et al., 2012). However, managing innovative projects entails complexity and risk, necessitating careful management to avoid adverse outcomes (Pinto et al., 2011).

2. Background

2.1. Project Management

The APMBOK Guide (APM, 2019) defines PM as a temporary endeavour centred on creating unique products or services and meeting stakeholder expectations, highlighting it as a performance-driven discipline, effectively organising and managing project activities.

PM's importance is growing in both academic and organisational contexts, particularly in today's challenging economic environment (Oliveira Lucena et al., 2019). It has evolved significantly since the mid-20th century, transitioning from case-specific methodologies to standardised approaches applicable across various complex sectors such as defence, construction, and IT (Davies, 2014). Despite comprehensive standards, studies indicate suboptimal PM practices, driving organisations to explore innovative strategies to enhance project success (Khalife et al., 2021). Traditional PM, often based on predictable models, may struggle to adapt to changing economic and business needs (Morris, 2013). Innovative projects require flexible strategies to adapt to unexpected challenges (Davies, 2014).

Given the uncertainties and complexities inherent in innovative environments, traditional approaches often fall short. This has led to the development of new theories and practices. The 'optimisation school' (Lenfle and Soderlund, 2019), design thinking (Ben Mahmoud-Jouini et al., 2016), and agile PM methods (hereafter agile unless otherwise stated) (Young et al., 2012) are prominent examples of these new approaches, aimed at enhancing adaptability and responsiveness in PM.

2.2. Innovation Management

The definition of innovation in the third edition of the Oslo Manual (Gault, 2013), highlights innovation extending beyond products to include various organisational processes. From a macro perspective, innovation is a transformative process where an advanced product or new process replaces its predecessor. Realising these innovations requires financial commitment and knowledge integration (Guerra Betancourt et al., 2013), making an innovation project both a transformative journey and an innovative venture, potentially leading to significant outcomes and pioneering solutions.

Innovation studies span various academic fields, focusing on uncertainties in developing and commercialising new products, processes, or services (Dodgson and Gann, 2011). It is crucial for businesses to thrive in ever-evolving technological and market environments (Goldhar, 1994). Research often involves contingency theory and organisational design, exploring how organisations adapt to uncertainty, complexity, and change. Projects or matrix structures are effective in overcoming these challenges (Mentzer, 1987). Moreover, organic organisational structures, known for their flexibility, are deemed conducive to innovation (Burns and Stalker, 1994).

In PM, innovation is often underrepresented in mainstream literature due to the differences between innovative and traditional projects (Tomala, 2004). Innovative approaches, dealing with uncertainties and complexities, contrast with traditional approaches focused on implementing existing decisions (Russo et al., 2017). Innovation in projects can be categorised as incremental, radical, or intermediate, correlating with derivative, breakthrough, and platform projects (Wheelwright and Clark, 1992). Various management strategies have been proposed to handle these types of projects. Ansoff, (2007) suggests managing proactive and reactive expectations in innovation projects, while Bibarsov et al., (2017) advocate combining long-term management tools with scientific principles such as selective management and goal orientation. Additionally, Shenhar and Dvir, (2007) proposed an adaptive PM model to enhance innovation and manage VUCA (volatility, uncertainty, complexity and ambiguity) challenges in a highly turbulent environment (Bennett, 2014).

2.3. Confluence of innovation and project management

Theoretical connections between Project and Innovation Management (PIM) have been explored, revealing a growing exchange of ideas in the twenty-first century. Scholars argue that innovation and contemporary PM are inherently linked, with projects often driving innovation in organisations (Silva and Gil, 2013; Davies, 2014). The literature on PM in innovation scenarios has evolved to include diverse theoretical bases, such as the PM paradigm, contingency theory, and organisational perspectives (Morris, 2013; Shenhar and Dvir, 2007).

Initially, the literature on PM and IM followed a separate and fairly self-contained trajectory of theoretical and professional growth (Davies, 2014), but recent trends indicate a convergence of ideas. Scholars are turning to interdisciplinary approaches that concentrate on how organisations deal with and manage innovation projects' uncertainty. Consequently, there is a clear research gap in project innovation, with a notable absence of comprehensive reviews consolidating and critically assessing existing studies in this intersecting domain.

Bibliometric analysis serves as a recognised method for surveying and summarising previous research, identifying academic trends, and predicting future research directions in PM (Silvius, 2017). It has been utilised to investigate various subfields of PM, including knowledge

management, project complexity, and project sustainability (De Rezende et al., 2018) , encompassing areas such as large-scale projects, construction initiatives, and software development (Lechler and Yang, 2017; Utama et al., 2020). However, in the era of big data, an econometric literature review offers a valuable approach to cross-integrate potentially connected disciplines such as PM and IM.

Existing research in the field of IM primarily focuses on models across various industries, including innovation projects in manufacturing, open innovation in pharmaceuticals, and IM models in aerospace (Honorato and De Melo, 2023). Although there are bibliometric reviews of IM studies covering evolution, models, techniques, and professionalisation (Robbins and O'Connor, 2023), there has yet to be a comprehensive literature review addressing the project-based context within IM, indicating a notable gap in current research.

2.4. Research Gaps and Objectives

Existing literature reviews often treat PM and IM as separate subjects, overlooking their potential intersections. While some reviews explore PM and IM individually, systematic examinations of their convergence, especially in the context of innovation and PM, are lacking. This gap persists despite technological shifts and societal changes spanning decades. To address the identified research gap, this study aims to elucidate the convergence within the PIM domain by examining publications from the past two decades. Specifically, the study sets out to accomplish the following objectives: (1) Provide an overview of the 20-year evolution of the PIM domain, emphasising publication statistics and disciplinary distribution. (2) Recognise research landmarks with highly-cited references and authors. (3) Discover the evolution of research advancements, the dominant research themes, and the frontier research fields by a series of keywords analysis.

3. Review Methodology

This study adopts bibliometric analysis, employed as a quantitative research method, assesses published literature within a specific knowledge domain (Abbasi et al., 2011) with scientometric analysis, complemented by visual mapping, offers a robust, replicable, and adaptable technique for tracing emerging trends and pinpointing pivotal contributions in a field (Chen et al., 2012). The data analysis software CiteSpace was selected for this review due to its robust mining and data compatibility processing capabilities (Zhang et al., 2023).

The bibliometric search held in three databases which are Web of Science (WOS), Scopus, and PubMed. To assure the accuracy of the literature scope, this study used a query-based search method (The search query for title, abstract and key words: ("project management" OR "project governance") AND ("innovation management" OR "innovation project*") OR ("innovative project" OR "project innovation")) to conduct a preliminary scoping search in the database

which held in August 31, 2023, as the time point and the accumulation of results yielded 1143 valid literature information sets. Then we applied our inclusion & exclusion criteria. (1) for the quality purposes, only journal articles were included and book reviews, editorials, and conference papers were excluded. (2) The time frame was limited to 2003 to 2023, as the search results indicated that most journal articles were published after 2003. (3) Only journal articles published in English were incorporated. This screening process end up with a total of 573 articles. Figure 1 illustrates the core methodologies employed in this research, detailing the data extraction process.

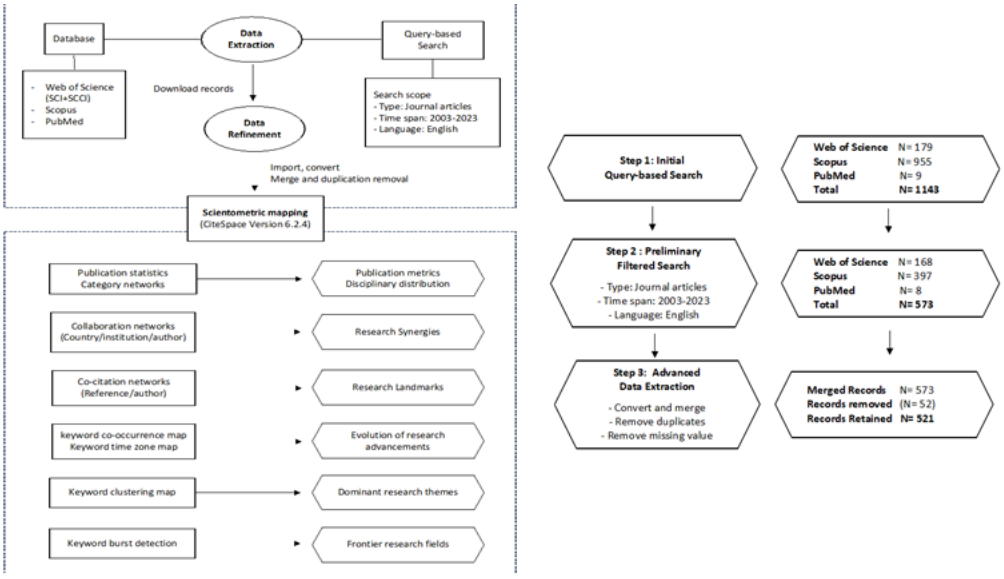


Figure 1. Review methodology (Left) and Process of data extraction (Right) (Authors' Own Source)

3.1. Procedure in CiteSpace

A total of 573 records were obtained and imported into CiteSpace for file format conversion, data merging, elimination of duplicates, and removal of records with missing values. After further data cleansing, 521 bibliographic records were retained for scientometric analysis. This study utilised co-occurrence networks in research categories and in keyword alongside with three visualisation views, namely Cluster View, which represent the distribution of research fields from diverse viewpoints, and Time-Line View and Time-Zone View, which illustrate the temporal evolution and interrelationships of research areas. The methodology ensured validity and reliability of the measurements, consistent with the approach.

4. Results and Findings

4.1. Time Series Segments of Publication Statistics

The volume of publications serves as a pivotal benchmark for discerning a field's developmental trajectory and prognosticating future directions (Figure 2).

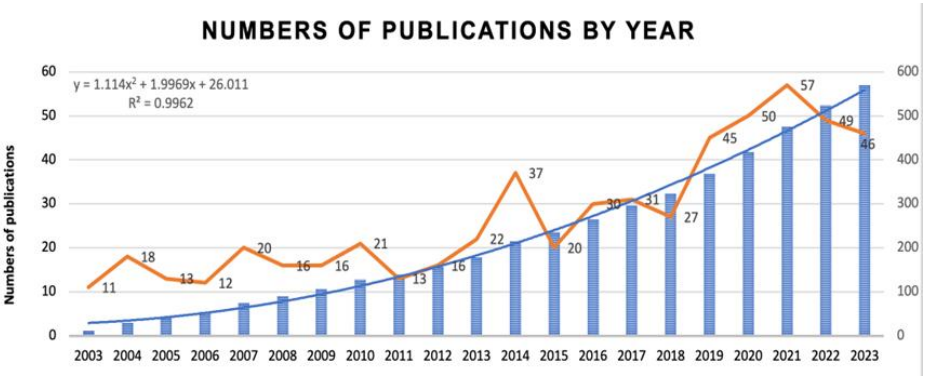


Figure 2. Publication statistics in time series segments (Authors' Own Source)

The orange line chart represents the annual incremental volume, while the blue bar chart denotes the cumulative amount. The blue exponential curve illustrates the trendline fitted through regression analysis. The PIM field has experienced growth, as the ascending trend in cumulative publications testifies. The growth trend aligns with the escalating interest from scholars in both interdisciplinary and cross-disciplinary studies. Despite this study only encompassing data from the initial seven months in 2023, a projection using linear regression estimates the total at 46 publications.

Overall, publications within the PIM domain show an upward trajectory, delineated into three phases: The Emerging Phase, Developing Phase, and Exploration Phase. During the Emerging Phase (2003-2012), the annual publication frequency showed variability, with an average of 16 publications per year. PIM, still in its nascent stage, attracted modest scholarly interest during this period. In the Developing Phase (2013-2018), there was a more robust publication output, with annual publications consistently exceeding 20 and peaking at 37 articles in 2014, reflecting a growing scholarly interest in cross-disciplinary research. The Exploration Phase (2019-2023) witnessed a pronounced surge in publications, averaging 49 articles per year. This surge underscores the increasing significance of PIM research, positioning it as a central area of academic inquiry and suggesting promising future growth.

4.2. Co-occurrence networks in research categories

By identifying cross-disciplinary and inter-disciplinary subjects within the PIM field, and observing their dynamic progression, It provides valuable guidance for future researchers exploring new directions.

Figure 3 visualises co-occurrence networks. Each node in the figure represents a category within the PIM domain, with larger nodes indicating higher occurrence. Thicker lines denote increased frequency of interdisciplinary research. Notably, the visualisation reveals Health Care as an isolated entity within the subject network, lacking intersection with other research categories, suggesting limited disciplinary crossovers.

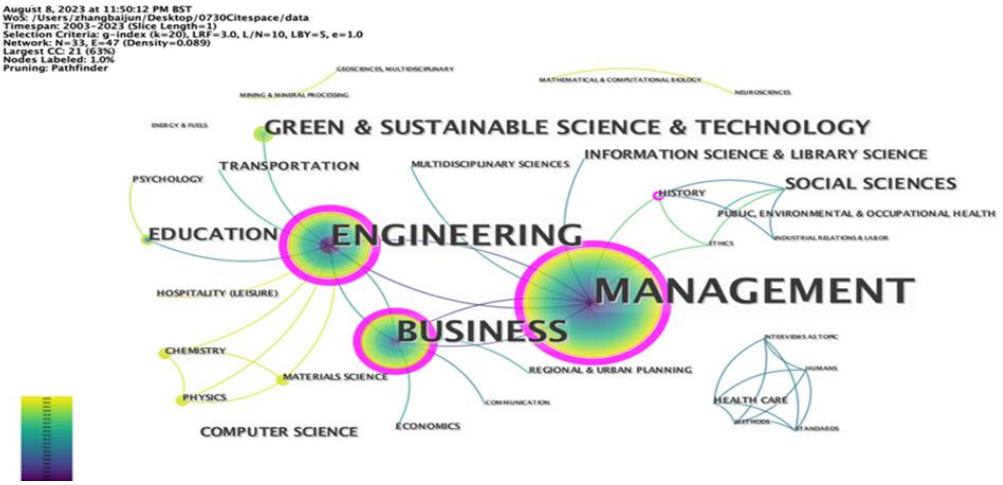


Figure 3. Co-occurrence networks in research categories (Authors' Own Source)

Disciplinary analysis unveils core and intersecting disciplines within the PIM domain, guiding future research directions. Figure 3 delineates key indicators for the top ten subjects in PIM publications, with Management, Engineering, and Business dominating but interdisciplinary collaborations remaining sporadic, suggesting modest disciplinary diversity. Conversely, fields like Healthcare, Neuroscience, Biotechnology, Geoscience, and Computer Science exhibit independence from the core disciplines, hinting at potential for diverse collaborations in PIM beyond conventional areas.

A notable prominence is observed on the "History" node, marked by robust centrality and a purple spotlight, primarily due to studies examining innovation initiatives through cultural and historical lenses. Responsible innovation necessitates consideration of broader socio-ethical and socio-economic implications (Flipse and van de Loo, 2018), indicating that future PIM research may continue converging at the intersections of history.

5. Keyword co-occurrence networks

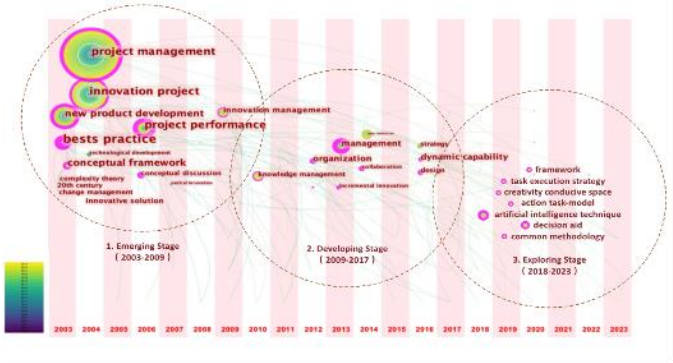
In the context of PIM, mapping keyword frequencies alongside their chronological occurrences reveals evolving trends in the field. This study utilised keyword clustering to pinpoint core research areas and assessed "burst" keywords to identify emerging research frontiers.

5.1. Keyword co-occurrence analysis

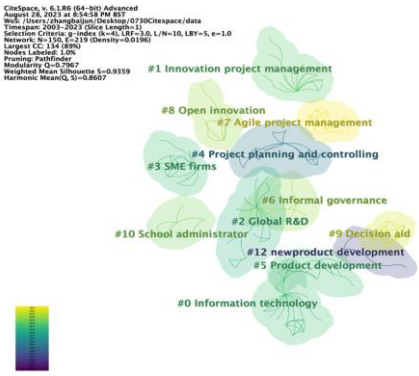
The Keyword co-occurrence network visualisation comprises 150 keywords and 219 links, suggesting robust keyword interactions can be seen in Figure 4.

Figure 4. Keyword co-occurrence networks (Authors' Own Source)

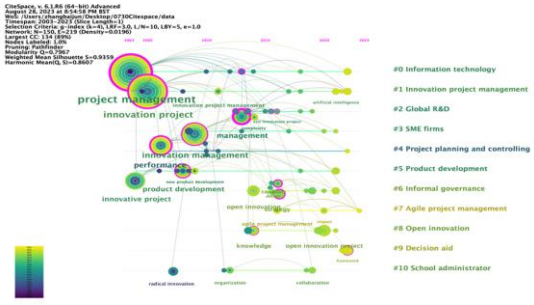
Analysis of the keyword frequency and centrality from Figure 4 reveals prevalent terms such as PM, IM, and innovation project. Significant nodes include new product development, project performance, knowledge management, and open innovation, indicating key focal points in PIM research. Hub nodes like best practice, conceptual framework, and dynamic capability serve as crucial connectors. Terms with a pink outer ring, like conceptual framework and incremental innovation, suggest future trends may emphasise framework establishment, enhanced management, and incremental innovation.


project management
innovation project
new product development
project performance
bests practice
conceptual framework
innovation management
management
organization
knowledge management
strategy
dynamic capability
framework
task execution strategy
creativity conducive space
action task-model
artificial intelligence technique
decision aid
common methodology
1. Emerging Stage
(2003-2009)
2. Developing Stage
(2009-2017)
3. Exploring Stage
(2018-2023)
2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023

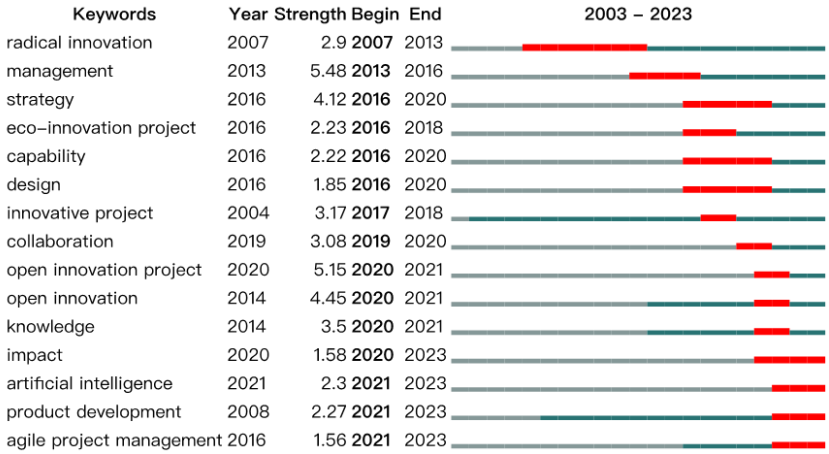
(a)


#1 Innovation project management
#8 Open innovation
#7 Agile project management
#4 Project planning and controlling
#3 SME firms
#6 Informal governance
#2 Global R&D
#10 School administrator
#9 Decision aid
#12 newproduct development
#5 Product development
#0 Information technology

(b)


project management
innovation project
management
innovation management
performance
product development
innovative project
#0 Information technology
#1 Innovation project management
#2 Global R&D
#3 SME firms
#4 Project planning and controlling
#5 Product development
#6 Informal governance
#7 Agile project management
#8 Open innovation
#9 Decision aid
#10 School administrator

(c)



(d)

Figure 5. Keyword time-zone map (a), Keywords clustering map (b), Keyword timeline graph (c), The list of top 15 Keywords with the strongest citation bursts (d) (Authors' Own Source)

5.2. Keyword time-zone map

In CiteSpace, the Keyword co-occurrence network facilitates the creation of a keyword time-zone map, plotting keywords across 1-year time segments (Figure 5.a), enabling the identification of each keyword's inception in the PIM literature. The node size represents the keyword's frequency, while the links visualise the progression of research. The map reveals three distinct phases: (1) Emerging Phase integrates PM with innovation projects, highlighting IM knowledge prominence. (2) Development Phase emphasises project interconnectedness within organisational processes, leading to strategies supporting organisational innovation. (3) Exploring Phase explores newer research areas.

5.3. Keyword Clustering

For the keyword clustering maps the Log Maximum Likelihood algorithm was employed (Figure 5.b). Eleven distinct research dimensions occurred with this analysis.

5.4. Keyword Timeline Graph

Leveraging the keyword clustering analysis, the keyword timeline graph illustrates the evolutionary trajectory of research orientations within this domain, providing a comprehensive visualisation of the progression and transformation of focal keywords. Aligning with prior clustering exploration, the timeline graph delineates dynamic shifts of various keywords under 11 predominant thematic clusters (Figure 5.c).

5.5. Keyword Burst

Burst words, characterised by their pronounced frequency fluctuations within specific time intervals, act as indicators of evolving subject trends. 15 keywords manifesting significant 'burst' characteristics was discerned, as depicted in Figure 5.d with corresponding red line segment. Mapping these burst keywords against the three temporal phases offers corroborative insights. (1) Emerging Phase exhibited a constrained breadth, highlighted solely by the burst term “Radical Innovation”. (2) Developing Phase marked an expansion in research volume and diversity, introducing burst terms such as "Management," "Strategy," and "Eco-Innovation". (3) Exploring Phase observed a steep incline in both burst word occurrences and publication metrics, this phase foregrounded concepts such as "Collaboration," "Knowledge," and "Agile Project Management" as pivotal research subjects.

6. Discussion and conclusion

This study conducted a thorough scientometric analysis on 521 literature pieces from renowned databases to comprehend the convergence in the PIM research domain over the last two decades. The findings offer insights for both industrial decision-making and academic research trajectories. Publication metrics reveal a rising trend in the cumulative number of papers within the PMI domain, particularly in the past five years, indicating increased scholarly interest and potential for research. Furthermore, disciplinary distribution identifies Management, Engineering, and Business as predominant subject areas in PIM, with potential intersections with diverse disciplines such as History, Healthcare, Neuroscience, Biology, Geoscience, and Computer Science. Research landmarks, including highly-cited papers and contributions from prominent researchers, provide insightful reviews. The progression of research is delineated into three stages: emerging, developing, and exploring, focusing on unique attributes of innovation projects, diverse facets of managing them, and probing cutting-edge research areas. Dominant research themes are divided into three domains focusing on managing uncertainty, investigating various efforts, and exploring applicability in complex situations. Frontier research fields gravitate towards AI, product development, and agile product management, emphasising the effective incorporation of AI into innovation endeavours, alignment of product development with disruptive innovation and digital transformation, and application of agile product management across industries.

This study has limitations concerning data source, scope, and methodology. Primary data were sourced from three databases. Incorporating data from additional databases, like Dimensions, could yield different results. Future research would benefit from such extended data sourcing. The research focused solely on peer-reviewed articles and reviews in English, potentially overlooking valuable insights from diverse publication types and languages. The scientometric mapping approach used bears inherent limitations, including citation bias and a time lag in data.

Combining scientometric review with traditional systematic review in future studies could mitigate these limitations.

References

Abbasi, A., Altmann, J. and Hossain, L. (2011) 'Identifying the effects of co-authorship networks on the performance of scholars: A correlation and regression analysis of performance measures and social network analysis measures.' *JOURNAL OF INFORMETRICS*. Amsterdam: Elsevier, 5(4) pp. 594–607.

Ansoff, H. (2007) *Strategic Management*. Springer.

APM (2019) *Association of Project Managers Body of Knowledge (APMBoK) Seventh edition*.

Ben Mahmoud-Jouini, S., Midler, C. and Silberzahn, P. (2016) 'Contributions of Design Thinking to Project Management in an Innovation Context.' *PROJECT MANAGEMENT JOURNAL*, 47(2) pp. 144–156.

Bibarsov, K. R., Khokholova, G. I. and Okladnikova, D. R. (2017) 'Conceptual basics and mechanism of innovation project management.' *European Research Studies Journal*, 20(2) pp. 224–235.

Burns, T. and Stalker, G. M. (1994) *The Management of Innovation*. Oxford, New York: Oxford University Press.

Chen, C., Hu, Z., Liu, S. and Tseng, H. (2012) 'Emerging trends in regenerative medicine: a scientometric analysis in CiteSpace.' *Expert Opinion on Biological Therapy*. Taylor & Francis, 12(5) pp. 593–608.

Davies, A. (2014) 'Innovation and Project Management.' *In* Dodgson, M., Gann, D. M., and Phillips, N. (eds) *The Oxford Handbook of Innovation Management*. Oxford University Press, p. 0.

De Rezende, L. B., Blackwell, P. and Pessanha Gonçalves, M. D. (2018) 'Research Focuses, Trends, and Major Findings on Project Complexity: A Bibliometric Network Analysis of 50 Years of Project Complexity Research.' *Project Management Journal*. SAGE Publications Inc, 49(1) pp. 42–56.

Dodgson, M. and Gann, D. (2011) 'Technological Innovation and Complex Systems in Cities.' *Journal of Urban Technology*. Routledge, 18(3) pp. 101–113.

Gault, F. (2013) *The Oslo Manual*. Gault, F. (ed.) *HANDBOOK OF INNOVATION INDICATORS AND MEASUREMENT*. Cheltenham: Edward Elgar Publishing Ltd (Elgar Original Reference), pp. 41–59.

Goldhar, J. D. (1994) 'Mastering the Dynamics of Innovation: How Companies Can Seize Opportunities in the Face of Technological Change.' *Sloan Management Review*. Massachusetts Institute of Technology, Cambridge, MA, 35(4) p. 97.

Guerra Betancourt, K., de Zayas Pérez, M. R. and González Guitián, M. V. (2013) 'Bibliometric analysis of publications related to innovation projects and their management in Scopus, 2001-2011.' *Revista Cubana de Informacion en Ciencias de la Salud*, 24(3) pp. 281–294.

Khalife, M. A., Dunay, A. and Illés, C. B. (2021) 'Bibliometric Analysis of Articles on Project Management Research.' *Periodica Polytechnica Social and Management Sciences*, 29(1) pp. 70–83.

Lenfle, S. and Soderlund, J. (2019) 'Large-Scale Innovative Projects as Temporary Trading Zones: Toward an Interlanguage Theory.' *ORGANISATION STUDIES*, 40(11) pp. 1713–1739.

Mentzer, M. (1987) 'Structure in Fives - Designing Effective Organisations - Mintzberg,h.' *ACADEMY OF MANAGEMENT REVIEW*. Briarcliff Manor: Acad Management, 12(2) pp. 395–401.

Morris, P. W. G. (2013) *Reconstructing Project Management*. John Wiley & Sons.

Oliveira Lucena, J. P., Lago Alves, T. da C. and de Medeiros Junior, J. V. (2019) 'Project Governance: a bibliometric analysis of 2014 to 2018.' *REVISTA DE GESTAO E PROJETOS*. Sao Paulo: Univ Nove Julho, 10(1) pp. 107–125.

Pinto, F. A., Frank, A. G. and Paula, I. C. de (2011) 'Definição de diretrises de gerenciamento de projetos empregando a análise de agrupamento: Um estudo exploratório.' *In Congresso Brasileiro de Gestão de Desenvolvimento de Produto (8.: 2011 set. 12-14: Porto Alegre, RS).[Anais][recurso eletrônico].[Porto Alegre, RS: Departamento de Engenharia de Produção e Transportes da UFRGS], 2011.*

Robbins, P. and O'Connor, G. C. (2023) 'The professionalization of innovation management: Evolution and implications.' *Journal of Product Innovation Management*, 40(5) pp. 593–609.

Russo, R. F. S. M., Sbragia, R. and Yu, A. S. O. (2017) 'Unknown unknowns in innovative projects: Early signs sensemaking.' *BAR - Brazilian Administration Review*, 14(3).

Shenhar, A. J. and Dvir, D. (2007) 'Reinventing project management: The diamond approach to successful growth and innovation.' *RESEARCH-TECHNOLOGY MANAGEMENT*. Arlington: Industrial Research Inst, Inc, 50(6) pp. 68–69.

Silva, E. and Gil, A. C. (2013) 'Inovação e Gestão de Projetos: Os "Fins" Justificam os "Meios."' *Gestão e Projetos: GeP*. Universidade Nove de Julho, 4(1). Gestão e Projetos: GeP pp. 138–164.

Silvius, G. (2017) 'Sustainability as a new school of thought in project management.' *Journal of Cleaner Production*, 166, November, pp. 1479–1493.

Utama, W., Chan, A., Zahoor, H. and Gao, R. (2020) 'Review of research trend in international construction projects: A bibliometric analysis.' *Construction Economics and Building*. UTS ePress, 16(2) pp. 71–82.

Wheelwright, S. and Clark, K. (1992) 'Creating Project Plans to Focus Product Development.' *HARVARD BUSINESS REVIEW*. Boulder: Harvard Business Review, 70(2) pp. 70–82.

Young, L., Ganguly, A. and Farr, J. V. (2012) 'Project management processes in agile project environment.' *In Annual International Conference of the American Society for Engineering Management*, pp. 9–19.

Zhang, L., Mohandes, S. R., Tong, J., Abadi, M., Banihashemi, S. and Deng, B. (2023) 'Sustainable Project Governance: Scientometric Analysis and Emerging Trends.' *Sustainability*. Multidisciplinary Digital Publishing Institute, 15(3) p. 2441.