

Analysis of Agile Methods in Laravel-Based Information System Development: A Review

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Abstract

The rapid expansion of web-based information systems has intensified the demand for adaptive and efficient software development approaches capable of handling evolving requirements. Laravel has become a widely adopted web framework due to its modular structure and comprehensive features. However, limited synthesized evidence exists regarding which Agile methods are most commonly implemented in Laravel-based system development and the domains in which they are applied. This study conducts a Systematic Literature Review (SLR) of publications from 2022 to 2024 to examine trends in Agile adoption within Laravel projects. From 810 initial records, 32 primary studies were selected using predefined inclusion, exclusion, and quality assessment criteria. The findings reveal that Scrum is the dominant Agile method (67%), followed by Extreme Programming (XP), Rapid Application Development (RAD), and Scrumban. Productivity-oriented information systems emerge as the most prevalent application domain. Overall, the results indicate that Agile approaches particularly Scrum are highly compatible with Laravel's iterative development model and provide practical guidance for selecting suitable methodologies in Laravel-based information system projects.

Keywords:

Review, Scrum, Agile, Information System.

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1. Introduction

The development of information systems continues to evolve in response to dynamic organizational needs and rapid technological change. Many institutions demand systems that are adaptive, scalable, and capable of supporting continuous updates. Traditional Software Development Life Cycle (SDLC) models often struggle to accommodate frequent requirement changes and iterative feedback. Agile methodologies emerge as a flexible alternative that emphasizes collaboration, incremental delivery, and rapid response to change. Hossain explains that Agile frameworks improve project control and stakeholder involvement compared to rigid sequential models [2]. Nova et al. further show that Agile approaches enhance efficiency and communication in web-based system development [6]. These conditions motivate a deeper analysis of Agile methods, particularly when implemented using modern web frameworks such as Laravel [2][6].

Laravel has become one of the most widely adopted PHP frameworks for developing web-based information systems. Developers prefer Laravel because of its Model–View–Controller (MVC) architecture, security features, routing mechanisms, and built-in authentication modules. Several studies report successful implementation of Laravel in financial, administrative, and marketplace systems [16], [17], [24]. Supriatmaja et al. demonstrate that Laravel improves system modularity and maintainability in government

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financial monitoring systems [16]. However, many studies focus more on technical implementation than on systematic evaluation of development methodologies. This gap highlights the need to analyze how Agile methods influence Laravel-based system development outcomes [16][17][24].

Agile has been widely implemented in various information system projects in Indonesia. Research by Melyani et al. applies Agile Software Development in payroll systems, and reports improved adaptability and faster deployment cycles [1]. Hakam et al. implement Agile in a Laravel-based zakat management system and show better stakeholder engagement during iterative development [12]. Ilmiah and Pendidikan also demonstrate that Agile supports flexible requirement changes in internship management applications built with Laravel [13]. Despite these positive results, most studies describe implementation outcomes without providing structured analytical comparison among Agile practices [1][12][13].

Scrum represents one of the most frequently adopted Agile frameworks. Suwarno and Jaya show that Scrum improves task tracking and team coordination in software project management systems [5]. Fadillah et al. confirm that Agile Scrum enhances productivity in management information system development [20]. Setiawan et al. apply Scrum in village innovation systems and observe faster sprint delivery cycles [25]. However, Scrum implementation often depends on team maturity and clear product backlog management. Many studies do not evaluate long-term maintainability or integration performance within Laravel-based environments [5][20][25].

Other Agile variants, such as Extreme Programming (XP), Feature-Driven Development (FDD), and Scrumban, also appear in web-based system development. Wiranti et al. apply XP in academic monitoring systems and report improved software quality through continuous testing [29]. Purwanti et al. integrate FDD and XP in community information systems and highlight structured feature planning benefits [31]. Wahyuni et al. implement Scrumban in village applications and emphasize workflow flexibility [33]. Although these methods demonstrate practical advantages, comparative analysis between these Agile variants and their compatibility with Laravel architecture remains limited [29][31][33].

Rapid Application Development (RAD) and other iterative approaches also influence information system design. Rianto and Amrin show that RAD accelerates inventory system development but may reduce documentation depth [22]. Abdussalaam and Ramdani demonstrate that Agile improves collaboration in internship management systems compared to conventional methods [26]. Maulana and Wiyono combine XP with Laravel and report enhanced development speed [36]. These findings suggest that method selection directly impacts system performance, scalability, and maintainability. However, systematic evaluation of Agile characteristics within Laravel-based environments still lacks comprehensive analysis [22][26][36].

Quality assurance and system sustainability remain important concerns in Agile-based projects. Hanief et al. conduct a systematic review on software quality using Agile approaches and emphasize continuous integration and testing practices [10]. Septiani et al. show that Agile improves adaptability in certification systems but requires disciplined sprint management to maintain quality [15]. Caren et al. demonstrate that Laravel-based monitoring systems benefit from iterative refinement but face challenges in requirement stability [30]. These issues underline the importance of analyzing how Agile principles translate into measurable system quality indicators in Laravel development [10][15][30].

Based on the existing literature, many studies confirm the effectiveness of Agile methods and the Laravel framework separately. However, few studies provide an analytical evaluation of how specific Agile practices influence system development performance within Laravel-based information systems. Most research emphasizes implementation success stories rather than structured methodological analysis. Therefore, this study aims to analyze Agile methods in Laravel-based information system development to identify

strengths, limitations, and practical implications. By synthesizing prior findings and examining methodological alignment, this research contributes to a clearer understanding of Agile effectiveness in modern web application environments [1][6][12][16].

2. Related Works

Several studies examined the implementation of Agile Software Development in web-based information systems. Melyani et al. [1] developed a payroll information system using Agile practices and reported improved adaptability to requirement changes. They showed that iterative development shortened delivery cycles and increased stakeholder satisfaction. The study clearly described sprint activities and user involvement. However, it did not measure system performance quantitatively nor analyze framework-specific constraints. The research also lacked a long-term evaluation of maintainability and scalability.

Hossain [2] analyzed the effectiveness of Agile methodologies compared to traditional SDLC models. The study found that Agile improved communication, risk management, and project visibility. It emphasized flexibility and incremental delivery as key strengths. The work provided a conceptual comparison supported by case observations. However, it did not focus on a specific technological framework. It also did not provide empirical metrics related to web application performance.

Nova et al. [6] implemented Agile methods in web-based system development and reported better collaboration between developers and users. The authors highlighted improved responsiveness to requirement changes and faster prototyping cycles. Their findings supported the suitability of Agile for dynamic project environments. Nevertheless, the study focused mainly on process evaluation rather than system architecture. It did not explore integration with modern PHP frameworks such as Laravel.

Supriatmaja et al. [16] developed a financial monitoring information system using the Laravel framework. The study demonstrated that Laravel's MVC architecture improved modularity and code organization. The authors reported stable system performance and easier maintenance. The research clearly described implementation stages and functional testing. However, it applied a general development approach and did not evaluate Agile practices in depth. It also lacked an analysis of team workflow efficiency.

Hakam et al. [12] integrated Agile methodology with Laravel in a zakat management system. They found that iterative sprints enhanced stakeholder engagement and allowed rapid feature updates. The system achieved functional stability and user acceptance. The study showed the practical compatibility between Agile and Laravel. However, it focused on implementation outcomes and did not compare different Agile variants. The evaluation also relied mostly on qualitative feedback.

Fadillah et al. [20] applied the Scrum framework in management information system development. The authors reported improved task tracking, sprint transparency, and team coordination. Scrum ceremonies structured communication effectively. The study demonstrated higher productivity compared to previous non-Agile projects. However, it did not assess technical performance indicators. It also did not analyze integration with specific programming frameworks.

Wiranti et al. [29] implemented Extreme Programming (XP) in an academic monitoring system. They emphasized continuous testing and pair programming to improve software quality. The results showed reduced bugs and faster issue resolution. The study highlighted XP's strength in maintaining code reliability. However, it required high team discipline and intensive collaboration. The research did not evaluate scalability in larger or more complex systems.

Hanief et al. [10] conducted a systematic review on software quality within Agile environments. They concluded that continuous integration and iterative validation improved product quality and user satisfaction. The review synthesized multiple case studies and

identified critical success factors. It provided a strong theoretical foundation for Agile adoption. However, it remained general and did not focus on Laravel-based development. It also did not present empirical experiments within a single controlled environment.

Overall, prior studies confirmed the benefits of Agile methodologies and the Laravel framework separately. However, limited research systematically analyzed how specific Agile practices influenced performance and maintainability in Laravel-based information systems. This gap motivated further investigation into the alignment between Agile processes and Laravel architecture.

3. Proposed Method

The research employed a Systematic Literature Review (SLR) as the primary methodological approach. The SLR method was chosen because it provides a structured procedure for identifying, evaluating, and synthesizing primary studies to produce a comprehensive and balanced overview of existing evidence [8]. This method follows predefined protocols to ensure transparency, replicability, and objectivity throughout the review process.

The SLR procedure in this study consisted of several stages. First, the research questions were formulated to guide the scope and focus of the review. Second, inclusion and exclusion criteria were established to select relevant studies published within the specified timeframe. Third, a systematic search was conducted across selected databases to collect studies related to agile methodologies in Laravel-based information system development. Fourth, the retrieved studies were screened through title, abstract, and full-text evaluations to ensure eligibility. Finally, the selected studies were analyzed to extract key findings, identify patterns, and synthesize results in accordance with the research objectives [9].

Agile development is characterized by iterative and incremental processes that allow continuous improvement throughout the software lifecycle. In this study, the Agile model is conceptually represented as a sequence of iterative development cycles that integrate planning, development, feedback, and refinement activities. Each Agile iteration can be formulated as:

$$A_i = \{P_i, D_i, F_i, R_i\} \quad (1)$$

where:

- P_i represents planning activities conducted at the beginning of each iteration,
- D_i represents system design and implementation,
- F_i represents testing and user feedback collection,
- R_i represents evaluation and refinement of system requirements.

The overall Agile development process is therefore defined as a series of iterations:

$$S = \sum_{i=1}^n A_i \quad (2)$$

This formulation illustrates that Agile development is not a linear process but a cyclic and adaptive sequence of activities. Each iteration contributes incremental system functionality and allows modifications based on stakeholder feedback. Such characteristics align with Laravel's modular architecture, which supports incremental feature integration and rapid

development cycles. The inclusion of this conceptual formulation strengthens the methodological clarity of the study by providing a structured representation of Agile processes applied in Laravel-based information system development [10].

This methodological design ensures that the review can be replicated by other researchers and provides a reliable foundation for analyzing trends and models in agile-based system development using the Laravel framework.

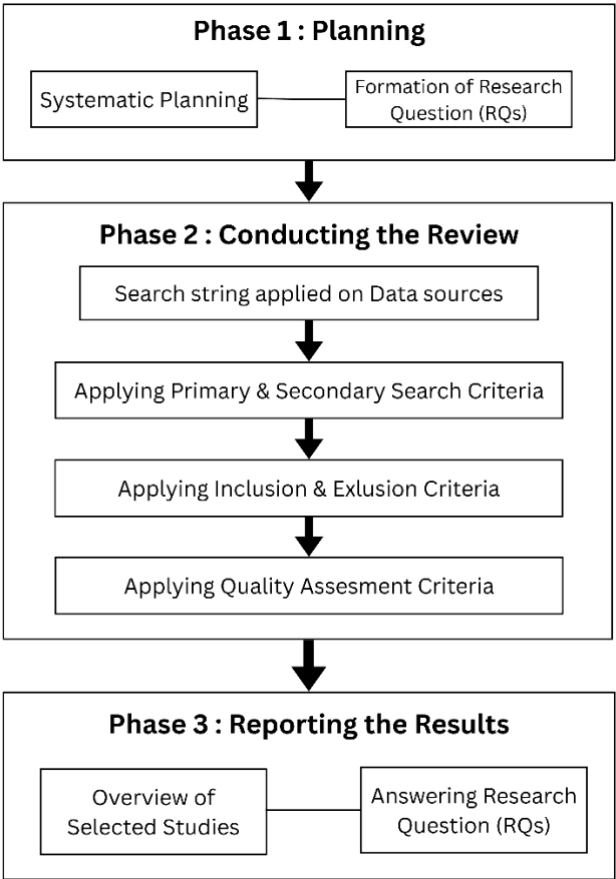


Fig. 1. Systematic Literature Review Phase[11]

1.1. Planning Phase

The planning phase formed the foundation of the Systematic Literature Review (SLR) by establishing the overall direction, scope, and objectives of the study. This stage ensured that the review was conducted systematically and aligned with the methodological standards required for producing transparent and replicable results. During this phase, the research problem was clarified, the purpose of the review was defined, and the criteria for conducting the study were determined.

One of the primary tasks in the planning phase was the formulation of research questions. Research questions are essential in an SLR because they guide the search strategy, inclusion and exclusion criteria, data extraction, and synthesis of findings. Well-defined research questions help ensure that the review remains focused and that selected studies are relevant to the objectives of the research.

The research objective is translated into measurable variables to address the following research questions:

1. **RQ1:** Identification of Agile method models used in Laravel-based information system development.
2. **RQ2:** Identification of application domains implementing Agile methods using Laravel.

Each selected study S_i is represented as a data unit containing:

$$S_i = \{M_i, D_i, Y_i\} \quad (3)$$

where:

- M_i = Agile model used in study i
- D_i = Application domain
- Y_i = Year of publication

1.2. Literature Identification

The conducting phase represents the core stage of the Systematic Literature Review (SLR), during which the identified plan is executed through a structured and replicable process. This phase involves locating relevant studies, applying screening procedures, assessing the quality of eligible literature, and extracting essential data necessary to answer the research questions. The initial literature set is defined as:

$$L_0 = \{l_1, l_2, \dots, l_n\} \quad (4)$$

Where L_0 represents all publications retrieved from the database search. The literature search uses predefined keywords related to Agile methods and Laravel-based development, limited to the publication period 2022–2024. Each step was carried out systematically to ensure objectivity, transparency, and methodological rigor. The procedures implemented in this phase include the search process, the application of inclusion and exclusion criteria, the quality assessment of selected studies, and the extraction of key information from the final set of literature.

1. Search Process

The search process was conducted using Google Scholar as the primary database. The search targeted studies published between 2022 and 2024 to ensure the relevance and recency of the collected literature. The search strategy was designed to identify studies that could address the previously formulated research questions. Keywords were selected based on the core concepts of the study and were combined using Boolean operators where appropriate. The main keywords used in the search process included:

1. *“information system development”*
2. *“Laravel framework”*
3. *“agile method”*

These keywords were applied in various combinations to maximize the coverage of relevant studies. The search process was documented to ensure transparency and replicability in accordance with SLR standards.

2. Inclusion and Exclusion Criteria

The inclusion and exclusion criteria were applied to identify studies that were suitable for the review and directly contributed to answering the research questions. These criteria ensured that only relevant, high-quality, and accessible studies were selected. The criteria used in this study are presented in Table 1.

Table 1. Inclusion and Exclusion Criteria

No	Inclusion Criteria	Exclusion Criteria
1	Literature addresses at least one research question	Literature does not address the research questions
2	Literature focuses on information system development using the Laravel framework	Literature does not focus on information system development using the Laravel framework
3	Literature written in Indonesian or English	Literature not written in Indonesian or English

3. Quality Assessment

After applying the inclusion and exclusion criteria, a quality assessment was conducted to ensure that each selected study met the minimum quality requirements for contributing reliable evidence. Quality assessment was performed using a predefined scoring system, where each question was scored as 1 (yes), 0.5 (partially), or 0 (no). The following three assessment questions were used:

- 1. **Q1.** Is the research objective clearly stated?
- 2. **Q2.** Is the agile method clearly defined in the study?
- 3. **Q3.** Does the study describe the development of an information system using the Laravel framework?

Each selected study is evaluated using a quality score Q_i , defined as:

$$Q_i = \sum_{j=1}^k q_{ij} \tag{5}$$

where:

- $q_{ij} \in \{0,0.5,1\}$ represents the score for quality question
- k = number of quality assessment questions

The quality scores were used to filter out studies that did not meet the required standards, ensuring that only credible and relevant literature was included in the final synthesis .

4. Data Extraction

The data extraction phase involved systematically collecting essential information from the final set of selected studies. This phase ensured that the data directly contributed to answering the research questions and facilitated structured analysis. The following information was extracted from each study:

- 1. Title of the study
- 2. Authors
- 3. Year of publication
- 4. Type of electronic data source
- 5. Publication venue

6. Type of study
7. Key findings (method characteristics, tools used, or relevant outcomes)
8. Research question(s) addressed

The extracted data were organized into a structured format to support the synthesis process and to identify patterns and trends related to agile methodologies in Laravel-based information system development. From the final dataset L_f relevant attributes are extracted and grouped:

$$D = \{(M_i, D_i) \mid i = 1, 2, \dots, N\} \quad (6)$$

where N represents the total number of selected studies.

1.3. Reporting the Results

1. Select studies overview
This section presents the distribution of the selected literature based on the publication sources.
2. Result Reporting RQ 1
RQ1 focuses on identifying the trends in the models used to implement agile methodologies.
3. Result Reporting RQ 2
RQ2 focuses on examining the fields in which agile methodologies are implemented in information system development using the Laravel framework.

4. Experimental Setup

Although this study does not involve physical experiments, an experimental setup is defined to describe how the data collection and analysis process was conducted systematically.

1. Data Sources

This study used peer-reviewed journal articles indexed in Google Scholar as the primary data source. We conducted a structured literature search using predefined keywords related to the research topic. The initial query identified 810 publications. We then performed a multi-stage screening process to ensure relevance, quality, and methodological rigor. First, we removed duplicate records and excluded non-peer-reviewed materials such as theses, reports, and conference abstracts without full papers. Second, we screened titles and abstracts to eliminate studies that did not directly address the research scope. Third, we conducted a full-text review of the remaining articles to assess their methodological clarity, empirical contribution, and alignment with the defined research questions.

We applied explicit inclusion and exclusion criteria, including publication quality, clarity of experimental design, availability of measurable results, and relevance to the proposed problem domain. We also evaluated each study using a quality assessment checklist to ensure consistency and reliability. After completing all filtering and validation stages, we selected 32 high-quality articles for in-depth analysis and synthesis. This systematic selection process ensured that the final dataset was both rigorous and directly relevant to the objectives of this study.

2. Instruments and Tools

This study employed several structured instruments to ensure methodological rigor and consistency throughout the review process. We used Google Scholar as the primary literature search engine to systematically identify relevant peer-reviewed publications. We designed structured inclusion and exclusion criteria tables to filter studies based on relevance, methodological clarity, scope alignment, and publication quality. We applied a quality assessment checklist to evaluate the reliability, empirical strength, and completeness of each selected article. In addition, we developed standardized data extraction forms to systematically record key study attributes, including the Agile model applied, application domain, research methodology, evaluation metrics, and publication year. These instruments ensured objectivity, transparency, and reproducibility in the literature review process while minimizing selection bias and data inconsistency.

3. Procedure

The experimental procedure began with the systematic identification of relevant literature using predefined keywords aligned with the research objectives. We conducted a comprehensive search to capture a broad range of potentially related studies. After compiling the initial dataset, we removed duplicate records and excluded clearly irrelevant publications based on title and abstract screening. We then applied structured inclusion and exclusion criteria to ensure that each study met predefined standards of relevance, scope alignment, and publication quality. Next, we performed a rigorous quality assessment of the remaining eligible studies to evaluate methodological clarity, empirical validity, and reporting completeness. From the final set of selected articles, we extracted essential data using standardized extraction forms to maintain consistency and reduce bias. We subsequently classified the studies according to the Agile models employed and their respective application domains to facilitate comparative analysis. Finally, we visualized the synthesized findings using structured tables and graphical representations to enhance interpretability and support analytical discussion.

4. Data Analysis

We analyzed the collected data using descriptive statistical methods to calculate the frequency and percentage distribution of the identified Agile models and their corresponding application domains. We quantified how often each model appeared in the selected studies and examined patterns across different sectors and system types. This approach allowed us to identify dominant methodologies and emerging trends within the reviewed literature. We presented the results in structured tables and graphical visualizations to clearly illustrate distributions, comparisons, and key findings in relation to the research questions.

5. Result and Analysis

Based on the literature search conducted for this study, a total of 810 publications were initially identified. These 810 records were then filtered using the keywords Laravel and agile methodology, resulting in 136 publications. After applying the Quality Assessment criteria, the selection was further refined to 32 relevant studies, as shown in Figure 2 and Table 2.

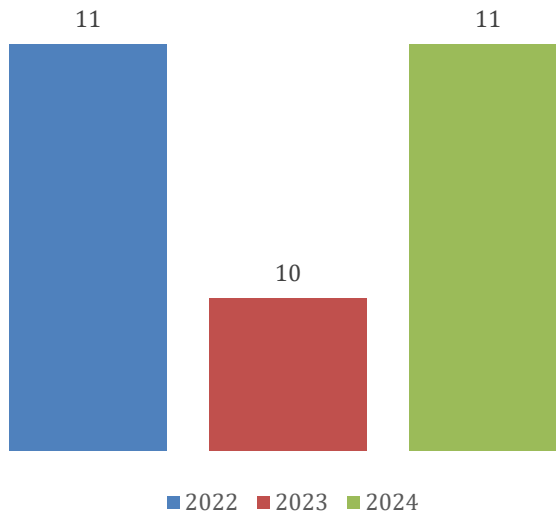


Fig 2. Number of Studies per Year

Table 2. Description of studies overview

No	Article Number	Model	Field	Publisher	Year
1	[12]	RAD	Religious Affairs	JTIK Journal (Jurnal Teknologi Informasi dan Komunikasi)	2022
2	[13]	Scrum	Productivity	Jurnal Ilmiah Wahana Pendidikan (JIWP)	2023
3	[14]	XP	Business	JTIK Journal (Jurnal Teknologi Informasi dan Komunikasi)	2022
4	[15]	Scrum	Education	Digital Transformation Technology (Digitech)	2024
5	[16]	XP	Services	INFOMATEK: Jurnal Informatika, Manajemen dan Teknologi	2024
6	[17]	XP	Business	Jurnal Inovtek Polbeng – Seri Informatika	2022
7	[18]	Scrum	Productivity	Komputika: Jurnal Sistem Komputer	2023
8	[19]	RAD	Finance	Jurnal MediaTIK: Jurnal Media Pendidikan Teknik Informatika dan Komputer	2023
9	[20]	Scrum	Productivity	DECODE: Jurnal Pendidikan Teknologi Informasi	2024

10	[21]	Scrum	Finance	Polygon: Jurnal Ilmu Komputer dan Ilmu Pengetahuan Alam	2024
11	[22]	Scrum	Productivity	Digital Transformation Technology (Digitech)	2023
12	[23]	Scrum	Business	Jurnal Infokom Esensi	2024
13	[24]	XP	Business	Jurnal sistem informasi dan teknologi informasi	2022
14	[25]	Scrum	Productivity	Processor: Jurnal Ilmiah Sistem Informasi, Teknologi Informasi dan Sistem Komputer	2023
15	[26]	XP	Productivity	Jurnal Informatika dan Komputer (INFOKOM)	2022
16	[5]	Scrum	Productivity	JITE (Journal of Informatics and Telecommunication Engineering)	2022
17	[27]	Scrum	Mapping & Navigation	Jurnal Algoritma	2022
18	[28]	RAD	Business	Jurnal Teknik dan Science (JTS)	2023
19	[29]	XP	Education	Indonesian Journal on Information System	2022
20	[30]	Scrum	Productivity	JOURNAL OF INFORMATICS, BUSINESS, EDUCATION AND INNOVATION TECHNOLOGY (JIBEIT)	2023
21	[31]	XP	Productivity	Techno.Com	2022
22	[32]	Scrum	Business	JIPI (Jurnal Ilmiah Penelitian dan Pembelajaran Informatika)	2024
23	[33]	Scrumban	Mapping & Navigation	The International Conference on Artificial Intelligence, Navigation, Engineering, and Aviation Technology (ICANEAT)	2024
24	[34]	Scrum	Business	INTERNAL (Information System Journal)	2024
25	[35]	XP	Productivity	International Journal on Perceptive and Cognitive Computing	2022

				(IJPCC)	
26	[36]	XP	Education	Journal of Digital Business and Technology Innovation (DBESTI)	2024
27	[37]	RAD	Education	International Journal of Informatics and Computation (IJICOM)	2024
28	[38]	Scrum	Education	Jurnal Teknik Informatika dan Sistem Informasi	2023
29	[39]	Scrum	Business	International Journal of Innovative Science and Research Technology	2023
30	[40]	Scrum	Productivity	JATI (Jurnal Mahasiswa Teknik Informatika)	2023
31	[41]	Scrumban	Business	Journal Informatics And Electronics Engineering	2024
32	[42]	Scrumban	Productivity	Applied Information Technology and Computer Science	2022

○ **Results for Research Question 1 (RQ1)**

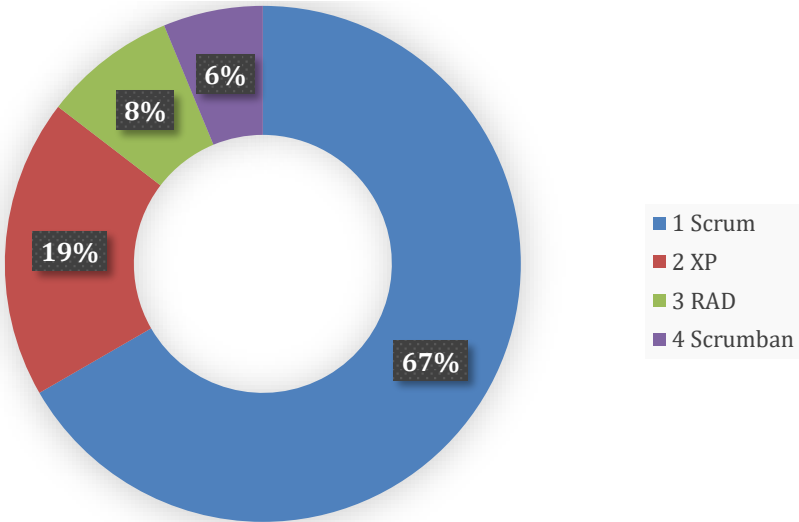


Fig 3. Trend Graph of Agile Method Models

In the agile methodology, various models can be applied. Based on the 32 selected

studies, four agile models were identified: Scrum, Extreme Programming (XP), Rapid Application Development (RAD), and Scrumban. Among these, Scrum appears in 16 studies, XP in 9 studies, RAD in 4 studies, and Scrumban in 3 studies. As shown in Figure 3, Scrum is the most widely used model, accounting for 67%, while Scrumban is the least used, with only 6%.

Scrum is the most frequently implemented model due to several advantages:

(1) With its short sprints and constant feedback loops, Scrum can easily accommodate changes that occur during development.

(2) In Scrum, cutting-edge development processes can be rapidly coded and tested, allowing for accelerated progress.

(3) Scrum can transform business processes that are difficult to measure into workflows that are easier to manage and develop [49].

The dominance of the Scrum model indicates its suitability for Laravel-based information system development. Compared to Extreme Programming, Scrum provides clearer role distribution and sprint planning, which simplifies project coordination in medium to large-scale systems. While XP emphasizes intensive testing and coding practices, its adoption requires higher developer discipline, which may limit its use in certain projects. Rapid Application Development offers faster prototyping; however, it lacks scalability for complex systems. These comparisons demonstrate that Scrum offers a balanced combination of flexibility, structure, and scalability, supporting the claim that Agile—particularly Scrum—is an effective approach for Laravel-based system development.

Overall, the findings of RQ1 confirm that Scrum is the most dominant Agile model in Laravel-based information system development due to its structured yet flexible workflow, effective project coordination mechanisms, and strong compatibility with iterative web application development environments. This dominance demonstrates that Scrum provides a balanced approach between adaptability and process control, making it the preferred Agile model in recent Laravel-based projects.

○ **Results for Research Question 2 (RQ2)**

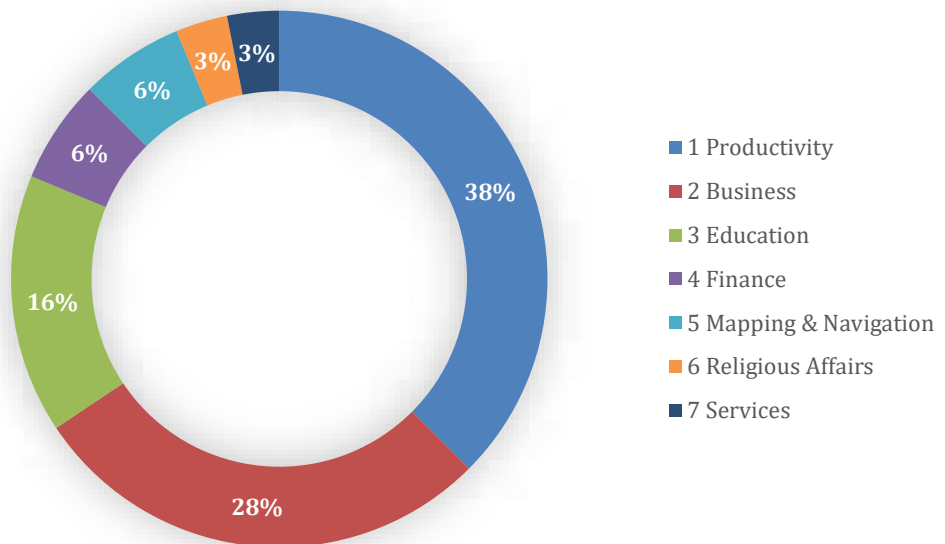


Fig 4. Field Trend Graph

In this study, nine fields were identified in the development of information systems using the Laravel framework with agile methodologies. These seven fields are: (1) Productivity, with 12 studies; (2) Business, with 9 studies; (3) Education, with 5 studies; (4) Finance and Mapping, with 2 studies; and Religion and Services, each represented by 1 study. The most prominent field in this research is productivity, followed by business. The dominance of productivity-oriented systems indicates that Agile methods are primarily utilized in projects requiring continuous improvement, iterative feature enhancement, and frequent user interaction. Laravel's modular architecture supports rapid development and deployment, which aligns well with Agile practices such as incremental delivery and continuous feedback.

Compared to other domains, such as religion, services, and finance, productivity-related applications tend to involve operational workflows that benefit significantly from iterative development cycles. Business-oriented systems also show substantial adoption, reflecting the need for flexible system updates and evolving requirements. In contrast, the limited presence of Agile implementations in certain domains suggests that these areas either rely on more traditional development approaches or remain underexplored in current research trends.

These findings demonstrate that Agile methodologies are particularly effective for Laravel-based systems that prioritize efficiency, workflow optimization, and continuous improvement. Thus, the results of RQ2 indicate that productivity-focused information systems represent the primary application domain for Agile-based Laravel development. This trend highlights the strong alignment between Agile principles such as adaptability and iterative delivery and the operational requirements of productivity-oriented applications.

6. Conclusion

This study analyzed the adoption of Agile methodologies in Laravel framework-based information system development by identifying the most frequently applied Agile models and examining their implementation across different application domains. We conducted a Systematic Literature Review (SLR) on peer-reviewed studies published between 2022 and 2024 to ensure relevance and methodological rigor. Through predefined inclusion, exclusion, and quality assessment criteria, we selected 32 primary studies for detailed analysis. This structured review approach enabled us to systematically map current research trends and evaluate how Agile practices have been integrated with Laravel's MVC architecture in contemporary information system development.

The findings demonstrate that Agile methodologies are widely adopted in Laravel-based projects, with clear dominance of specific models. Scrum emerged as the most frequently implemented Agile framework, accounting for 67% of the reviewed studies, followed by Extreme Programming (XP), Rapid Application Development (RAD), and Scrumban. The dominance of Scrum can be explained by its sprint-based structure, iterative planning cycles, and strong emphasis on stakeholder feedback, which align well with Laravel's modular and incremental development characteristics. Scrum facilitated continuous integration, adaptive requirement management, and structured team coordination, making it particularly suitable for dynamic web-based system environments. In contrast, other Agile models appeared less frequently, suggesting either narrower applicability or limited empirical reporting in Laravel-centered research.

In terms of application domains, the literature predominantly focused on productivity-oriented information systems, followed by the business and education sectors. These domains emphasized efficiency, workflow optimization, and digital transformation, which naturally aligned with Agile's iterative delivery model. However, domains such as religion, public services, healthcare, tourism, and financial technology remained underrepresented, indicating an imbalance in current research coverage. Overall, the results confirm that Agile approaches, especially Scrum are highly compatible with Laravel-based information system development due to their flexibility, adaptability, and support for incremental feature enhancement. This study provides structured evidence to guide researchers and practitioners in selecting suitable Agile models for Laravel projects. Future research should broaden the literature scope by incorporating additional academic databases, extending the publication timeframe, and conducting empirical comparative studies on real-world Laravel implementations to evaluate performance, scalability, maintainability, and cross-domain applicability.

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References

- [1] R. Indah Melyani, R. Rosita, and S. Aji, "Development of a Web-Based Payroll Information System Using the Laravel Framework with the Agile Software Development Method," *Journal of Accounting Information Systems*, vol. 3, no. 1, pp. 31–36, 2023, doi: 10.31294/jasika.v3i01.2195.
- [2] M. I. Hossain, "Software Development Life Cycle (SDLC) Methodologies for Information Systems Project Management," vol. 5, no. 5, pp. 1–36, 2023.
- [3] M. N. Asrori, "ACCURATE: Robust Online Systems for Leveraging Financial Reporting Process," vol. 7, no. 1, 2025, doi: 10.35842/ijicom.
- [4] M. Pöhlmann, C. De Heras-Pedrosa, and C. Jambrino-Maldonado, "Opportunities and Challenges in the Start-Up Context," *Humanities and Social Sciences Communications*, pp. 1–15, 2025, doi: 10.1057/s41599-025-04600-w.
- [5] S. Suwarno and W. S. Jaya, "Design and Development of a Software Project Management System Using Scrum," *Journal of Informatics and Telecommunication Engineering*, vol. 5, no. 2, pp. 483–493, 2022, doi: 10.31289/jite.v5i2.6412.
- [6] S. H. Nova, A. P. Widodo, and B. Warsito, "Analysis of Agile Methods in Website-Based Information System Development: A Systematic Literature Review," *Techno.Com*, vol. 21, no. 1, pp. 139–148, 2022, doi: 10.33633/tc.v21i1.5659.
- [7] K. C. Dewi, P. I. Ciptayani, and I. W. R. Wijaya, "Agile Project Management in the Development of E-Musrenbang in Benoa Village, Bali," *Journal of Information Technology and Computer Science*, vol. 5, no. 6, p. 723, 2018, doi: 10.25126/jtiik.2018561143.
- [8] L. Rahmawati and D. Juandi, "Mathematics Learning with a STEM Approach: A Systematic Literature Review," *Teorema: Theory and Research in Mathematics Education*, vol. 7, no. 1, pp. 149–160, 2022.
- [9] D. Cabrera, L. Cabrera, and E. Cabrera, "The Steps to Doing a Systems Literature Review (SLR)," *Journal of Systems Thinking*, vol. 23, no. 3, pp. 1–28, 2023, doi: 10.54120/jost.pr000019.v1.
- [10] S. Hanief, T. Sutikno, and I. Riadi, "Systematic Literature Review on Software Quality Using Agile Approach," vol. 7, no. 2, 2025, doi: 10.35842/ijicom.
- [11] A. N. Yusril, I. Larasati, and P. Al Zukri, "Analysis of Agile Methods in Mobile Application Development," *Sistemasi: Journal of Information Systems*, vol. 10, pp. 369–380, 2021.
- [12] M. A. Hakam, A. Triayudi, and N. Hayati, "Implementation of Agile Method in a Web-Based Zakat Management System Using the Laravel Framework," *JTIK (Journal of Information and Communication Technology)*, vol. 6, no. 1, pp. 111–116, 2022, doi: 10.35870/jtik.v6i1.393.
- [13] "Implementation of Agile Method in the Development of a Web-Based Internship Data Management Application Using the Laravel Framework," *Journal of Scientific Educational Media*, vol. 9, no. 4, pp. 144–154, 2023.
- [14] K. Anwar, L. D. Kurniawan, M. I. Rahman, and N. Ani, "Marketplace Application for Multi-Sport Field Rental Using Agile Development Method," *Sisfokom (Information Systems and Computer Journal)*, vol. 9, no. 2, pp. 264–274, 2020, doi: 10.32736/sisfokom.v9i2.905.
- [15] L. Septiani, D. Ramdani, A. T. Maula, N. B. Nugroho, and M. F. Ar Ridho, "Development of a Certification Information System Using Agile Method," *Digital Transformation and Technology*, vol. 4, no. 2, pp. 1060–1066, 2025, doi: 10.47709/digitech.v4i2.5144.
- [16] G. A. Supriatmaja *et al.*, "Development of a Financial Administration Monitoring and Archiving Information System Using the Laravel Framework at BPS Buleleng," *Infomatek*, vol. 26, no. 2, pp. 239–252, 2024, doi: 10.23969/infomatek.v26i2.19231.
- [17] Y. V. Euaggelion and R. Somya, "Analysis and Implementation of a Web-Based Cosmetic Sales Application at BMC Using the Laravel Framework," *INOVTEK POLBENG – Information Series*, pp. 37–49, 2022.
- [18] M. Alda, "Development of an Android-Based Payroll Application Using the Agile Method," *Komputika: Journal of Computer Systems*, vol. 12, no. 1, 2023, doi: 10.34010/komputika.v12i1.8030.
- [19] A. Isma, A. K. Muhlis, A. Ardiansyah, A. Asriyani, and D. Fadhilatunisa, "Web-Based Financial Information System Using an Agile Approach," *Journal of Mediatika*, vol. 6, no. 3, pp. 62–68, 2024, doi: 10.59562/mediatik.v6i3.1474.

- [20] S. A. Fadillah, N. Chandra, and C. Rivatunisa, "Implementation of Agile Scrum in Developing a Culinary Management Information System Website," *Decode: Journal of Information Technology Education*, vol. 4, no. 1, pp. 301–315, 2024, doi: 10.51454/decode.v4i1.357.
- [21] A. Kusaeri and I. Jaelani, "Implementation of Payment Gateway and WhatsApp Gateway in a Web-Based Member Management Information System Using the Laravel Framework," *Polygon: Journal of Computer Science and Natural Sciences*, vol. 2, no. 5, pp. 32–42, 2024.
- [22] H. Rianto and A. Amrin, "Design and Development of an Inventory Information System Using the Rapid Application Development Method," *Insantek*, vol. 4, no. 1, pp. 1–6, 2023, doi: 10.31294/instk.v4i1.1942.
- [23] A. G. Ananda and M. A. Izzudin, "Implementation of Agile Method in the Development of a Web-Based Inventory Card Information System," *Journal of Esensi Infokom*, vol. 8, no. 2, pp. 101–108, 2024, doi: 10.55886/infakom.v8i2.925.
- [24] A. Nurhidayah and S. Kosasi, "Design of a Website-Based Sales Software Using the Laravel Framework at Emiracase," *Journal of Information Systems and Technology*, vol. 11, no. 1, pp. 24–35, 2022.
- [25] D. Setiawan, F. Fatimah, and D. Primasari, "Development of a Web-Based Village Innovation Ambassador Information System Using Scrum," *Processor Journal*, vol. 18, no. 1, 2023, doi: 10.33998/processor.2023.18.1.191.
- [26] F. Abdussalaam and A. Ramdani, "Perancangan Sistem Informasi Manajemen Praktek Kerja Lapangan Berbasis Web Menggunakan Metode Agile," *INFOKOM (Informatika & Komputer)*, vol. 10, no. 2, pp. 33–43, 2023, doi: 10.56689/infokom.v10i2.950.
- [27] F. F. Roji, "Perancangan Sistem Informasi Geografis Pengelolaan Praktik Kerja Industri untuk Sekolah Menengah Kejuruan," *Jurnal Algoritma*, vol. 18, no. 2, pp. 583–593, 2022, doi: 10.33364/algoritma/v.18-2.1089.
- [28] "Analisis Cara Kerja Framework Laravel untuk Perancangan E-Commerce Toko Online Hello Kitchen dengan Metode DSDM (Dynamic Systems Development Method)," *Jurnal Teknik dan Science (JTS)*, vol. 1, no. 2, pp. 1–8, 2023.
- [29] Y. T. Wiranti, S. R. Natasia, V. F. Insanittaqwa, and R. Setyawan, "Student Academic Monitoring Information System in SMAN 9 Balikpapan with Extreme Programming," *Indonesian Journal of Information Systems*, vol. 7, no. 1, pp. 1–13, 2022.
- [30] G. C. Rorimandey, M. M. Ratag, and H. A. Kristiandika, "Sistem Monitoring Daftar Tunggu Pelayanan Pelanggan Berbasis Web di Unit Pelaksana Pelayanan Pelanggan Manado Menggunakan Framework Laravel," *Journal of Informatics, Business, Education and Innovation Technology*, pp. 46–56, 2023.
- [31] N. P. Purwanti, S. Andryana, and A. Gunaryati, "SIKARTUN: Sistem Informasi Karang Taruna Berbasis Web Menggunakan Metode FDD dan XP," *Techno.Com*, vol. 21, no. 1, pp. 115–126, 2022, doi: 10.33633/tc.v21i1.5638.
- [32] S. Ranti and A. D. Putra, "Penerapan Framework Laravel pada Sistem E-Booking (Studi Kasus: 4People Studio)," *JUPI (Jurnal Ilmiah Penelitian dan Pembelajaran Informatika)*, vol. 9, no. 3, pp. 1643–1656, 2024, doi: 10.29100/jupi.v9i3.5481.
- [33] S. Wahyuni, A. Khaliq, H. M. Z. N. Amrul, and A. Akbar, "Designing a Website-Based Kota Pari Village Mangrove Application with the Agile Scrum Method," *Navigation Engineering and Aviation Technology*, vol. 1, no. 1, pp. 415–419, 2024.
- [34] D. Firmansyah, H. Purwanto, T. Wiharko, and R. Gustian, "Pemanfaatan Token dalam Pengembangan Sistem Informasi Barter Barang Berbasis Web Menggunakan Framework Laravel," *INTERNAL (Information Systems Journal)*, vol. 6, no. 2, pp. 101–114, 2024, doi: 10.32627/internal.v6i2.850.
- [35] E. H. Piam, A. Mahmud, R. Abdulghafor, S. Wani, A. Abubakar, and A. Olowolayemo, "Face Authentication-Based Online Voting System," *International Journal of Perceptive and Cognitive Computing*, vol. 8, no. 1, pp. 19–23, 2022.
- [36] R. Maulana and B. H. Wiyono, "Penerapan Metode Extreme Programming Menggunakan Framework Laravel dalam Pengembangan Sistem Informasi Khazaregsys," *Journal of Digital Business and Technology Innovation*, vol. 1, no. 2, pp. 78–85, 2024.
- [37] S. L. Mufreni, T. Hardiani, and M. I. Maulana, "Android-Based Detection Application of Indonesian Sign Language System (SIBI) Using Rapid Application Development Method," vol. 6, no. 2, 2024, doi: 10.35842/ijicom.
- [38] I. W. Arnawama, R. Fauzi, and M. Saputra, "Analisis dan Perancangan Sistem Informasi Tanggung Jawab Sosial dan Lingkungan dengan Pendekatan Scrum," *Jurnal Teknik Informatika dan Sistem Informasi*, vol. 10, no. 1, pp. 447–457, 2023.

- [39] S. T. Welhelmina, A. Pramana, and T. Bhustomy, "Aplikasi Voting Naskah dan Pre-Order Buku Berbasis Web Menggunakan Framework Laravel (Studi Kasus: Penerbit Loveable)," *Journal of Business Audit Information Systems*, vol. 6, no. 2, pp. 46–57, 2023.
- [40] C. A. Purnama *et al.*, "Sistem Seleksi Rekrutmen Karyawan Baru pada PT Mayangkara Group Menggunakan Framework Laravel," vol. 7, no. 5, pp. 3817–3823, 2023.
- [41] M. Ibrahim and D. S. Ramdhan, "Sistem Informasi Pengadaan Barang dan Jasa Berbasis Web (Studi Kasus di PT. XYZ)," vol. 4, no. 2, pp. 79–84, 2024.
- [42] D. Darmanto, P. Akhmad, B. P. Sibuea, and M. Nurdianita, "Sistem Informasi Lembaga Sertifikasi Profesi P-1 Politeknik Negeri Ketapang Berbasis Web," *Applied Information Technology and Computer Science*, vol. 1, no. 1, pp. 25–33, 2022, doi: 10.58466/aicoms.v1i2.1233