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Analyzing project management trends in Indonesia: 2018-2023 international literature review

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Abstract

Purpose: The purpose of this systematic literature review is to investigate the evolution of project management worldwide from 2018 to 2023, focusing on the integration of modern project management approaches and the challenges faced in the context of Industry 4.0. The review aims to bridge the gap between academic theory and industry practice in project management within the Indonesian landscape.

Research methodology: A structured search was conducted through the Scopus platform, with inclusion and exclusion criteria applied to ensure relevance to the topic. The methodology involved evaluating articles for quality and relevance, extracting key information, and systematically organizing data for analysis. The review followed the PRISMA guidelines to ensure a rigorous and transparent approach.

Results: The review revealed a growing need for adaptive project management practices in response to technological advancements and cultural nuances. Key findings include the importance of organizational culture, the role of authentic leadership, and the challenges of implementing sustainable community development. The study also highlighted the potential impact of Generation Z on the economic and political landscape.

Limitations: The confinement of the literature search to articles from accredited international journals accessed through Google Scholar and categorized from Scopus 1 to Scopus 4, which may have excluded relevant studies. Additionally, the practical application of these insights in real-world settings was not extensively explored.

Contribution: This review contributes to a deeper understanding of project management in Indonesia, offering insights into the challenges and opportunities within the field. It provides a foundation for future research and improved practices, emphasizing the need for project management professionals and scholars in Indonesia to explore innovative approaches and remain agile in the face of change.

Keywords: *Innovation, Literature Review, Project Management, Sustainability, Technology*

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1. Introduction

Project management, with its core principles of planning, organizing, and resource management to achieve predefined objectives, has evolved significantly in an era marked by escalating complexity and uncertainty (Blampied et al., 2023). This evolution has led to a shift from the conventional, structured

approach of project management toward a more adaptive and dynamic strategy. This transformation not only fosters adaptability and continuous learning but also broadens the perspective to encompass social, environmental, and long-term sustainability impacts (Bag, Gupta, & Kumar, 2021; Burga, Spraakman, Balestreri, & Rezania, 2022). Alongside these changes, digitalization has emerged as a pivotal factor, streamlining communication, progress tracking, and performance analysis within project teams. Digital technologies such as data analytics and artificial intelligence have further amplified efficiency and effectiveness in project management (Marnewick & Marnewick, 2022). The study of smart buildings holds particular relevance in today's global landscape, as these buildings integrate advanced technology to enhance efficiency, security, comfort, and sustainability, necessitating a deep understanding of optimal smart building project management (Rodrigues et al., 2023).

In the context of Indonesia, a developing country facing substantial challenges in the era of Industry 4.0, with implications for project management, the adaptability to new technologies and efficient working methodologies becomes crucial to maintain competitiveness in the global market (Hidayat & Yunus, 2019). The Industry 4.0 revolution ushers in rapid and dynamic changes across various sectors, including education and industry. Consequently, the implementation of online education during the COVID-19 pandemic is noteworthy, particularly in Magelang, where schools have successfully adapted to government social restrictions. Challenges include digital infrastructure readiness, and digital literacy among both teachers and students, resulting in varying implementation quality classified as 'fully-implemented,' 'partially implemented,' or 'none of the two' (Haryati, Sukarno, & Purwanto, 2021).

Currently, Indonesia's economic and political landscape is dominated by Generation Y, also known as millennials, who are often criticized for their financial decision-making. Thus, there is a growing imperative to educate the next generation, Generation Z, who have grown up with internet access and knowledge availability. However, Generation Z's significant online presence and social media engagement raise concerns about their susceptibility to materialistic issues (Pangestu & Karnadi, 2020). Indonesia's project landscape exhibits significant variations in terms of project duration, scale, and scope. Government-funded or internationally funded projects tend to be characterized by longer durations and larger financial investments, whereas projects undertaken by NGOs are often shorter in duration and more localized (Stacey et al., 2021). In this context, organizational culture often features high power distance and collectivism, underlining the importance of authentic leadership in fostering employee psychological well-being (Niswaty, Wirawan, Akib, Saggaf, & Daraba, 2021).

In the context of exploring the implementation of project management in Indonesia, this study aims to bridge crucial gaps in the systematic literature review. This literature review is important because of the discrepancy between academic theory and industry practice in project management (Locatelli et al., 2023). These gaps encompass diverse aspects deeply relevant to the dynamics of project management in Indonesia from 2018 to 2023, covering topics such as the advancement of Industry 4.0 technology, sustainable innovation, workforce mental health, non-profit organizations, smart building integration, and the role of Generation Z. This research anticipates providing valuable insights to address the evolving challenges in project management in Indonesia, contributing to a deeper understanding and improved practices.

2. Literature review

2.1 Introduction To Project Management

Project management, as defined by the Project Management Institute (PMI), is a discipline that involves knowledge, skills, tools, and technology used to achieve planned project objectives (Nikolaenko & Sidorov, 2023). The main objective of project management is to achieve project goals in terms of scope, schedule, cost, and quality, and to meet the expectations of all interested parties. To help organizations achieve this goal, various project management maturity models have been developed. According to Zerjav, Martinsuo, and Huemann (2023), There are three levels of project management approaches:

1) Individual level, focusing on the career and professional development of the project manager.
2) Organizational level, this research focuses on the role of governance and stakeholder theory in influencing project outcomes.

3) Network level, it explores how different organizations collaborate on large-scale projects to create shared value.

Furthermore, there is a project management maturity model that serves as a tool to measure and evaluate managerial maturity in projects. This maturity model provides a framework for organizations to assess and improve their project management capabilities, with the aim of increasing efficiency and effectiveness in project management. Thus, project management and project management maturity models play an important role in helping organizations achieve their project goals. Effective project management models typically have several intrinsic strengths that facilitate project success (Nikolaenko & Sidorov, 2023):

1) Application of Recognized Project Management Principles: These models are often based on globally recognized principles, such as those articulated in the Project Management Body of Knowledge (PMBOK) Guide, ISO 21500, or Projects In Controlled Environments (PRINCE2). Consistency with these standards aids in the validation and credibility of the model (Blampied et al., 2023).
2) Structure and Maturity Levels: These models usually include a scheme for assessing and improving an organization's project management maturity, which is often a critical factor in long-term success.
3) Focus on Continuous Improvement: Effective models not only provide a framework for current project success but also provide a mechanism for continuous improvement, allowing organizations to learn from past projects and continuously enhance efficiency.
4) Adaptability: The adaptability or flexibility of the model to different types of organizations and project contexts is a significant strength, allowing the model to be applied in a variety of environments with little or no modification.
5) Consideration of Structural and Infrastructural Elements: A comprehensive model will consider factors such as technological infrastructure, norms and regulations, and human resources, all of which can affect project success.

2.2 Project Management Approaches

There are several project management approaches that have evolved and are widely used in project management practice. Here are some of them:

1) Traditional Approach
   Represents linear and predictable project planning, designed to achieve a set of well-understood and achievable goals (Gemino, Horner Reich, & Serrador, 2021). The main goal of the traditional project management approach is optimization and efficiency in following a detailed initial project plan, with the aim to complete the project within the planned time, budget, and scope.
2) Agile Approach
   An approach that emphasizes flexibility and adaptability to change. Work is divided into iterations or sprints, with each iteration ending in a review and planning for the next one. Agile also emphasizes strong communication and collaboration between team members and project stakeholders, including clients and sponsors. Agile has demonstrated increased project success and job satisfaction and is now being used outside of the software development industry. The adoption of agile methodologies in project management changes organizational dynamics socially, economically, and environmentally (Gomes Silva et al., 2022; Koke & Moehler, 2019; Maqbool & Jowett, 2023). Socially, agile encourages team collaboration and communication, increasing customer satisfaction and may require investment in employee training. From an economic standpoint, agile offers efficiency and adaptability, contributing to competitive advantage and cost savings. In an environmental context, agile supports sustainability by minimizing waste and using resources efficiently (Ika & Pinto, 2022).
3) Lean Approach
   The Lean approach is derived from Toyota's production system philosophy and focuses more on efficiency and waste elimination. It aims to improve work flow and emphasizes the principle of continuous improvement. In this context, 'waste' can mean anything from unproductive waiting time to excess inventory (AbuKhamis & Abdelhadi, 2022). It is often combined with Agile approaches to improve efficiency and responsiveness. For example, Kanban is an approach that utilizes

principles from both Agile and Lean, creating a hybrid methodology that offers benefits from both worlds (Weflen, MacKenzie, & Rivero, 2022).

4) PMBOK dan PRINCE2
   The PRINCE2 approach emphasizes learning from experience, providing as much information as possible to project participants, forming teams and appointing team leaders responsible for specific phases, establishing financial plans, detailed schedules for work execution, quality control plans, and responsible persons plans, as well as detailing the technological sequence of work. The PMBOK approach leads to its flexibility in the application of project management tools and techniques. PMBOK emphasizes collective knowledge that is widely accepted as best practices in the field of project management (Simonaitis, Daukšys, & Mockienė, 2023).

2.3 The Importance of Applying Project Management Science to Recent Developments

The turn of the century has driven an increase in multi-project environments, affecting how organizations manage their projects. In response, many organizations established Project Management Offices (PMOs) for coordination and oversight. PMOs provide benefits such as strategic alignment and resource consolidation, but are often less effective in dealing with the complexities and challenges of modern environments. Research shows a discrepancy between stakeholder perceptions of success and traditional success metrics (Odusanya, Ochoa, Chileshe, & Ahn, 2021). Factors such as technical uncertainty and changing objectives affect project complexity, but these negative impacts can be minimized with adaptive management and effective communication (Hu, Wu, Zheng, Zhao, & Zuo, 2023). One of the major weaknesses in current project management practice is that decision-makers often ignore project management research, leading to inappropriate project selection and inefficient execution, resulting in a lack of integration between fields, such as risk management and cost planning as well as theoretical and practical approaches (Amirtash, Parchami Jalal, & Jelodar, 2021). This differs from traditional research that focuses more on specific aspects, such as project planning and control (Locatelli et al., 2023).

Some of the key project management challenges mentioned include:

1) A changing and turbulent environment that demands decreased time-to-market, cost-cutting, and increased client satisfaction.
2) Additional pressure on companies to reduce the time spent on new product development.
3) The need to customize their services to the needs of clients.
4) Companies are starting to calculate more carefully their level of investment in project management.
5) The application of the management method in companies is very limited.
6) PMO, as a new organization, is not able to address all the challenges that the company is facing today.

All these challenges demanded the development of a methods in project management, which is referred to as the modern-day project management approach in modern times (Gemino et al., 2021). In response to these limitations, the concept of modern project management emerged, which tries to be more adaptive and responsive to changing needs.

3. Research methodology

The method used in this study is the Systematic Literature Review (SLR) approach. Through this method, researchers identify, analyze, evaluate, and synthesize various studies related to the chosen topic, which is about project management literature review 2018-2023. This approach involves a systematic and organized process of selecting and assessing journals, following established procedures in each stage of the research (El Fallahi, Ibenrissoul, & Adil, 2022; Mondal, Akter, & Polas, 2023). Data were collected from journals about project management literature review from 2018 to 2023. This study selected several articles from accredited international journals accessed through Google Scholar, focusing on categories Scopus 1 to Scopus 4. After selecting relevant and aligned articles, they were analyzed and summarized. The result is an in-depth discussion of the research findings. The process of the Systematic Literature Review (SLR) can be explained in simple stages:

Table 1. The Process of the Systematic Literature Review (SLR)

No.	Step	Description
1	Define Objectives and Scope	- Determine aims for exploring project management trends, challenges, and advancements from 2018 to 2023. - Specify research boundaries, such as project types, industries, and geographical areas.
2	Literature Search	- Identify potential sources: academic databases (Scopus for international journal, SINTA for Indonesian journal,) and library catalogs. - Develop a list of search terms related to project management. - Conduct systematic searches to gather relevant articles and publications.
3	Article Selection	- Apply inclusion and exclusion criteria based on factors like publication year between 2018-2023, relevance of list of search terms related to project management, and quality. - Use citation management software for organizing and tracking findings.
4	Quality Assessment	- Evaluate the quality of selected articles, focusing on methodology, sample size, data sources, academic databases, and author credibility. - Keep detailed records of assessments for transparency.
5	Data Extraction	- Extract key information from articles: findings, methods, data, etc. - Organize data systematically for analysis.
6	Data Analysis	- Identify trends, patterns, and themes within the project management literature. - Synthesize key findings and insights.
7	Data Criteria	- Inclusion criteria were literature that addressed the differences between academic theory and industry practice in project management. - Exclusion criteria were literature that was not relevant to the topic of the review.
8	Writing the Review	- Structure the review with an introduction, methodology, findings, analysis, and conclusion. - Support analysis with evidence from selected articles.
9	References and Citations	- Properly cite all sources using a recognized style (APA). - Provide complete bibliographic details for each source.
10	Validation	- Seek peer review from experts in project management to ensure the review's quality and credibility.

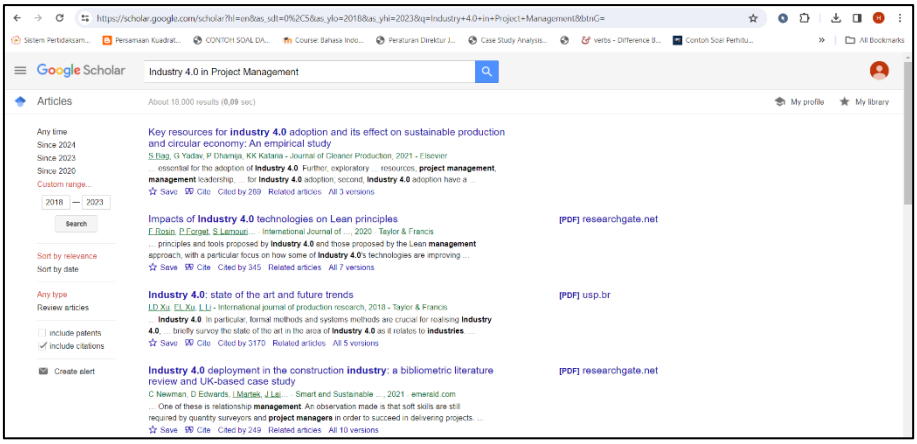

Figure 1. Search results for several keywords related to Project Management on Grey Website

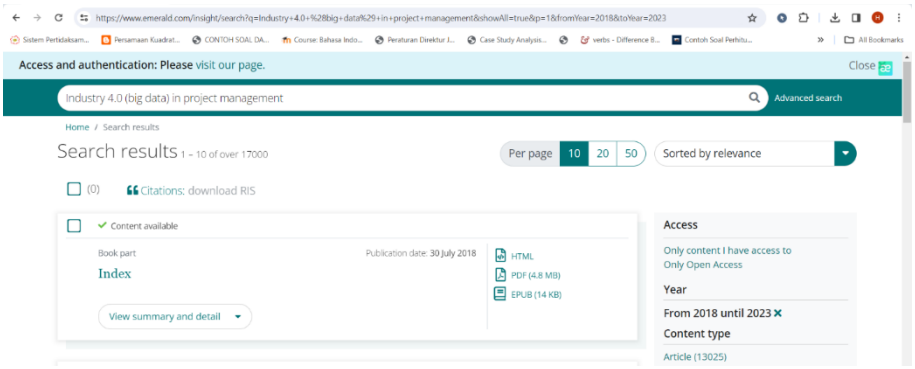

Figure 2. Searching for Research Keywords on Reputable Journal Websites

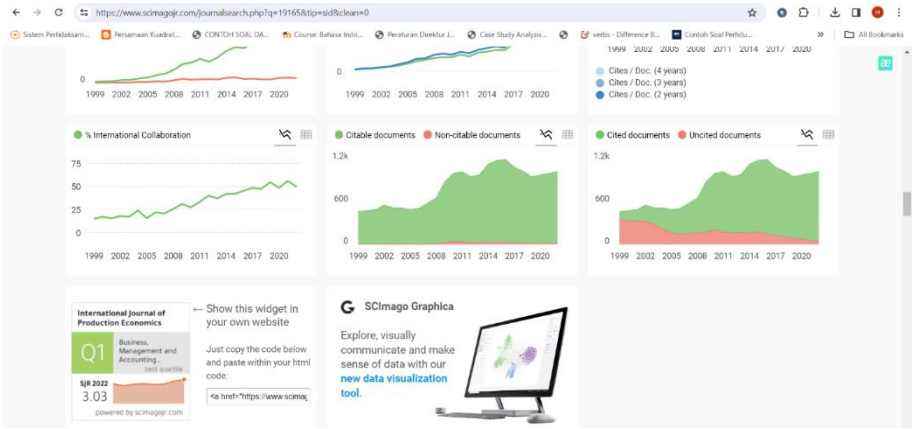

Figure 3. Scopus Ranking Check for Selected International Journals

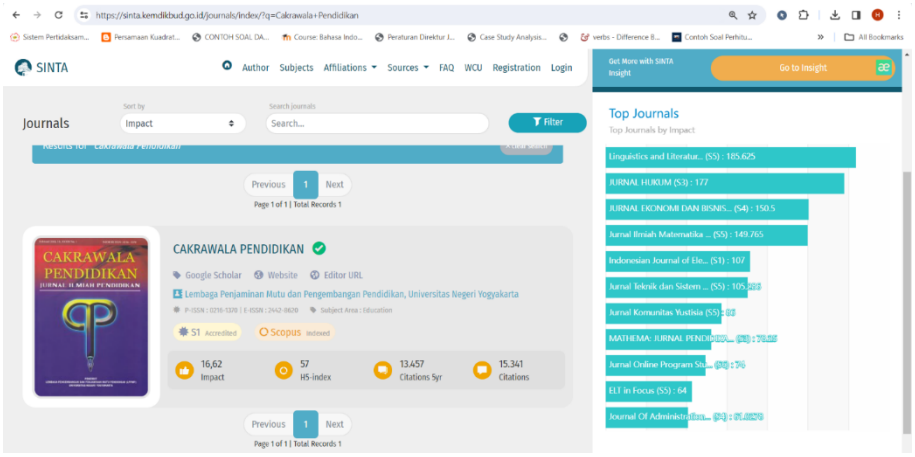

Figure 4. SINTA Ranking Check for Selected Indonesian Journals

4. Results and discussions

A Systematic Literature Review was conducted to investigate the evolution of concepts, methods, and recent trends in project management. The process began with a structured search through the Scopus platform, a leading source for scholarly literature. This search encompassed various aspects of project management, such as cost control, risk management, and resource management. Following the search, relevant articles were evaluated considering their quality, relevance, and connection to the research topic. The total number of articles successfully found through the search using specialized search engines from each publisher was then recorded. This reflects the availability of significant literature related to the research topic.

Table 2. Recent literature and articles relevant to Project Management Worldwide

Topic of Recent Project Management (2018-2023)	Publisher						
	Elsevier	**Emerald**	**MDPI**	**SAGE**	**Sciendo**	**Springer**	**Taylor & Francis**
Industri 4.0							
Big Data	48	13,024	25	12,534	3,656	42,870	7,756
Blockchain	3	1,868	26	350	2,624	8,823	598
Artificial Intelligence (AI)	38	4,275	30	1,959	2,982	28,894	1,795
Sustainability Innovations in Project Management							
adaptation of virtual teams	9,896	2,762	4	4,547	2,594	19,681	7,324
A conducive work environment plays a critical role in supporting employees' mental health	3,745	1,905	5	11,883	5,164	12,293	20,018
adoption of Industry 4.0 in contributing to sustainability	15,509	14,274	379	7,951	2,869	30,959	5,161
Application of Agile and Lean Project Management Methods for NPOs (Non-Profit Organizations)	-	4	1	18	4,006	181	12
Integration of Emerging Technologies in Smart Building Project Management	34,329	10,225	79	19,066	2,802	93,570	34,331
The Role of Generation Z in Project Management	2,740	13,839	1	5	3,644	12,818	3,134
Number Total of Articles Retrieved via Publisher-Specific Search Engine Queries	**66,308**	**62,176**	**550**	**58,313**	**30,341**	**250,089**	**80,129**

After collecting literature from various specialized search engines, the identification, screening, and inclusion stages were conducted in the Systematic Literature Review. Identification ensured the relevance of articles to the research topic. Screening discarded articles that did not meet quality criteria. The inclusion stage selected relevant and high-quality articles for further analysis. This process was carried out meticulously to ensure that only the best articles were considered.

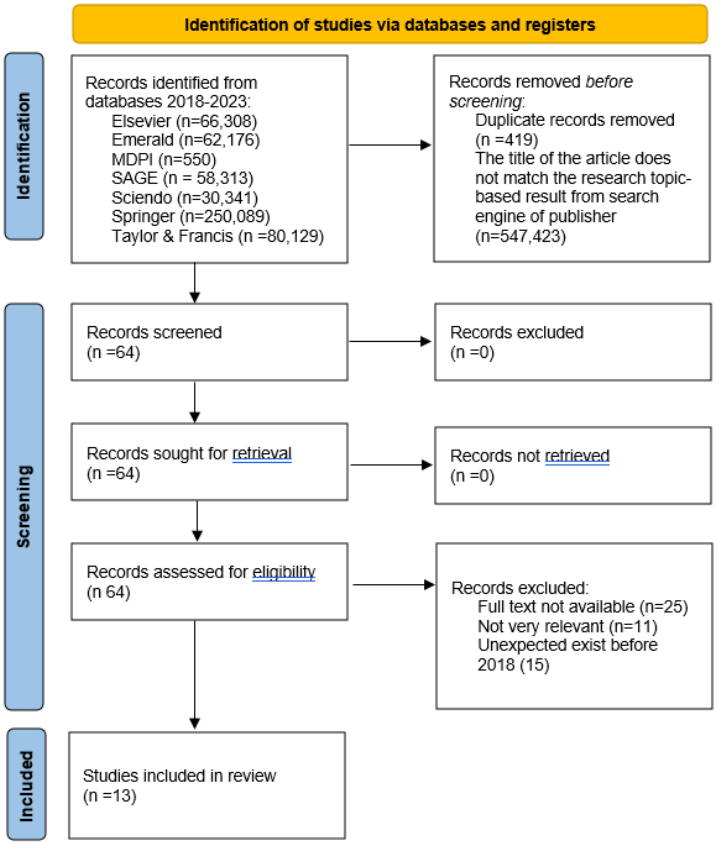

Figure 5. The SLR Result on Articles Retrieved via Publisher-Specific Search Engine Queries

The final outcome of the information exploration included in this literature review is the analysis and summary of the documented articles related project management literature from 2018 to 2023. This information is presented in the following table:

Table 3. Details of Recent Articles Relevant to Project Management

No.	Research Topic	Researcher	Research Method	Name and Journal and Quartile (Q) in Scopus Indexed of Journal	Country's Research
1	Industry 4.0	Rincon-Guio et al. (2023)	Systematic Literature Review (SLR) methodology. Additionally, a bibliometric review was undertaken to handle a substantial volume of published works and scrutinize them to suggest future directions.	Logforum, Q2	Global Scale
2	Industry 4.0	Bag et al. (2021)	Empirical research design, which is field-based and designed to	International Journal of Production	South Africa

No.	Research Topic	Researcher	Research Method	Name and Journal and Quartile (Q) in Scopus Indexed of Journal	Country's Research
			collect data from naturally occurring events. The data collection involved the use of a structured questionnaire, and the data analysis was performed using WarpPLS software.	Economics, Q1	
3	Industry 4.0: Big Data	Yang (2023)	The research method is not explicitly described in this article.	Applied Mathematics and Nonlinear Sciences, Q1	General concept
4	Industry 4.0: Blockchain	Khalfan, Azizi, Haass, Maqsood, and Ahmed (2022)	Systematic literature review.	Sustainability, Q1	Bangladesh
5	Industry 4.0: Artificial Intelligence (AI)	Fridgeirsson, Ingason, Jonasson, and Jonsdottir (2021)	A quantitative cross-sectional survey is a research method that involves collecting data from a population or a representative subset at one specific point in time. This type of survey is designed to measure the prevalence of certain characteristics, opinions, behaviors, or other defined variables within the study group.	Sustainability, Q1	Iceland
6	Sustainability innovations: adaption of virtual teams	Bernat, Qualharini, Castro, Barcaui, and Soares (2023)	Survey-based research (SBR) is a research method that involves collecting data from a sample of individuals by administering a survey. This method is often used to gather quantitative data or to assess the prevalence of	Sustainability, Q1	Brazil

No.	Research Topic	Researcher	Research Method	Name and Journal and Quartile (Q) in Scopus Indexed of Journal	Country's Research
			certain opinions, behaviors, or characteristics within a given population.		
7	Sustainability innovations: conducive work environment for employee's mental health	Lingard and Turner (2023)	Survey	International Journal of Project Management, Q1	New Zealand
8	Sustainability innovations: industry 4.0	Vrchota, Řehoř, Maříková, and Pech (2020)	Non-probability purposive sampling by expert assumption about the total population.	Sustainability, Q1	Czech Republic
9	Sustainability innovations: industry 4.0	Sjödin, Parida, Kohtamäki, and Wincent (2020)	Case study approach, which involved multiple interviews and a review of documents for empirical triangulation. This approach included constructing a case study protocol and a case study database containing notes, documents, and analysis .	Journal of Business Research, Q1	Globally active Swedish B2B providers and customers engaged in digital servitization relationship.
10	Application of Agile and Lean Project Management Methods for NPOs (Non-Profit Organizations)	AbuKhamis and Abdelhadi (2022)	Primarily quantitative, as indicated by the use of statistical tests such as reliability analysis, correlation analysis, independent t-tests, and frequency analysis to analyze the data collected through a questionnaire survey. The study is described as quantitative,	Applied Sciences, Q2	Not specify the country as the research's object

No.	Research Topic	Researcher	Research Method	Name and Journal and Quartile (Q) in Scopus Indexed of Journal	Country's Research
			explanatory, and empirical, and it utilized a deductive research approach.		
11	Integration of Emerging Technologies in Smart Building	Rodrigues et al. (2023)	Two-step approach following the guidelines of preferred reporting items for systematic reviews and meta-analysis (PRISMA).	Buildings, Q1	General concept
12	The Role of Generation Z	Magano et al. (2020)	Mixed-method methodology, which combined both quantitative and qualitative data collection at the same moment.	Education Sciences, Q2	Portugal
13	The Role of Generation Z	Montenegro, Dobrota, Todorovic, Slavinski, and Obradovic (2021)	Combination of Confirmatory Factor Analysis (CFA) and Structural Equation Modelling (SEM).	Sustainability, Q1	Serbia

After the stages of identification, screening, and inclusion, a comparative analysis was conducted on the literature included in this study. The majority of the literature is estimated to be scarce before the year 2018. The main differences include the latest approaches in project management, changes in industry practices, and innovations in research and theory. New literature covers topics such as agile project management, artificial intelligence, and blockchain, reflecting adaptation to an increasingly dynamic and complex work environment. This analysis demonstrates the valuable contribution of the included literature to the study, updating the understanding of project management by highlighting recent developments that may not have been widely documented before 2018.

4.1 Evolution of Recent Approaches in Project Management Science (2018-2023)

First, industry 4.0, originating from Germany in 2012 (Rincon-Guio et al., 2023), harnesses technological advancements like cyber-physical systems, the Internet of Things (IoT), and digitization to merge the physical and digital realms. Its adoption addresses manufacturing challenges:

a. Skills Deficit: Industry 4.0's automation and machine learning bridge skill gaps caused by advanced technologies.
b. Financial Limitations: Despite initial investment needs, Industry 4.0 boosts efficiency, leading to favorable returns.
c. Operational Complexity: Industry 4.0 enhances connectivity and interoperability, easing integration challenges.

d. Barriers in the 10R Process: Industry 4.0 aids in navigating challenges within the 10R process (Refuse, Rethink, Reduce, Reuse, Repair, Refurbish, Remanufacture, Repurpose, Recycle, and Recover) through technological application (Bag et al., 2021).

In the context of Industry 4.0, several technological advancements significantly impact project management:

a. Big Data is utilized in enterprise project management to enhance various functions such as financial management, human resources, risk, and quality. It accumulates extensive and complex data throughout the project lifecycle, enabling real-time analysis. This data-driven approach provides insights that support informed decision-making, enhance efficiency, and reduce costs (Yang, 2023).
b. Blockchain technology revolutionizes project management and e-procurement by offering numerous benefits:
    1) Efficient Procurement: Transition from paper-based to online systems for faster procurement processes.
    2) Transparency and Accountability: Enhances visibility and verification of information, reducing fraud risks.
    3) Smart Contracts: Automates tasks through smart contracts, speeding up processes, and minimizing errors.
    4) Real-Time Tracking: Enables dynamic tracking of equipment and materials, facilitating quick adjustments based on project developments.
    5) Vendor Management: Enhances efficiency in vendor or contractor evaluation and selection.
    6) Automated Documentation: Automates and organizes storage of project information, simplifying document management (Khalfan et al., 2022).
c. AI impacts various aspects of project management, aligning with PMBOK defined by PMI. It improves efficiency and effectiveness across PMBOK knowledge areas, including integration, scope, schedule, cost, quality, resources, communication, risk, procurement, and stakeholders. AI can automate tasks, enhance data analysis, and facilitate informed decision-making, contributing to achieving project goals efficiently (Fridgeirsson et al., 2021).

Second, the advancement of technology brings sustainability innovations in project management, including:

a. Utilization of virtual teams: Remote working reduces carbon emissions, enhances resource efficiency, and offers geographic flexibility. However, research indicates that virtual teams do not inherently impact stakeholder engagement or knowledge sharing, emphasizing the continued relevance of sustainability principles in both physical and virtual environments (Bernat et al., 2023).
b. Importance of a supportive work environment: Social support, teamwork, and mental well-being contribute significantly to project sustainability. Investing in a work environment that fosters mental health not only enhances productivity and efficiency but also mitigates risks such as burnout and turnover (Lingard & Turner, 2023).
c. Integration of Industry 4.0 technologies: Because the use of new technologies that connect machines and equipment with digital data into automated, intelligent and flexible systems can save resources including waste, water, electricity, energy, and so on (Vrchota et al., 2020). In the context of digitalization, companies must have the capacity to create new digital service innovations in collaboration with customers and the wider ecosystem (Sjödin et al., 2020).

Third, Non-Profit Organizations (NPOs) face unique challenges such as insufficient funding, inadequate headcount, and lack of adequate infrastructure that set them apart from profit-oriented entities. Therefore, flexible and efficient project management approaches, such as Agile and Lean methodologies, can offer valuable solutions. Agile methodologies allow NPOs to be more responsive to dynamic changes and utilize limited resources more effectively. With a simpler and iterative project management structure, Agile assists in the tracking of progress and identification of bottlenecks, enabling timely reallocation of resources. Lean methodology, on the other hand, emphasizes waste elimination and process optimization. This can be very useful for NPOs in terms of equipment management and resource allocation, leading to more efficient use of funds and more time to focus on the mission. However, the implementation of these two methodologies in NPOs requires managerial

nuances. For instance, an in-depth understanding of stakeholder needs and preferences is key. In addition, NPOs may need to innovate and experiment with new business models or practices, which can be challenging due to limited resources (AbuKhamis & Abdelhadi, 2022).

Fourth, Smart building project management encompasses various key areas including general characterization, risk assessment, scope definition, cost estimation, scheduling, technology integration, and sustainability considerations. Unlike traditional project management, smart building projects involve a broader scope and complexity, necessitating a comprehensive understanding of innovative technologies such as the Internet of Things (IoT), digital twins, and Building Information Modeling (BIM) (Rodrigues et al., 2023). IoT facilitates connectivity among people, systems, and the environment, driving the advancement of smart buildings. Digital twins serve as digital replicas of construction projects, facilitating interaction with sensors and IoT devices. BIM plays a crucial role in the design, construction, and operation phases of smart buildings. The adoption of these technologies requires project managers to acquire new competencies. They must comprehend how these technologies impact project management processes and possess both technical expertise and interpersonal skills. Smart building project managers must define project requirements clearly and decisively, navigating through multidisciplinary environments characterized by rapid change and innovation.

Lastly, Generation Z, born in the late 1990s to the early 2000s, are "digital natives" who are proficient in technology and the internet. This generation is valued for its flexibility, realism, and work ethic, as well as the ability to multitask and be community-oriented. Nonetheless, they are often criticized for their lack of social and interpersonal skills, as well as their tendency to become addicted to technology (Magano et al., 2020). To address the shortage of leadership and time management skills in Generation Z, this study recommends further focus on education and training policies designed to strengthen soft skills. One promising area is training programs that focus on emotional intelligence (EQ), which has four main components: emotion identification, emotion use, emotion understanding, and emotion management. EQ has been identified as a key factor in improving project management effectiveness. Therefore, investment in education and training targeting EQ may represent a robust strategy to maximize Generation Z's managerial potential. This would not only address soft skills deficiencies but also potentially improve their effectiveness in various aspects of project management (Montenegro et al., 2021). Education and training that focus on leadership skills, time management, and emotional intelligence are key to preparing Generation Z for success in project management. Student-centered pedagogical approaches, such as project-based learning and agile methodologies, are particularly effective in sharpening these competencies.

4.2 Project Management Implementation in Indonesia.

Table 4. Recent literature and articles relevant to Project Management in Indonesia

No.	Research Topic	Researcher	Research Method	Name and Index of Journal
1	Virtual Teams in Industry 4.0	Haryati et al. (2021)	Qualitative and interpretive.	Cakrawala Pendidikan, Sinta 1 and Q3
2	Innovative Work Behaviors and Performance in Industry 4.0	Santoso, Abdinagoro, and Arief (2019)	Explanatory survey.	International Journal of Technology, Sinta 1 and Q2
3	Developing Sustainable Small-Scale	Stacey et al. (2021)	Comprehensive examination of both scholarly and informal sources by a team with diverse academic backgrounds,	Marine Policy, Q1

No.	Research Topic	Researcher	Research Method	Name and Index of Journal
	Fisheries Livelihoods		employing qualitative research methods.	
4	Socially-Sustainable Community Development in Oil Palm and Forestry Operations	Pasaribu, Vanclay, and Zhao (2020)	Qualitative approach that includes document analysis, in-depth interviews, and focus group discussions.	Land, Q1
5	Psychological Contract and Job Satisfaction of Healthcare Professionals	Tabasum and Ghosh (2021)	Empirical analysis.	International Journal of Financial, Accounting, and Management (IJFAM), Sinta 3
6	Work Culture, Workplace environment and Employee Psychology	Srimulyani, Rustiyaningsih, Farida, and Hermanto (2023)	Quantitative approach focusing on hypothesis testing. Data analysis was performed using SPSS version 24 and Smart PLS version 3, including validity and reliability analysis, assessments of common method variance, descriptive statistics, and hypothesis testing with the mediation role tested using the online Sobel test software.	Sustainable Futures, Q1
7	NPOs (Non-Profit Organizations)	Pascapurnama et al. (2018)	Systematic literature review.	International Journal of Disaster Risk Reduction, Q1
8	Smart City	Rachmawati, Sari, Sukawan, Widhyastana, and Ghiffari (2021)	Qualitative approach.	Infrastructures, Q2
9	Generation Z	Pangestu and Karnadi (2020)	Survey-based approach.	Cogent Business and Management, Q2

During the research period of 2018-2023, project management in Indonesia has undergone various transformations influenced by factors such as the fourth industrial revolution and the COVID-19

pandemic. Research conducted by Haryati et al. (2021) shows that digital technologies like Learning Management Systems (LMS), WhatsApp, and Google Meet have become important communication and collaboration tools in project management, especially in the context of virtual teams. The pandemic has forced many sectors to shift to online operations, including education and project management. This research explores how virtual teams in project management have adapted to these changes and how they maintain productivity and effectiveness. Santoso et al. (2019) found that transformational leadership and digital literacy play a crucial role in enhancing innovative work behaviors and performance, particularly in industries undergoing changes due to the fourth industrial revolution.

Sustainable project management in Indonesia has become a significant focus in recent years, especially in the face of increasing environmental and social challenges. Research emphasizes the importance of long-term project evaluation to assess the trade-offs between livelihoods and sustainability, a key aspect of sustainable project management (Stacey et al., 2021). This research also reveals that despite numerous livelihood and fisheries interventions implemented in coastal communities in Indonesia, many projects lack adequate evaluations to assess their long-term impacts, including environmental and social sustainability. This indicates the need for more in-depth and sustainable evaluations to ensure that these projects genuinely deliver sustainable benefits to communities and the environment.

Furthermore, Pasaribu et al. (2020) discuss the challenges in implementing socially sustainable community development (SSCD) by companies in the palm oil and forestry sectors in Indonesia. This research highlights the practices and challenges faced by these companies in creating socially sustainable projects, which are crucial aspects of sustainable project management. The study identifies five main challenges: unresolved land conflicts, determining appropriate programs, building community capacity, a shortage of company field staff and government facilitators, and managing community expectations. Understanding these challenges and how to address them can assist in sustainable project management in Indonesia, ensuring that these projects are successful not only technically but also in providing long-term benefits.

The mental health of workers in Indonesia is an important issue that receives attention, particularly in the context of project management and the workplace environment. According to Tabasum and Ghosh (2021), the workplace plays a crucial role in enhancing the mental health of employees in private hospitals in India, which can also be applied in the context of Indonesia. Excessive workload, especially for those working permanently at night, can lead to stress and emotional fatigue, reducing mental health scores and job satisfaction. Therefore, it is important for project management to maintain a balanced work schedule and ensure that workloads do not exceed employees' capacity. Workplace social support is essential for morale and job satisfaction, positively impacts mental health. Building a solid team and mentorship programs can strengthen this social support. Furthermore, research by Srimulyani et al. (2023) explores the impact of organizational culture, specifically the "AKHLAK" corporate culture, on affective commitment, which is the psychological aspect of employees' attitudes towards their organization. This research also discusses the role of inclusive leadership in shaping a quality work culture, directly related to the workplace environment and its influence on employee psychology. These elements are crucial in project management as they influence team dynamics, motivation, and overall performance. Therefore, the findings and discussions on these researches can provide valuable insights for research on the psychological impact of the workplace environment in the context of project management in Indonesia.

On the other hand, project management for NPOs in Indonesia can be viewed from the perspective of integrating project management approaches into health education and disaster risk reduction programs. This highlights the importance of effective project management in addressing critical societal needs (Pascapurnama et al., 2018). The implementation of smart city concepts in various cities in Indonesia, including the use of mobile applications for public services, underscores the importance of technology in urban project management. While the focus is on smart cities and not specifically on smart buildings, there is a connection in terms of the broader concept of integrating technology and innovation into urban management (Rachmawati et al., 2021).

In the context of higher education, the challenges and opportunities presented by the fourth industrial revolution have compelled universities in Indonesia to adapt to new technologies. This is relevant to project management as it emphasizes the importance of integrating technology and innovation in project management. Furthermore, the improved financial literacy among Generation Z in Indonesia may indicate their ability to make better financial decisions, which is an asset in project management, especially in budget management and financial resource allocation (Pangestu & Karnadi, 2020).

4.3 Project Management Implementation Challenges in Recent Developments

There are several key challenges in modern project management (Rincon-Guio et al., 2023), especially in the context of Industry 4.0 technology adoption:

a. Resistance to Change: Organizations face resistance to adopting new technologies and changes in work processes.
b. Lack of Industry-Specific Standards and Laws: The absence of clear standards and laws makes it difficult for organizations to comply with regulations related to new technologies.
c. Inadequate Upper Management Support: Successful digital transformation requires the support and commitment of senior management, which is often lacking.
d. Skill Development: There is a need for the development of both technical and soft skills to navigate an increasingly digital work environment, including leadership and collaboration skills.
e. Sustainability Integration: Modern project management faces the challenge of integrating sustainability into practices, including measuring and reporting environmental and social impacts.
f. Management of Mixed Project Teams: There are challenges related to coordinating, communicating, and dividing labor between human and non-human (e.g., robots, AI systems) team members.

The COVID-19 pandemic has emphasized the need for agility in project management, particularly in developing economies with limited resources. Research by Sharma, Luthra, Joshi, and Joshi (2022) identifies key challenges in applying the Agile approach:

a. Skepticism towards new methods may hinder the adoption of agile practices due to resistance to change.
b. Managing partnerships becomes more complex during the pandemic, with limited face-to-face interactions.
c. Investment decisions requiring certainty clash with the iterative nature of agile methodologies.
d. Resource scarcity and early Industry 4.0 adoption in emerging economies further complicate agility-building.

To overcome these challenges, strategies are suggested:

a. Technology Adoption: Implement online project management tools for remote work facilitation.
b. Training and Education: Educate teams on agile methodologies and virtual work effectiveness.
c. Effective Communication: Ensure transparent communication among all parties for smooth project flow.
d. Flexibility and Adaptability: Develop an agile approach to quickly respond to changes.
e. Stakeholder Involvement: Involve stakeholders in decision-making to align on project goals.
f. Risk Management: Proactively identify and manage risks, including creating contingency plans.

5. Conclusions

The systematic literature review on project management in Indonesia from 2018 to 2023 has provided a comprehensive exploration of the field's evolution, highlighting the integration of modern project management approaches that are adaptive and responsive to the changing needs of the industry. This review has identified the additional pressures on companies to expedite new product development, customize services to client needs, and carefully calculate investment levels in project management, which are crucial for the advancement of project management practices in Indonesia. The research has also shed light on the significant variations in Indonesia's project landscape, the importance of organizational culture, and the role of authentic leadership in fostering employee well-being. The

advancement of Industry 4.0 technology, the mental health of workers, and the challenges of implementing socially sustainable community development have been recognized as key factors influencing project management in Indonesia.

However, this review is not without its limitations. The primary limitation lies in the scope of the literature search, which was confined to articles from accredited international journals accessed through Google Scholar and categorized from Scopus 1 to Scopus 4. This may have excluded relevant studies published in other databases or journals not indexed in Scopus, potentially limiting the breadth of perspectives and findings. Additionally, while the review has provided valuable insights into the challenges and opportunities within the field of project management in Indonesia, it has not extensively explored the practical application of these insights in real-world settings. The discrepancy between academic theory and industry practice in project management remains a gap that requires further investigation and bridging.

In conclusion, this systematic literature review has contributed to a deeper understanding of project management in Indonesia, offering a foundation for future research and improved practices. It is recommended that future studies expand the scope of literature search and focus on the practical application of project management theories to address the evolving challenges in the field. By doing so, project management practices in Indonesia can be further refined to meet the demands of the industry and support the nation's development in the global arena.

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