Recibido: 06/02/2026 | **Aceptado:** 19/05/2026 | **Publicado:** 1/6/2026

Project management and agile methodologies – systematic review and bibliometric analysis

Gestión de proyectos y metodologías ágiles – revisión sistemática y análisis bibliométrico

https://doi.org/10.21803/adgnosis.1114

JHONY ALEXANDER BARRERA LIEVANO
https://orcid.org/0000-0002-2274-2297
JESÚS ENRIQUE BELTRÁN VIRGÜEZ
https://orcid.org/0000-0003-3144-3720

Cómo citar este artículo
Barrera, J. y Beltrán, J. (2026). Project management and agile methodologies – systematic review and bibliometric analysis. *Ad-gnosis, 15*(17). *e-1114.* https://doi.org/10.21803/adgnosis.1114

Abstract:

Introduction: Project management is a valued tool regardless of the context in which the project is proposed or executed, and its scope or budget. Agile methodologies have gained acceptance within the expert community due to their advantages compared to traditional methods. **Objective**: Determine the type of agile methodology implemented according to the project typology. **Methodology**: A systematic literature review is conducted, addressing project management based on the type of project and the agile methodology employed for its development. The review uses the Scopus bibliographic index, adhering to the PRISMA statement. **Results**: The main findings indicate that 41.25% of the studies focus on software development, while the remaining 58.75% encompass various types of projects, demonstrating that agile methodologies have ventured into different fields of knowledge. The central problematic focus of the analyzed studies is the application of agile methodologies themselves (56.25%), followed by project efficiency (17.5%) and pedagogical didactics (11.25%). **Conclusions**: Scrum is identified as the most addressed methodology, appearing in 97% of the studies.

Keywords[1]**:** Management; Management techniques; Project implementation; Project management**.**

JEL: M10; M19

Resumen:

Introducción: La gestión de proyectos es una herramienta valorada independientemente del contexto en el que el proyecto se proponga o ejecute, al igual que de su alcance o presupuesto. Las metodologías ágiles han ganado aceptación entre la comunidad experta debido a sus ventajas en comparación con los métodos tradicionales. **Objetivo**: Determinar el tipo de metodología ágil implementada según tipología de proyecto. **Metodología**: Se realiza una revisión sistemática de la literatura que aborda la gestión de proyectos según el tipo de proyecto y la metodología ágil utilizada para su desarrollo. La revisión se realiza en el índice bibliográfico de Scopus contemplando lo planteado en la declaración PRISMA. **Resultados:** Los principales hallazgos indican que el 41,25% de las investigaciones se centran en el desarrollo de software, mientras que el 58,75% restante abarca diversos tipos de proyectos, lo que demuestra que las metodologías ágiles han incursionado en diferentes campos del conocimiento. El enfoque problemático central de las investigaciones analizadas es la aplicación de la propia metodología ágil (56,25%), seguido de la eficiencia del proyecto (17,5%) y la didáctica pedagógica (11,25%). **Conclusiones:** Scrum se identifica como la metodología más abordada, predominando en el 97% de las investigaciones.

Palabras clave: Administración; Técnicas de administración; Implementación de proyectos; Administración de proyectos**.**

1 UNESCO Thesaurus

1. INTRODUCTION

Project management is a relatively young discipline (Stretton, 1994) that, despite its short existence, has impacted all fields of knowledge related to management. Although its formal study spans little more than a century, it is possible to affirm that its most rudimentary principles have been applied throughout the history of humanity (González et al., 2014). Furthermore, it has been instrumental in scientific and technological developments that have shaped history by creating significant turning points, such as the development of the atomic bomb (Wallace, 2014). However, despite the increasing number of studies and developments regarding how projects should be managed, differences still exist today regarding the idealization of the "correct way" to manage projects. Over the past seventy years, several methodologies have emerged as a result of reflections on how projects should be managed, recognizing that a project is not an end in itself (McElroy, 1996), but rather a means to achieve clearly identifiable objectives (Miranda, 2004). Therefore, as a tool, project management methodologies must be useful and efficient in achieving the goals that motivate the project's conception and subsequent development. This, in turn, has implications in terms of time, performance, costs, safety, and risk (Miranda, 2005; Söderlund, 2004), among other possible aspects.

According to the Project Management Institute, there is strong evidence indicating that poor project management leads to the waste of up to 10% of total investment. This represents ten cents lost for every dollar invested. Additionally, more than 30% of executed projects fail to achieve their intended objectives, meaning that they do not fulfill the purpose that motivated their creation (PMI, 2018). This situation results from multiple factors, including poor planning, economic conditions, political stability in the location where the project is implemented, unrealistic timelines, and unfeasible project proposals (Crispieri, 2019), as well as the human factor (Vélez et al., 2018), among others. Issues such as failed projects and the high rate of renegotiation associated with them (Al-subhi et al., 2020) prompt reflection on the suitability of the methodologies selected for project development according to their specific characteristics. Project management can be understood as the application of a set of knowledge, tools, skills, and techniques to the tasks and activities defined within a project in order to meet its requirements (PMI, 2021). In essence, it focuses on the efficiency and effectiveness of the overall process for the benefit of the organization executing the project. Currently, a significant number of methodologies have been developed for project management.

Over time, project management methodologies have evolved under the influence of factors such as technological development and the increasing need to adapt them to specific requirements (Luna et al., 2022), which arise from the inherent characteristics of each project. In this context, the so-called agile methodologies have gained significant worldwide acceptance among project management professionals due to their flexibility when compared to rigid or traditional methodologies. Nevertheless, they also present certain limitations, for example, when applied to large-scale projects (Figueroa et al., 2008). The origin of agile methodologies can be traced to the Agile Manifesto (Uribe & Ayala, 2007), which establishes a set of principles guiding the software development process.

Among agile methodologies are, but are not limited to, Scrum, Kanban, Agile Inception, and Design Sprint, which are implemented in the management of projects across different fields and areas of knowledge.

Scrum is a project management methodology primarily used in software development (Rodríguez & Vicente, 2015). It is based on the ideas proposed by Ikujiro Nonaka and Hirotaka Takeuchi in the 1980s, who emphasized the importance of teamwork in product development and the autonomy required within teams (Takeuchi & Nonaka, 1986). In the 1990s, Ken Schwaber and Jeff Sutherland developed the concept of Scrum as a methodology for software development (SCRUMstudy, 2017). This framework is grounded in the Agile Manifesto, Lean principles, and empiricism (Lei et al., 2017; Permana, 2015; Reddy, 2015).

Scrum is implemented through small teams with clearly defined objectives that must be achieved within short time frames ranging from one to four weeks, known as sprints. This approach allows functional products to be delivered to clients throughout the project development process rather than only at the end (Mathis, 2018). Although Scrum is widely used in software development, it has also been applied in various other areas and fields (Oprins et al., 2019). Among its main limitations or disadvantages are the small size of teams, limited emphasis on testing processes, the pressure for rapid delivery, and the fact that resource replacements or additions can only be made at the beginning of a sprint (Salazar & Beltrán, 2020). Kanban, as mentioned by Bermejo (2011), is a Japanese term derived from the combination of two words: kan, referring to "visual," and ban, meaning something similar to a "card" or "board." As a methodology, Kanban is a management technique based on a pull system, grounded in process self-management without centralized scheduling. It focuses on producing and transporting what is required by each consuming process while maintaining this rationality throughout the production system (Arango Serna et al., 2015). This methodology is based on a set of six rules centered on the production process (Cárdenas & Jaimes, 2021).

Agile Inception, also known as the Agile Inception Deck, is an agile methodology based on a set of activities that enable teams to develop products correctly and appropriately. According to Torres (2023), it consists of ten steps designed to align the team around a shared purpose related to the product. Design Sprint is an agile methodology proposed by Google Ventures, originally developed to accelerate the processes of building and testing ideas within a short timeframe (Knapp et al., 2017). As a methodology, it focuses on the user through an iterative, practical, and collaborative approach to product development and is influenced by other methodologies such as Design Thinking (da Silva, 2018). The Design Sprint process follows five steps, typically carried out over five days, starting from the identification of a problem and culminating in a product prototype (Souza, 2023).

Despite the growing body of literature on project management and agile methodologies, existing studies have primarily focused on describing the operational characteristics, implementation processes, and practical benefits of specific frameworks such as Scrum and Kanban, particularly within software development environments (Serrador & Pinto, 2015). However, there is still limited integrative evidence regarding how agile methodologies are adopted across differ-

ent project typologies and organizational contexts. In addition, previous reviews have tended to emphasize descriptive or bibliometric approaches, with limited analytical discussion concerning the evolution, applicability, and contextual limitations of these methodologies across diverse sectors. This gap highlights the need for updated systematic reviews that not only identify publication trends, but also examine the relationship between agile methodologies and the specific characteristics of the projects in which they are implemented, thereby contributing to a broader and more contextualized understanding of agile project management practices (Luna et al., 2022).

This research adopts a documentary approach and employs a systematic literature review based on research documents indexed in the Scopus bibliographic database. The main objective of this study is to determine the type of agile methodology implemented according to project typology.

2. METHODOLOGY

Given that this document aims to provide a significant contribution to the academic literature, it employs a systematic literature review as its methodological approach. This type of review is understood as one that applies systematic methods to individual studies to collect and synthesize data to address a clearly defined and precisely formulated research question (Dekkers et al., 2019). The methodological framework proposed by Petticrew and Roberts (2006), developed for the social sciences, is adopted. This framework follows six fundamental steps and is complemented by the development of the items included in the PRISMA (2020), as presented below:

Step 1) Formulation of research question(s): A primary research question is formulated as follows: According to the type of project to be developed, which type(s) of agile methodology(ies) are used?

Step 2) Selection of database(s) and definition of search equation(s): The review was conducted using the Scopus bibliographic database in January 2026. For the search process, the following search equation was used: (“Project management” OR “Projects management” OR “Project administration”) AND (“Scrum” OR “Kanban” OR “Agile Inception” OR “Design Sprint”) AND (“business” OR “Company” OR “Organizations”).

The Scopus bibliographic database was selected as the sole database for this study because it is widely recognized as one of the largest and most rigorous multidisciplinary scientific indexing platforms, offering extensive international coverage and peer-reviewed academic publications. Its use enabled access to a solid and standardized body of literature, thereby facilitating the traceability, reproducibility, and consistency of both the systematic review and the bibliometric analysis.

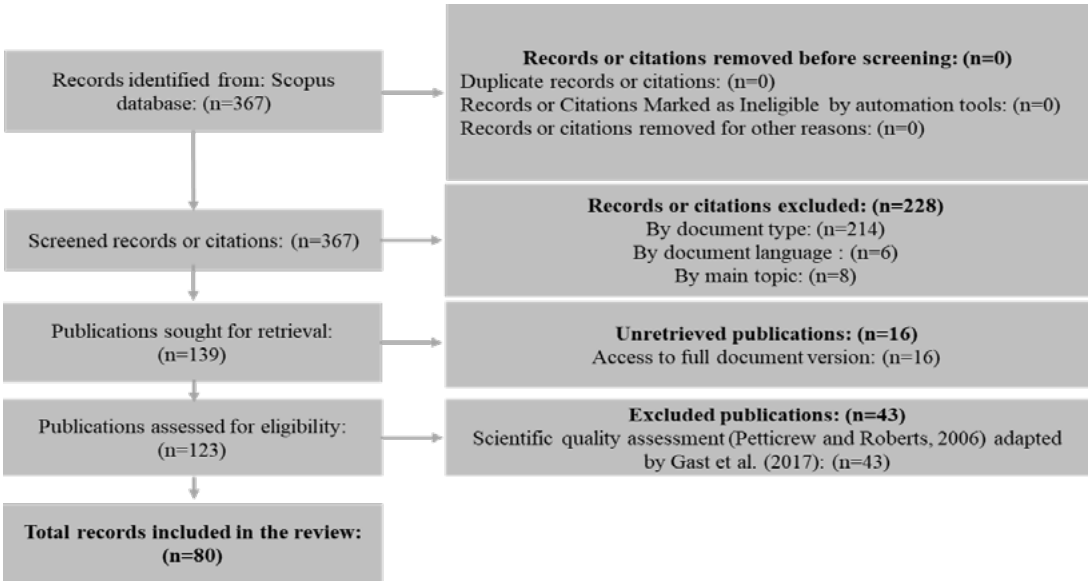
Step 3) Formulation of inclusion and exclusion criteria: The following inclusion and exclusion criteria were established: review period (2015–2025); document types: articles, book chapters, and books; document language: English; and systematic literature reviews were excluded. Additionally, an inclusion criterion required that the full version of the document be available.

The period (2015–2025) was selected because it represents the most recent decade of scientific production on project management and agile methodologies, a timeframe in which the highest concentration of research and academic publications in this field has been recorded. In addition, this period makes it possible to examine the latest trends, as well as the conceptual and methodological evolution of the field, while capturing contemporary dynamics related to the adoption of agile approaches across different organizational contexts.

Step 4) Bibliometric analysis: Given the importance of bibliometric analysis (Ceballos-Parra et al., 2018), descriptive statistics were used to examine categories or factors such as journal identification, authors, affiliated institutions, countries, number of publications per year, type of publication, among others. These elements allow the identification of trends in knowledge generation related to the subject of this research. For the bibliometric analysis, the software VOSviewer 1.6.20 and MS Excel from Office 365 were used.

Step 5) Evaluation of the scientific quality of publications: To assess the scientific quality of the documents considered in the proposed systematic review, eleven criteria proposed by Petticrew and Roberts (2006) were used, which were later adapted by Gast et al. (2017) for application in the social sciences. Each quality criterion was evaluated according to three parameters: the criterion is not defined (score: 0.0); the criterion is presented but not clearly defined (score: 0.5); and the criterion is clearly defined (score: 1.0). Accordingly, the total evaluation scale ranges from 0 to 11. For a document to be included in the review, it must obtain a minimum quality score of 6.0. After applying all the criteria established for the systematic review, the results are presented following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Statement (2020), as illustrated in Figure 1.

Figure 1.
Schematic representation of the application of the method established in the PRISMA statement



Note. Adapted from Yepes-Nuñez et al. (2021)

Once the selection process was completed according to the established parameters, a total of 80 records were obtained for review from the 367 documents identified in the Scopus bibliographic database. Table 1 presents the list of included documents, indicating the document ID (an identifier assigned within this review), the document citation, and the number of citations recorded in the database.

Table 1.

Documents included in the systematic review

ID	Document citation	Citations	ID	Document citation	Citations
1	Azanha et al. (2017)	57	41	Milićević et al. (2019)	3
2	Hidalgo (2019)	48	42	Micic (2017)	2
3	Heikkilä et al. (2017)	48	43	Antunes et al. (2015)	2
4	Streule et al. (2016)	46	44	Haxby & Lekhi (2017)	2
5	Machado et al. (2015)	34	45	Pishchik et al. (2020)	2
6	Galvan et al. (2015)	22	46	Kussunga & Ribeiro (2019)	2
7	Masood et al. (2022)	19	47	Ivetić & Ilić (2020)	2
8	Mousaei & Gandomani (2018)	16	48	Cortés & Lizano (2019)	2
9	Ribeiro & Domingues (2018)	15	49	Kautz et al. (2016)	2
10	Oprins et al. (2019)	15	50	Baxter & Turner (2023)	2
11	Lehnen et al. (2016)	13	51	Marchwicka et al. (2022)	1
12	Paschek et al. (2016)	13	52	Rajan & Santhosh (2021)	1
13	Jiménez et al. (2020)	12	53	Alshammari (2022)	1
14	Stormi et al. (2019)	12	54	Revutska & Antlová (2022)	1
15	Santos Júnior et al. (2021)	12	55	Mahajan et al. (2019)	1
16	Vogelzang et al. (2020)	11	56	Godse & Rajiv (2021)	1
17	Balashova & Gromova (2017)	11	57	Nyemkova et al. (2022)	1
18	Gablas et al. (2018)	11	58	De Melo et al. (2019)	1
19	Mkoba & Marnewick & (2020)	10	59	Almeida & Carneiro (2023)	1
20	Akhmetshin et al. (2019)	10	60	Orłowski et al. (2017)	1
21	Jesse (2019)	8	61	Pelantova & Vitvarova (2015)	1
22	Freitas et al. (2020)	8	62	Dong (2023)	1
23	Kristinsdottir et al. (2016)	8	63	Babik (2022)	1
24	Weinreich et al. (2015)	8	64	Proença & Bernardino (2019)	1
25	Almeida & Espinheira (2022)	7	65	Sud (2025)	0
26	Wannes & Ghannouchi (2019)	7	66	Sudiarno et al. (2024)	0
27	Valero-Pastor et al. (2019)	7	67	Tudose et al. (2024)	0
28	Dolezel et al. (2019)	7	68	Takagi & Varajão (2025)	0
29	Besenyöi et al. (2018)	6	69	Kour & Kharat (2025)	0
30	Iqbal et al. (2019)	6	70	Julianasari et al. (2022)	0
31	Hanslo et al. (2020)	5	71	Lopes et al. (2021)	0

ID	Document citation	Citations	ID	Document citation	Citations
32	Patrucco et al. (2022)	5	72	Lahiri & Saltz (2023)	0
33	Enkler & Sporleder (2019)	4	73	Suárez-Gómez & Hoyos-Vallejo (2023)	0
34	Orlov et al. (2021)	4	74	Soukaina et al. (2022)	0
35	Javed et al. (2021)	4	75	Schramm et al. (2023)	0
36	Verlaine et al. (2016)	4	76	Oliveira et al. (2016)	0
37	Drazic & Schermuly (2021)	4	77	Pejcinovic et al. (2019)	0
38	Hamerski et al. (2019)	4	78	Ribeiro et al. (2018)	0
39	Garcia et al. (2021)	3	79	Bose et al. (2023)	0
40	Stechert (2021)	3	80	Thackeray & Thackeray (2023)	0

Step 6) Category analysis: The categories analyzed derive from the research questions formulated. The following categories are proposed in relation to the research questions addressed:

Table 2.
Categories of analysis

Question		Categories
According to the type of project to be developed, which type(s) of agile methodology(ies) are used?	Project Type	Construction Project Software Development Project Research Project Intrapreneurial Project IT Project* Non–Software Development Project* Academic Project* Data Science Project*
	Agile Methodology	Agile Inception Design Sprint Kanban Scrum Crystal* Extreme Programming – XP* Lean* LeSS Framework* UPEDU*
* Emerging categories		

During the review process, the categories marked with an asterisk in Table 2 emerged as emerging categories, totaling nine, based on the research question proposed for the development of the present review.

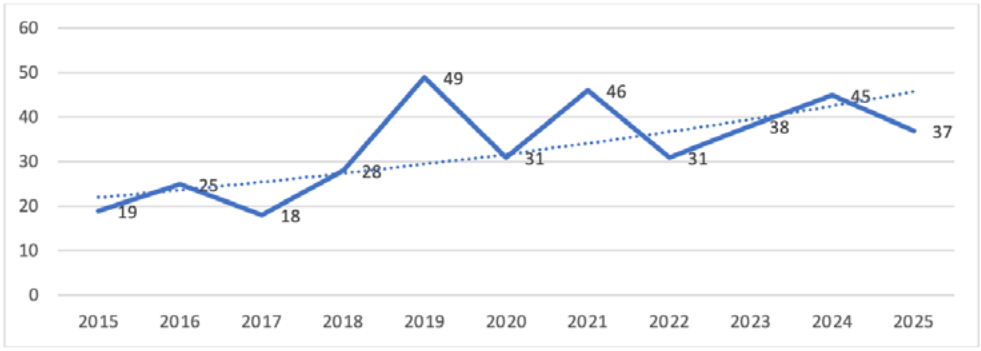
3. RESULTS

Following the proposed methodological framework, the bibliometric analysis (based on the 367 documents identified in the Scopus database for the established period) and the category analysis derived from the findings (based on the 80 documents selected after applying the PRISMA protocol criteria) are presented below.

3.1. Bibliometric Analysis

The bibliometric analysis considers the entire body of knowledge indexed in the Scopus database for the previously defined time period (2015–2023). The first analysis examines the number of publications produced per year. Figure 2 illustrates this trend.

Figure 2.



The graph indicates that 2019, 2020, and 2021 recorded the highest levels of scientific production within the analyzed period. For the author analysis conducted using VOSviewer software, a minimum threshold of two documents per author was established. The results are presented in Figure 3.

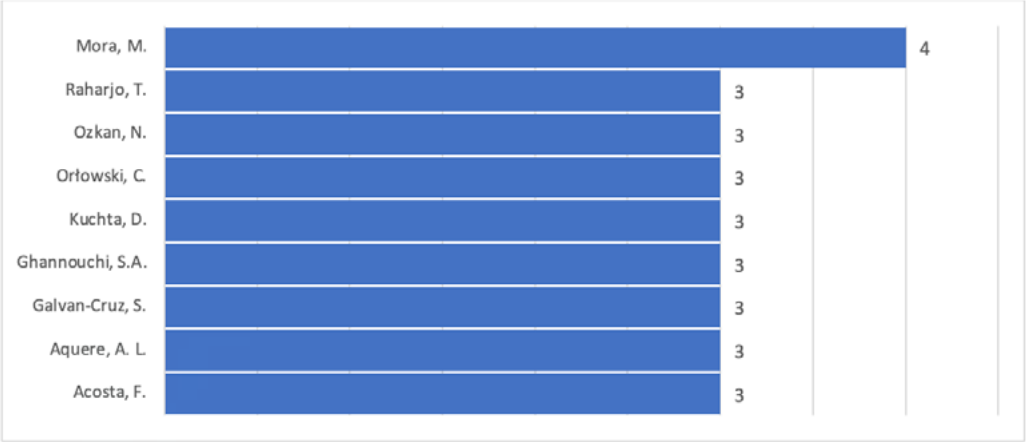
Figure 3.

Author analysis

As illustrated in the previous figure, the resulting network is relatively small, indicating a

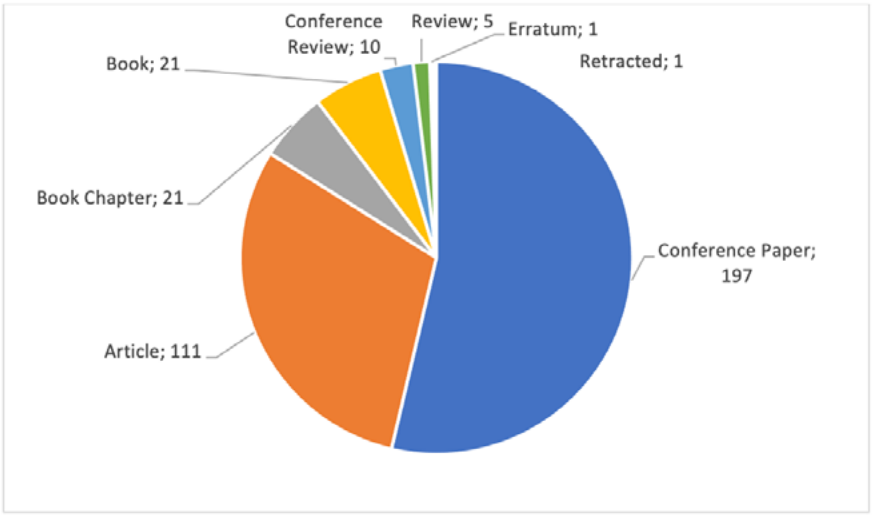
degree of fragmentation (or "atomicity") in the scientific production within this field. Figure 4 presents the nine leading authors based on the number of documents published in Scopus during the established time period.

Figure 4.
Number of documents by author



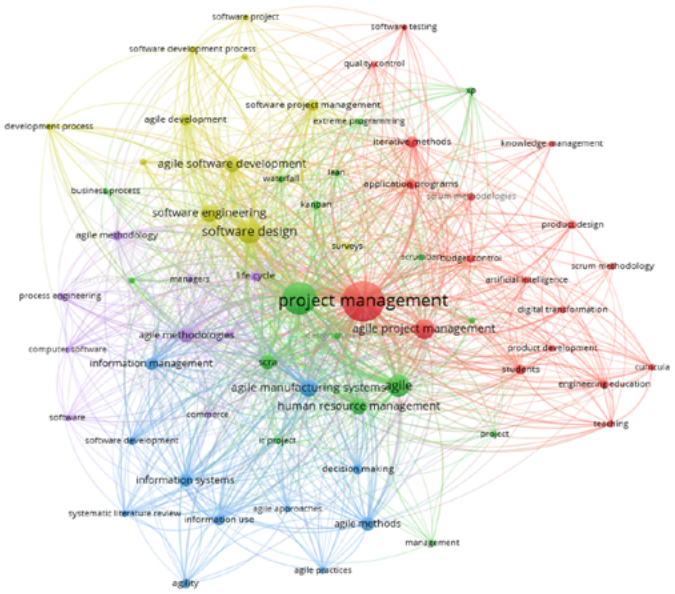
The graph shows that the author with the highest number of publications in this field during the 2015–2025 period has four publications, followed by eight authors with three publications each. The remaining authors have two or one publication. Regarding the type of document published, Figure 5 presents the results. Conference papers account for more than 50% of the total publications, followed by journal articles with slightly over 30%.

Figure 5.
Number of documents by type



For the keyword co-occurrence analysis, VOSviewer software was used, setting a minimum occurrence threshold of five for each keyword. The resulting visualization is presented in Figure 6.

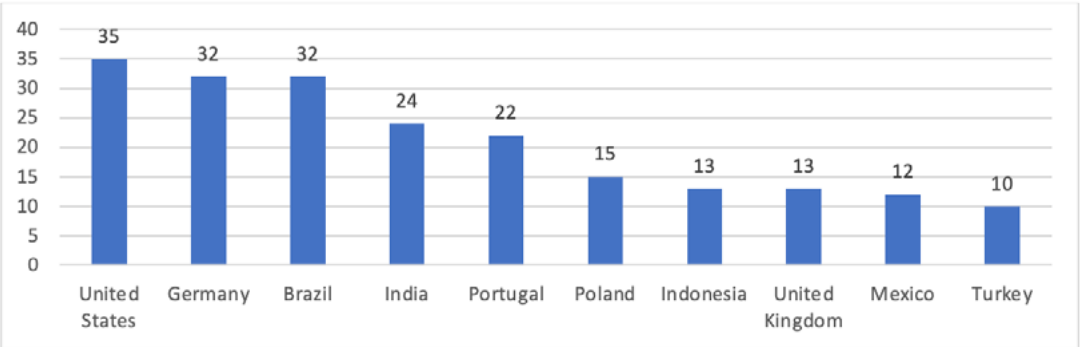
Figure 6.
Keyword co-occurrence analysis



Within this field of knowledge, the main keywords identified in the scientific documents indexed in the database (top 10, in descending order) are: Project management; Scrum; software design; agile; software engineering; agile manufacturing system; agile project management; human resource management; agile software development; and agile methodologies.

Regarding scientific production by country, the top three countries with the highest number of publications in the Scopus database are the United States, Germany, and Brazil. Figure 7 presents the list of countries with the highest publication output in this field of knowledge.

Figure 7.
Number of documents published by country

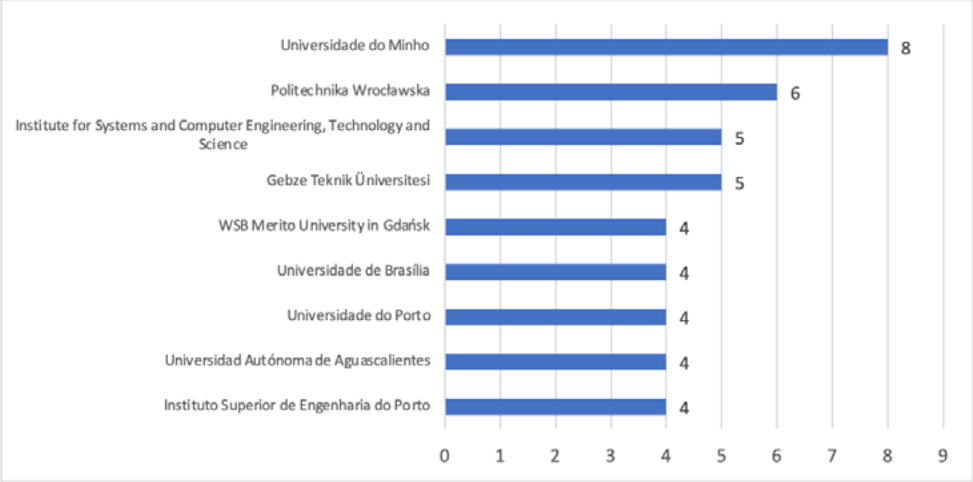


Regarding the countries and the number of publications, it is noteworthy that Brazil and

Mexico appear in the top 10, being the only Latin American countries represented. Surprisingly, China does not appear on thet list, despite being one of the largest producers of scientific publications worldwide.

With respect to author affiliation, Figure 8 presents the top 10 institutions reported by authors as their affiliations. The figure shows that the institution with the highest number of documents produced is the University of Minho, with six documents.

Figure 8.
Number of documents published by author affiliation



3.2. Category analysis according to the findings

This section presents the results obtained by categories, according to the research question proposed for the present systematic literature review, based on the framework established in Step 6.

Table 3.
Category – Project Type vs. Agile Methodology

Project Type	Total Documents	Agile Methodology	Number of Documents	Document ID
Software Development Project	33	Scrum	32	1, 5, 6, 8, 9, 15, 23, 26, 28, 30, 34, 36, 42, 43, 46, 48, 49, 53, 55, 56, 57, 58, 59, 64, 67, 70, 74, 75, 76, 78, 79, 80
		Kanban	3	30, 34, 57
		Extreme Programming – XP	4	6, 30, 67, 75
		LeSS Framework	1	25
		UPEDU	2	6, 67

Project Type	Total Documents	Agile Methodology	Number of Documents	Document ID
Intrapreneurial Project	14	Scrum	13	12, 13, 14, 22, 27, 33, 35, 39, 51, 54, 61, 66, 71
		Kanban	3	22, 27, 54
		Lean	2	33, 54
		Extreme Programming – XP	1	27
		Crystal	1	27
		Agile	1	17
Any type of project	9	Scrum	9	7, 11, 18, 19, 45, 47, 50, 62, 73
		Kanban	2	19, 45
		Extreme Programming – XP	1	19
Academic Project	8	Scrum	8	16, 20, 40, 41, 63, 68, 69, 77
		Lean	2	69, 77
		Agile	1	20
Construction Project	4	Scrum	4	4, 29, 38, 65
IT Project	3	Scrum	3	44, 52, 60
Non–Software Development Project	3	Scrum	3	10, 24, 32
Research Project	2	Scrum	2	2, 3
Data Science Project	1	Scrum	1	72
Unspecified	3	Scrum	3	21, 31, 37
Total documents	**80**			

It is identified that Kanban and Extreme Programming (XP) are associated with documents addressing software development projects and intrapreneurial projects. Regarding the emerging concepts, although in no case do they reach a participation equal to or greater than 5% in terms of both project type and agile methodology, it is observed that Lean and Agile Inception are related to documents addressing intrapreneurial projects and academic projects. Additionally, Crystal is associated with intrapreneurial projects, while the LeSS Framework is linked to software development projects.

4. DISCUSSION

Undoubtedly, project management has become an ideal managerial tool for achieving specific objectives. Its historical evolution helps to understand its importance. The results obtained in this research confirm what was stated by Luna et al. (2022) regarding the current acceptance of

agile methodologies in project management processes, with Scrum identified as the most widely implemented methodology (Rodríguez & Vicente, 2015), regardless of the type or nature of the project being developed (Oprins et al., 2019).

The findings of this study suggest that, although agile methodologies are currently applied across different project typologies, their adoption remains strongly concentrated around Scrum, particularly in software development environments. This tendency confirms previous studies that identify Scrum as the dominant agile framework due to its adaptability, iterative structure, and capacity to facilitate continuous delivery processes (Oprins et al., 2019; Serrador & Pinto, 2015). However, the results also reveal an important imbalance in the development and dissemination of other agile methodologies, such as Kanban, Lean, Crystal, Agile Inception, and LeSS Framework, whose presence in the literature remains considerably lower. This situation may indicate that organizations and researchers continue to prioritize methodologies with greater market visibility and standardization, even though some studies have highlighted that no single agile methodology is universally effective for all project contexts or organizational environments (Conforto et al., 2016). Consequently, the predominance of Scrum should not necessarily be interpreted as evidence of universal superiority, but rather as a reflection of its broader institutionalization and maturity within the field of project management.

Agile methodologies in project management have gained significant prominence in the field of knowledge due to their capacity to generate tangible and functional deliverables before the overall completion of the project, as well as their flexibility, in contrast to traditional methodologies, which are generally characterized by rigidity and the delivery of a single output at the end of the project execution. The main challenge in project management lies in the project outcomes themselves, which, as indicated by the Project Management Institute (PMI), often fail to achieve the originally defined objectives. Problems related to poor planning, cost overruns, schedule delays, and team management, among others, are also frequently observed. These issues bring to the forefront the debate regarding the appropriateness of the methodologies applied in project management.

5. CONCLUSIONS

After conducting the present systematic literature review and addressing the proposed objective, it was clearly found that Scrum is currently the most widely used methodology in the studies identified in the Scopus database for the established time period. As identified, Scrum is not only used for software development projects, but is also applied to projects of diverse nature. This finding suggests the multidisciplinary suitability of the methodology, given its characteristics based on agility and empiricism. In this same context, Kanban also stands out as a relevant methodology, being applied both in software development projects and in other types of projects within organizations, and it is often integrated with Scrum in order to enhance the benefits of both approaches. It is also noteworthy that no evidence was found in any of the analyzed documents regarding the use of Design Sprint, the methodology developed at Google Ventures.

As the main axis of the problem addressed in the analyzed documents, the application of agile methodologies within specific contexts was identified. This is closely linked to the main research method used in the studies, namely the case study, through which specific situations within particular organizations were examined. Another prominent issue addressed in the literature is the overall efficiency of project processes, which is directly associated with the success of project execution. Along this same line, pedagogical didactics also emerges as a relevant area, where agile methodologies—mainly Scrum—are applied in the development of academic projects, also known as classroom projects.

Overall, the findings show that scientific research on agile methodologies mainly focuses on project development using Scrum, given its characteristics and its contributions throughout the entire project management process. The results demonstrate that this methodology is not only used in software development projects, but also in construction projects, intrapreneurial projects, research projects, data science projects, among others. In fact, it can be applied to virtually any type of project with clearly defined objectives.

The main implications identified in this research are associated with the generalized use of Scrum as a project management methodology regardless of project type. However, its suitability for large-scale projects still needs to be tested, representing an area that remains open for further study. Likewise, the lack of evidence regarding research on the Design Sprint methodology invites reflection on the limited interest that researchers have shown toward its impact within organizational processes. Finally, a growing tendency has been identified to combine different agile methodologies, creating hybrid approaches tested in specific cases with promising results, such as "Scrumban," which integrates components of Scrum and Kanban.

As future research directions, it would be valuable to investigate the measurement of efficiency impacts in projects managed through hybrid agile methodologies. Another promising line of research involves exploring the integration of agile principles into traditional methodologies in order to address large-scale projects, an area where agile methodologies alone have not yet demonstrated optimal performance.

Conflicts of interest: The authors declare no conflict of interest.

6. REFERENCES

Akhmetshin, E. M., Romanov, P. Y., Zakieva, R. R., Zhminko, A. E., Aleshko, R. A. & Makarov, A. L. (2019). Modern approaches to innovative project management in entrepreneurship education: A review of methods and applications in education. *Journal of entrepreneurship education, 22,* 1-15. https://www.abacademies.org/articles/Modern-approaches-to-innovative-project-1528-2651-22-S1-355.pdf

Almeida, F. & Carneiro, P. (2023). Perceived Importance of Metrics for Agile Scrum Environments. *Information*, *14*(6), 327. https://www.mdpi.com/2078-2489/14/6/327

Almeida, F. & Espinheira, E. (2022). Adoption of Large-Scale Scrum Practices through the Use of Management 3.0. *Informatics*, *9*(1). MDPI. https://www.mdpi.com/2227-9709/9/1/20

Alshammari, F. H. (2022). Analytical Evaluation of SOA and SCRUM Business Process Management Approaches for IoT-Based Services Development. *Scientific Programming*, *22*, 1-14. https://doi/10.1155/2022/3556809

Al-subhi, S. H., Pérez, P. P., Vacacela, R. G., Mahdi, G. S. S. & Acuña, L. A. (2020). Sistema de apoyo a la toma de decisiones durante la gestión de proyectos basado en Mapas Cognitivos Neutrosóficos. *Revista Investigación Operacional*, *41*(5), 768-779. https://redi.cedia.edu.ec/document/456678

Antunes, B., Santos, D., Lopes, E., Fidalgo, F. & Alves, P. (2015). Blisstrail: an agile project business case study. *Procedia Computer Science*, *64*, 529-536. https://www.sciencedirect.com/science/article/pii/S1877050915026939

Arango Serna, M. D., Campuzano Zapata, L. F. & Zapata Cortes, J. A. (2015). Mejoramiento de procesos de manufactura utilizando Kanban. *Revista Ingenierías Universidad de Medellín*, *14*(27), 221-233. https://doi.org/10.22395/rium.v14n27a13

Azanha, A., Argoud, A. R. T. T., Camargo Junior, J. B. D. & Antoniolli, P. D. (2017). Agile project management with Scrum: A case study of a Brazilian pharmaceutical company IT project. *International journal of managing projects in business*, *10*(1), 121-142. https://www.emerald.com/ijmpb/article-abstract/10/1/121/148130/Agile-project-management-with-ScrumA-case-study-of?redirectedFrom=fulltext

Babik, D. (2022). Teaching Tip: Scrum Boot Camp: Introducing Students to Agile System Development. *Journal of Information Systems Education*, *33*(3), 195-208. https://jise.org/Volume33/n3/JISE-2022v33n3pp195-208.pdf

Balashova, E. S. & Gromova, E. A. (2017). Agile project management in telecommunications industry. *Revista Espacios*, *38*(41), 1-8. https://doi.org/10.12691/jbms-10-4-6

Baxter, D. & Turner, N. (2023). Why Scrum works in new product development: the role of social capital in managing complexity. *Production Planning & Control*, *34*(13), 1248-1260. https://doi.org/10.1080/09537287.2021.1997291

Bermejo, M. (2011). *El Kanban. UOC.* https://es.scribd.com/document/360337253/El-Kanban-Manual-UOC-pdf

Besenyöi-Laux, Z., Krämer, M. & Husain, F. (2018). Building Information Modelling in Agile Environments - an Example of Event Management at the Airport of Tempelhof [Paper presentation]. *MATEC Web of Conferences*, 251. https://doi.org/10.1051/matecconf/201825103064

Bose, B., Khan, N. T., Ashreen, S., Shuvo, F. A., Mazid-Ul-Haque, M. & Bhowmik, A. (2023). Hybrid Scrum-XP: A Proposed Model based on Effectiveness of Agile Model on Varieties of Software Companies in Bangladesh. *AIUB Journal of Science and Engineering (AJSE)*, *22*(1), 35-44. https://doi.org/10.53799/ajse.v22i1.353

Cárdenas, N. L. & Jaimes, L. (2021). Kanban como herramienta de mejora de procesos productivos. *Revista Ingeniare, 17*(31). https://doi.org/10.18041/1909-2458/ingeniare.31.8957

Ceballos-Parra, P.J., Sarache, W. A. & Gómez, D.M. (2018). *Un Análisis Bibliométrico de las Tendencias en Logística Humanitaria*. *Información Tecnológica, 29*(1), 91-104. https://doi.org/10.4067/S0718-07642018000100091

Conforto, E. C., Amaral, D. C., da Silva, S. L., Di Felippo, A., y Kamikawachi, D. S. L. (2016). *The agility construct on project management theory*. *International Journal of Project Management, 34*(4), 660–674. https://doi.org/10.1016/j.ijproman.2016.01.007

Cortés Chavarria, R. & Lizano Madriz, F. (2019). *ROI Estimation in a Scrum Project: A case study* [Paper presentation]. 28th International Conference on Software Engineering and Data Engineering (SEDE), San Diego, CA, United States. *EPiC Series in Computing*, *64*, 78–87.

Crispieri, G. P. (2019). Factores de éxito y fracaso en la gestión de proyectos: un enfoque en las mejores prácticas. *Project Design and Management*, *1*(1), 65-76. https://doi.org/10.35992/drhzdx28

da Silva, E. J. (2018). O design sprint como ferramenta para engajamento da equipe: um estudo de caso. *Human Factors in Design, 7*(13). 191–202. https://doi.org/10.5965/2316796307132018191

De Melo, I. F., Mendes, G. A. R. & Gelmetti, S. A. (2019). Non-Scrum Implementation: A Methodological Approach for Small Companies. In *18th European Conference on Research Methodology for Business and Management Studies*. https://www.semanticscholar.org/paper/Non-Scrum-Implementation%3A-A-Methodological-Approach-Melo-Mendes/ed26c-7d518769870e7ee5b6a3746273e2fa8fa7f

Dekkers, O. M., Vandenbroucke, J. P., Cevallos, M., Renehan, A. G., Altman, D. G. & Egger, M. (2019). COSMOS-E: guidance on conducting systematic reviews and meta-analyses of observational studies of etiology. *PLoS medicine, 16*(2), e1002742. https://doi.org/10.1371/journal.pmed.1002742

Dolezel, M., Buchalcevova, A., & Mencik, M. (2019, 16–17 December). *The State of Agile Software Development in the Czech Republic: Preliminary Findings Indicate the*

Dominance of "Abridged" Scrum [Paper presentation]. 13th IFIP WG 8.9 International Conference on Research and Practical Issues of Enterprise Information Systems (CONFENIS), Prague, Czech Republic. https://www.researchgate.net/publication/337954706_The_State_of_Agile_Software_Development_in_the_Czech_Republic_Preliminary_Findings_Indicate_the_Dominance_of_Abridged_Scrum

Dong, L. (2023). Strengthening Sustainability in Agile Education: Using Client-Sponsored Projects to Cultivate Agile Talents. *Sustainability*, *15*(11), 8598. https://doi.org/10.3390/su15118598

Drazic, I. & Schermuly, C. C. (2021). Too old for agility? Employee age and readiness for change toward scrum—The moderating roles of age climate and subjective age. *Work, Aging and Retirement*, *7*(3), 174-196. https://academic.oup.com/workar/article-abstract/7/3/174/6168338

Enkler, H. G. & Sporleder, L. (2019). Agile Product Development—coupling explorative and established CAx methods in Early Stages of Virtual Product Development. *Procedia CIRP*, *84*, 848-853. https://www.sciencedirect.com/science/article/pii/S2212827119308650

Figueroa, R. G., Solís, C. J. & Cabrera, A. A. (2008). Metodologías tradicionales vs. metodologías ágiles. *Universidad Técnica Particular de Loja, Escuela de Ciencias de la Computación*, *9*(1), 1-10. https://www.researchgate.net/publication/299506242_METODOLOGIAS_TRADICIONALES_VS_METODOLOGIAS_AGILES

Freitas, F., Silva, F. J., Campilho, R. D. S. G., Pimentel, C., & Godina, R. (2020). Development of a suitable project management approach for projects with parallel planning and execution. *Procedia Manufacturing*, *51*, 1544-1550. https://www.sciencedirect.com/science/article/pii/S2351978920320862

Gablas, B., Ruzicky, E., & Ondrouchova, M. (2018). The Change in Management Style during then Course of a Project from the Classical to the Agile Approach. *Journal of Competitiveness*, *10*(4), 38-53. https://www.cjournal.cz/files/304.pdf

Galvan, S., Mora, M., O'Connor, R. V., Acosta, F., & Alvarez, F. (2015). A compliance analysis of agile methodologies with the ISO/IEC 29110 project management process. *Procedia Computer Science*, *64*, 188-195. https://www.sciencedirect.com/science/article/pii/S1877050915026150

Garcia, V. M. B., Martens, C. D. P., Carvalho, R. B., & Martens, M. L. (2021). Contributions of entrepreneurial orientation in the use of agile methods in project management. *Innovation & Management Review*, *18*(1), 17-33. https://www.emerald.com/inmr/article/18/1/17/180550/Contributions-of-entrepreneurial-orientation-in

Gast, I., Schildkamp, K. y van der Veen J. T. (2017). Team-Based Professional Development Interventions in Higher Education: A Systematic Review. *Review of Educational Research*, *87*(4). https://doi.org/10.3102/0034654317704306

Godse, M., & Rajiv, B. (2021). *Improvement of Project Management Knowledge Areas Using Scrum Technique* [Paper presen-

tation]. In International Conference on Optimization Methods in Engineering, Singapore. https://link.springer.com/chapter/10.1007/978-981-15-4550-4_8

González, M., Alba, F. & Ordieres, J. (2014). *Ingeniería de proyectos*. Editorial DEXTRA.

Hamerski, D. C., Formoso, C. T., Isatto, E. L., & Cevallos, C. A. (2019). Combining lean and agile project management in a multi-project environment: Case study in a retail company [Paper presentation]. *In 27th Annual Conference of the International Group for Lean Construction,(IGLC)*, Dublin, Ireland. https://www.researchgate.net/publication/335036236_Combining_Lean_and_Agile_Project_Management_in_a_Multi-Project_Environment_Case_Study_in_a_Retail_Company

Hanslo, R., Vahed, A., & Mnkandla, E. (2019). Quantitative analysis of the scrum framework. In Advances in Agile and User-Centred Software Engineering (pp. 82-107). Springer International Publishing.

Haxby, A., & Lekhi, R. (2017, 22–24 May). Building capacity in Kenya's ICT market using cross-border scrum teams [Paper presentation]. 14th IFIP WG 9.4 International Conference on Social Implications of Computers in Developing Countries (ICT4D), Yogyakarta, Indonesia. https://ifip.hal.science/IFIP-AICT-504/hal-01650101

Heikkilä, V. T., Paasivaara, M., Lasssenius, C., Damian, D., & Engblom, C. (2017). Managing the requirements flow from strategy to release in large-scale agile development: a case study at Ericsson. *Empirical Software Engineering*, *22*, 2892-2936. https://link.springer.com/article/10.1007/s10664-016-9491-z

Hidalgo, E. S. (2019). Adapting the scrum framework for agile project management in science: case study of a distributed research initiative. *Heliyon*, *5*(3), 2-32. https://doi.org/10.1016/j.heliyon.2019.e01447

Iqbal, J., Omar, M., & Yasin, A. (2019). The impact of agile methodologies and cost management success factors: An empirical study. *Baghdad Science Journal*, *16*(2), 496-504. https://www.researchgate.net/publication/329468182_The_Impact_of_Agile_Methodologies_and_Cost_Management_Success_Factors_An_Empirical_Study

Ivetić, P., & Ilić, J. (2020). Reinventing universities: Agile project management in higher education. *European Project Management Journal, 10*, 64-68. https://doi.org/10.18485/epmj.2020.10.1.7

Javed, S., Bamford, J., & Abualqumboz, M. (2021). Helping Deluxe Beds to sleep easy: A case study of agile project management. *The International Journal of Entrepreneurship and Innovation*, *22*(2), 132-139. https://doi/10.1177/1465750320974942

Jesse, N. (2019). Agility eats Legacy–the Long Good-bye. In *Proc. of 19th IFAC Conference on Technology, Culture and International Stability (154-158)*. North Holland: Elsevier.

Jiménez, V., Afonso, P., & Fernandes, G. (2020). Using agile project management in the design and implementation of ac-

tivity-based costing systems. *Sustainability*, *12*(24), 10352. https://www.mdpi.com/2071-1050/12/24/10352

Julianasari, R., Raharjo, T., Hardian, B., & Simanungkalit, T. (2022). CRITICAL FAILURE FACTOR USING TOPSIS METHOD–A CASE STUDY OF AN INDONESIAN POULTRY AGRO-TECHNOLOGY STARTUP. *Journal of Theoretical and Applied Information Technology*, *100*(20), 5865-5874. https://www.jatit.org/volumes/Vol100No20/2Vol100No20.pdf

Kautz, K., Johansen, T.H., Uldahl, A. (2016). The Perceived Impact of the Agile Development and Project Management Method Scrum on Team Leadership in Information Systems Development. In Vogel, D., Guo, X., Linger, H., Barry, C., Lang, M., Schneider, C. (eds) *Transforming Healthcare Through Information Systems*. Lecture Notes in Information Systems and Organisation, *17*. Springer. https://doi.org/10.1007/978-3-319-30133-4_12

Knapp, J., Zeratsky, J. & Kowitz, B. (2017). *Sprint: o m´etodo usado no Google para testar e aplicar novas ideias em apenas cinco dias*. Editora Intrinseca.

Kour, M., & Kharat, A. U. (2025). An Empirical Study on the Impact of Agile Leadership on Project Managers' Performance With Special Reference to Industry 4.0 related Projects. In *Leadership Paradigms and the Impact of Technology* (pp. 87-106). IGI Global Scientific Publishing. https://doi.org/10.4018/979-8-3693-7175-6.ch004

Kristinsdottir, S., Larusdottir, M., & Cajander, Å. (2016, August 29–31). *Responsibilities and challenges of product owners at spotify-an exploratory case study* [Paper presentation]. International Conference on Human-Centered Software Engineering (HCSE), Stockholm, Sweden. https://dx.doi.org/10.1007/978-3-319-44902-9_1

Kussunga, F., & Ribeiro, P. (2019). Proposal of a Visual Environment to Support Scrum. *Procedia Computer Science*, *164*, 491-497.https://www.sciencedirect.com/science/article/pii/S1877050919322586

Lahiri, S. & Saltz, J. (2023, January 3–6). *Evaluating Data Science Project Agility by Exploring Process Frameworks Used by Data Science Teams* [Paper presentation]. 56th Hawaii International Conference on System Sciences (HICSS), Maui, HI, United States. https://scholarspace.manoa.hawaii.edu/server/api/core/bitstreams/7fe7d024-3885-43fe-84e8-e7302ed6445f/content

Lehnen, J., Schmidt, T. S. & Herstatt, C. (2016). Bringing agile project management into lead user projects. *International Journal of Product Development*, *21*(2-3), 212-232.

Lei, H., Ganjeizadeh, F., Jayachandran, P. K. & Ozcan, P. (2017). A statistical análisis of the effects of Scrum and Kanban on software development projects. *Robotics and Computer-Integrated Manufacturing, 43*, 58-67. https://doi.org/10.1016/j.rcim.2015.12.001

Lopes, E. T., Mendes, M. J., Silva, G. F., Rosado, L. T. M. & Aquere, A. L. (2021). *DesENCrenca: A PBL experience on project management education*. International Symposium on Project Approaches in Engineering Education, 11, 72–78. https://

doi.org/10.5281/zenodo.5095347

Luna, J. A. A., Osuna-Millán, N., Parra, J. M. F. & Cisneros, R. F. R. (2022). Hacia la selección de una metodología adecuada de gestión de proyectos de TI. *Revista Ibérica de Sistemas e Tecnologias de Informação*, (E54), 631-643.

Machado, T. C. S., Pinheiro, P. R., & Tamanini, I. (2015). Project management aided by verbal decision analysis approaches: a case study for the selection of the best SCRUM practices. *International Transactions in Operational Research*, *22*(2), 287-312. https://onlinelibrary.wiley.com/doi/abs/10.1111/itor.12078

Mahajan, R. A., Yadav, S. K. & Mahajan, S. A. (2019). Development and Integration of Scrum Tree Algorithm with K-Means Data Clustering. *International Journal of Engineering and Advanced Technology*, *8* (6). https://www.ijeat.org/wp-content/uploads/papers/v8i6/F9026088619.pdf

Marchwicka, E., Tusz, P., & Betta, J. (2022). Adopting scrum methodology in the project of organising a concert. *International Journal of Project Organisation and Management*, *14*(1), 1-19. https://doi.org/10.1504/IJPOM.2022.10044288

Masood, Z., Hoda, R. & Blincoe, K. (2020). Real world scrum a grounded theory of variations in practice. *IEEE Transactions on Software Engineering*, *48*(5), 1579-1591. https://kblincoe.github.io/publications/2020_TSE_Scrum.pdf

Mathis, B. (2018). *Agile Project Management para Principiantes: Dominar los Conocimientos Básicos con Scrum*. Babelcube Inc.

McElroy, W. (1996). Implementing strategic change through projects. *International Journal of Project Management*, *14*(6), 325-329. https://doi.org/10.1016/0263-7863(95)00060-7

Micic, L. (2017). Agile methodology selection criteria: IT start-up case study. In *IOP Conference Series: Materials Science and Engineering*, *200*(1). https://artefacts-discovery.researcher.life/full_text/DA-2/06/06263d5030843c7ab2efe678d3edf2c5/full_text/ac793ed53772dcabc4ced05b6eacb7c5.pdf

Milićević, J. M., Filipović, F., Jezdović, I., Naumović, T., & Radenković, M. (2019). Scrum agile framework in e-business project management: an approach to teaching scrum. *European Project Management Journal*, *9*(1), 52-60. https://scispace.com/pdf/scrum-agile-framework-in-e-business-project-management-an-4ra54dv21g.pdf

Miranda, J. (2004). *El desafío de la gerencia de proyectos*. MM Editores. https://leidanoguera.wordpress.com/wp-content/uploads/2014/04/gestic3b3n-de-proyectos-juan-josc3a9-miranda.pdf

Miranda, J. (2005). *Gestión de proyectos*. MMEditores. https://books.google.com.co/books?id=pAQ9QelkHmkC&printsec=frontcover&hl=es&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false

Mkoba, E., & Marnewick, C. (2020). Conceptual framework for auditing agile projects. *IEEE Access*, *8*, 126460-126476. https://doi.org/10.1109/ACCESS.2020.3007874

Mousaei, M. & Gandomani, T. J. (2018). A new project risk management model based on Scrum framework and Prince2 methodology. *International Journal of Advanced Computer Science and Applications, 9*(4). https://thesai.org/Publications/ViewPaper?Volume=9&Issue=4&Code=IJACSA&SerialNo=61

Nyemkova, E., Justice, C., Liaskovska, S. & Lakh, Y. (2022). Methods of Current Knowledge Teaching on the Cybersecurity Example. *Education Sciences, 12*(11), 732. https://www.mdpi.com/2227-7102/12/11/732

Oliveira, J., Vinhas, M., da Costa, F. & Nogueira, M. (2016). Is Scrum useful to mitigate project's risks in real business contexts? [Conference paper]. In *International Conference on Computational Science and Its Applications*, Beijing, China. https://www.researchgate.net/publication/304672596_Is_Scrum_Useful_to_Mitigate_Project's_Risks_in_Real_Business_Contexts

Oprins, R., Frijns, H. A. & Stettina, C. J. (2019). Evolution of Scrum Transcending Business Domains and the Future of Agile Project Management. *Lecture Notes in Business Information Processing, 355*, 244–259. https://www.researchgate.net/publication/333021961_Evolution_of_Scrum_Transcending_Business_Domains_and_the_Future_of_Agile_Project_Management

Orlov, E. V., Rogulenko, T. M., Smolyakov, O. A., Oshovskaya, N. V., Zvorykina, T. I., Rostanets, V. G. & Dyundik, E. P. (2021). Comparative analysis of the use of kanban and scrum methodologies in it projects. *Universal Journal of Accounting and Finance, 9*(4), 693-700. https://www.hrpub.org/download/20210730/UJAF15-12223909.pdf

Orłowski, C., Ziółkowski, A., & Paciorkiewicz, G. (2017). Quantitative assessment of the IT agile transformation. *Procedia Engineering, 182*, 524-531. https://www.researchgate.net/publication/316355381_Quantitative_Assessment_of_the_IT_Agile_Transformation

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., McGuinness, L. A., ... Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ (Clinical research ed.), 372, n71. https://doi.org/10.1136/bmj.n71

Paschek, D., Rennung, F., Trusculescu, A. & Draghici, A. (2016). Corporate development with agile business process modeling as a key success factor. *Procedia Computer Science, 100*, 1168-1175. https://www.sciencedirect.com/science/article/pii/S1877050916324425

Patrucco, A. S., Canterino, F. & Minelgaite, I. (2022). How do scrum methodologies influence the team's cultural values? A multiple case study on agile teams in Nonsoftware industries. *IEEE Transactions on Engineering Management, 69*(6). https://doi.org/10.1109/TEM.2022.3146717

Pejcinovic, B., Wong, P. & Bass, R. B. (2019). Board 63: Work in Progress: Adapting Scrum Project Management to

ECE Courses. En *2019 ASEE Annual Conference & Exposition*. https://www.researchgate.net/publication/344796712_Board_63_Work_in_Progress_Adapting_Scrum_Project_Management_to_ECE_Courses

Pelantova, V. E. R. A., & Vitvarová, J. (2015). Safety culture and agile. *MM Science Journal*, *201*, pp. 686-690. file:///C:/Users/Usuario/Downloads/mmscience_2015-10_safety-culture-and-agile.pdf

Permana, P. A. G. (2015). Scrum method implementation in a software development project management. *International Journal of Advanced Computer Science and Applications, 6*(9), 198-204. https://doi.org/10.14569/IJACSA.2015.060927

Petticrew, M. & Roberts, H. (2006). *Systematic reviews in the social sciences: A practical guide*. Blackwell Publishing. https://doi.org/10.1002/9780470754887

Pishchik, V., Belousova, A., Rashchupkina, Y. & Shorokhov, A. (2020). *Methodology of project management and type of economic mentality of managers of X and Y generations. E3S Web of Conferences, 175,* Article 13012. https://www.e3s-conferences.org/articles/e3sconf/abs/2020/35/e3sconf_interagromash2020_13012/e3sconf_interagromash2020_13012.html

PMI (2018). *Las organizaciones de todo el mundo derrochan $1 millón cada 20 segundos*. Project Management Institute. https://www.pmi.org/-/media/pmi/documents/public/pdf/about/press-media/press-release/pulse-of-the-profession-2018-media-release.pdf?sc_lang_temp=es-ES

PMI (2021). *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) – Seventh Edition and The Standard for Project Management, Séptima Edición*. Project Management Institute

PRISMA (2020). *PRISMA translations policy*. https://www.prisma-statement.org/translations-policy

Proença, C. R., & Bernardino, J. (2019, July). Evaluating Gant Project, Orange Scrum, and ProjeQtOr Open Source Project Management Tools using QSOS. *ICSOFT* (pp. 522-528). https://www.scitepress.org/Papers/2019/79566/pdf/index.html

Rajan, E. R. & Santhosh, V. A. (2021). Adoption of Agile Methodology for iMproving it project perforMAnce. *Serbian Journal of Management*, *16*(2), 301 – 320. https://dx.doi.org/10.5937/SJM16-26854

Reddy, A. (2015). *The Scrumban [R]Evolution: getting the most out of Agile, Scrum, and lean Kanban*. Pearson Education. https://ptgmedia.pearsoncmg.com/images/9780134086217/samplepages/9780134086217.pdf

Revutska, O. & Antlová, K. (2022). Application of agile management approaches in selected automotive companies in Liberec and Central Bohemian regions, *25*(3), 174 – 189. https://doi.org/10.15240/tul/001/2022-3-011

Ribeiro, A. & Domingues, L. (2018). Acceptance of an agile methodology in the public sector. *Procedia computer science*, *138*, 621-629. https://www.sciencedirect.com/science/article/pii/S1877050918317290

Ribeiro, T. V., Souza, C. D. & Leao, H. A. T. (2018). SIDD-SCRUM Iteration Driven Development: An Agile Software Development and Management Process Based on SCRUM (S). *In SEKE (pp. 502-501). https://ksiresearch.org/seke/seke18paper/seke18paper_102.pdf*

Rodríguez, C. & Vicente, R. D. (2015). ¿Por qué implementar Scrum? *Revista Ontare*, *3*(1), 125-144. https://doi.org/10.21158/23823399.v3.n1.2015.1253

Salazar, E. Y. H. & Beltrán, C. A. (2020). SCRUM, Un enfoque práctico de metodología ágil para la ingeniería de software. *Tecnología Investigación y Academia*, *8*(2), 61-73. https://revistas.udistrital.edu.co/index.php/tia/article/view/15702

Santos Júnior, P. S. S., Barcellos, M. P., de Almeida Falbo, R. & Almeida, J. P. A. (2021). From a scrum reference ontology to the integration of applications for data-driven software development. *Information and Software Technology*, *136*, 106570. https://www.semanticscholar.org/paper/From-a-Scrum-Reference-Ontology-to-the-Integration-J%C3%BAnior-Barcellos/b96e992dd52fdf97c6480b6bd54df646e243ef

Schramm, V. B., Damasceno, A. C., & Schramm, F. (2023). SUPPORTING THE CHOICE OF THE BEST-FIT AGILE MODEL USING FITRADEOFF. *Pesquisa Operacional*, *43*, e264750. https://www.scielo.br/j/pope/a/bnydnjKwSBRBNPc7d6FMfyy/?lang=en

SCRUMstudy (2017). *Una guía integral para la entrega de proyectos utilizando Scrum. 3ª edición.* SCRUMstudy. https://www.academia.edu/38937062/Una_gu%C3%ADa_para_el_CUERPO_DE_CONOCIMIENTO_DE_SCRUM_Gu%C3%ADa_SBOK_3ra_Edici%C3%B3n_Una_gu%C3%ADa_integral_para_la_entrega_de_proyectos_utilizando_Scrum

Serrador, P. & Pinto, J. K. (2015). Does agile work? A quantitative analysis of agile project success. *International Journal of Project Management, 33*(5), 1040–1051. https://doi.org/10.1016/j.ijproman.2015.01.006

Söderlund, J. (2004). Building theories of project management: past research, questions for the future. *International Journal of Project Management, 22*(3), 183-191. https://www.researchgate.net/publication/222549276_Building_Theories_of_Project_Management_Past_Research_Questions_for_the_Future

Soukaina, N., Soukaina, M. & Abdelaziz, M. (2022). SQrum: An Improved Method of Scrum. *International Journal of Advanced Computer Science and Applications*, *13*(9), 239-249. https://doi.org/10.14569/IJACSA.2022.0130928

Souza, R. S., Valentim, N. M. & Costa, C. (2023). Aplicando Design Sprint em Sala de Aula Invertida: Um Estudo de Caso. *Anais do XXXIV Simpósio Brasileiro de Informática na Educação* (pp. 402-413). SBC. https://doi.org/10.5753/sbie.2023.235174

Stechert, C. (2021). Digital and distributed project management in mechanical engineering studies–a case study. *Procedia CIRP*, *100*, 500-505. https://www.sciencedirect.com/science/article/pii/S2212827121005825

Stormi, K. T., Laine, T., & Korhonen, T. (2019). Agile performance measurement system development: an answer to the need for adaptability? *Journal of Accounting & Organizational Change, 15*(2), 231-256. https://www.sciencedirect.com/org/science/article/abs/pii/S1832591219000204

Stretton, A. (1994). A short history of modern project management. *PM World Today, 10*(9), 1-18. https://pmworldlibrary.net/wp-content/uploads/2023/07/pmwj131-Jul2023-Stretton-short-history-of-modern-project-management-2nd-edition.pdf

Streule, T., Miserini, N., Bartlomé, O., Klippel, M. & De Soto, B. G. (2016). Implementation of scrum in the construction industry. *Procedia engineering*, *164*, 269-276.

Suárez-Gómez, E. D., & Hoyos-Vallejo, C. A. (2023). Scalable agile frameworks in large enterprise project portfolio management. *IEEE Access,* (11), 98666-98684. https://www.researchgate.net/publication/373740835_Scalable_Agile_Frameworks_in_Large_Enterprise_Project_Portfolio_Management

Sud, K. (2025). *Customizable Agile Development: Crafting Innovative Agile Frameworks to Suit Your Business Needs*. Springer Nature.

Sudiarno, A., Abdillah, O., Yusdin, H. D., Ummatin, K. K. & Murti, I. W. (2024). Effectivity analysis of the scrum framework adaptation in safety performance improvement: A system dynamics approach. *Journal of Infrastructure, Policy and Development*, *8*(9), 7386. https://doi.org/10.24294/jipd.v8i9.7386

Takagi, N., & Varajão, J. (2025). Fundamental guidelines for integrating success management into standard and custom project management methodologies. *International Journal of Organizational Analysis*, 1-22. https://doi.org/10.1108/IJOA-05-2025-5499

Takeuchi, H. & Nonaka, I. (1986). The New New Product Development Game. *Harvard Business Review*, *64*(1), 137-146. https://damiantgordon.com/Methodologies/Papers/The%20New%20Product%20Development%20Game.pdf

Thackeray, L. R., & Thackeray, S. L. (2023, June). A Novel Interdepartmental Approach to Teach Cross-Functional Collaboration in Software Engineering. *2023 ASEE Annual Conference & Exposition (1-14)*. https://peer.asee.org/a-novel-interdepartmental-approach-to-teach-cross-functional-collaboration-in-software-engineering

Torres, L. C. (2023). Aplicación Design Thinking y Agile Inception para el desarrollo de microempresas de servicio de cafetería. *Revista Científica Ciencia y Tecnología*, *23*(39), 44-62. https://doi.org/10.47189/rcct.v23i39.615

Tudose, C., Boiangiu, C. A., Bădoi, I. B. & Iordache, e. A.(s.f.). Assessing the role of project manager in agile environments. *UPB Scientific Bulletin, Series C: Electrical Engineering and Computer Science*. *4*, 95-108. https://www.scientificbulletin.upb.ro/static/pdfs/rez52a_575350.pdf

Uribe, E. H. & Ayala, L. E. V. (2007). Del manifiesto ágil sus valores y principios. *Scien-*

tia et technica, *13*(34), 381-386. https://www.redalyc.org/pdf/849/84934064.pdf

Valero-Pastor, J. M., Carvajal-Prieto, M. & Garcia-Aviles, J. A. (2019). Flujos de trabajo para el periodismo postindustrial: métodos y programas para una comunicación organizacional más agil y transversal**.** *Profesional De La Información*, *28*(5). https://revista.profesionaldelainformacion.com/index.php/EPI/article/view/epi.2019.sep.14

Vélez, S., Zapata, J. A. & Henao, A. (2018). Gestión de Proyectos: origen, instituciones, metodologías, estándares y certificaciones. *Entre ciencia e ingeniería*, *12*(24), 68-76. https://doi.org/10.31908/19098367.3818

Verlaine, B., Jureta, I. & Faulkner, S. (2016). How Can ITIL and Agile Project Management Coexist? An Adaptation of the ITIL v. 3 Life Cycle in Order to Integrate SCRUM. *Exploring Services Science: 7th International Conference* (pp. 327-342). Springer International Publishing. https://researchportal.unamur.be/en/publications/how-can-itil-and-agile-project-management-coexist-an-adaptation-o/

Vogelzang, J., Admiraal, W. F., & Van Driel, J. H. (2020). A teacher perspective on Scrum methodology in secondary chemistry education. *Chemistry Education Research and Practice*, *21*(1), 237-249. https://pubs.rsc.org/en/content/articlelanding/2020/rp/c9rp00111e

Wallace, W. (2014). Gestión de proyectos. *Edinburhg Business School*. *https://ebs.online.hw.ac.uk/documents/course-tasters/spanish/pdf/pr-bk-taster.pdf*

Wannes, A. & Ghannouchi, S. A. (2019). KPI-based approach for business process improvement. *Procedia Computer Science*, *164*, 265-270.

Weinreich, R., Neumann, N., Riedel, R. & Müller, E. (2015). *Scrum as method for agile project management outside of the product development area* [Ponencia]. *IFIP International Conference on Advances in Production Management Systems (APMS)*, Tokyo, Japón. https://hal.science/hal-01417614v1/document