

behavior to become more modern and inventive in response to community demands [8].

D. PMBOK Guide 7th Edition

PMBOK, or Project Management Body of Knowledge, contains a set of project management terminologies and recommendations issued by the Project Management Institute (PMI). Like previous editions, the seventh edition of PMBOK, published in 2021, recognizes that the project management landscape constantly evolves and adapts [13]. PMBOK Guide 7th Edition has two parts, the Standard for Project Management and A Guide to the Project Management Body of Knowledge. The first section explains the introduction, value delivery system, and 12 project management principles. The second section covers eight project performance domains, tailoring, as well as models, methods, and artifacts [13]. In this study, the challenges found were grouped based on eight project performance domains, as shown in Figure 1.

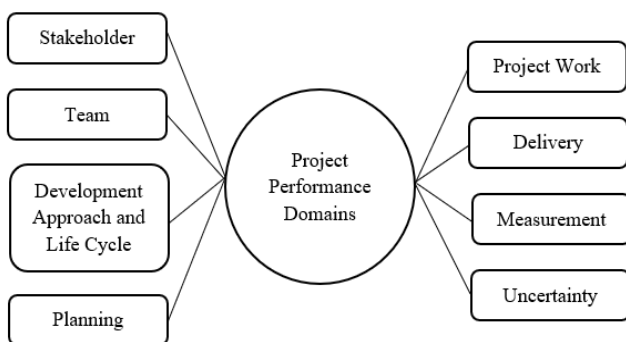


Fig. 1 PMBOK Project Performance Domains

A project performance domain is a collection of interconnected activities that are essential to the project's success. The project performance domain is interactive and interconnected with each other to achieve the desired project results [10]. The explanation of each domain is as follows.

First, Stakeholder is a domain that discusses activities and functions related to stakeholders. Team is a domain that covers the actions and functions of the individuals who are in charge of delivering project deliverables. Development Approach and Lifecycle is a domain related to the development approach, rhythm, and phases of the project life cycle. Planning is a domain related to the organization's beginning, continuation, and development and the coordination needed to deliver project deliverables and outcomes. Project Work is a domain that discusses matters related to establishing project processes, managing physical resources, and fostering a learning environment. Domain Delivery is focused on meeting the project's goals in terms of scope and quality. Measurement is an area concerned with assessing project performance and taking the required steps to sustain it. Finally, uncertainty is a domain that discusses risk and uncertainty.

The methods used in this research are a Systematic Literature Review (SLR) to identify, assess, and interpret findings linked to the issues that government organizations experience in implementing Agile project management and the best practices that can be used. According to Kitchenham and Charters [17], SLR is locating, evaluating, and

interpreting all available research evidence to respond to specific research questions.

In this study, SLR is used with an approach is known as the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analyses) method. According to Liberati et al. [18], the PRISMA method can help researchers summarize existing evidence based on explicit, rigorous, and transparent processes and steps. Four stages are used in conducting a systematic review using PRISMA [18]: identification, screening, eligibility, and inclusion. The following are detailed explanations and results of each SLR stage using PRISMA.

A. Identification

The literature search process is carried out through a digital library which is accessed through the remote lib of the University of Indonesia, namely Scopus, IEEE Xplore, ACM, and Emerald Insight. The keywords used in the search process must be related to the research question in this study, namely:

(("CHALLENGE" OR "ISSUE" OR "PROBLEM" OR "LIMITATION" OR "OBSTACLE" OR "BENEFIT" OR "SUCCESS FACTOR" OR "ADVANTAGE" OR "BEST PRACTICE") AND "AGILE PROJECT MANAGEMENT" AND ("PUBLIC SECTOR" OR "GOVERNMENT" OR "PUBLIC ORGANIZATION"))

Subsequently, the inclusion criteria were determined, the criteria used, and the exclusion criteria were excluded. The specified inclusion criteria are (a) related to research questions (b) published within the last five years (2017-2021) (c) in the form of journals or proceedings (d) in English. The specified exclusion criteria are (1) the literature is unrelated to the discussion of applying Agile in the government organization.

B. Screening

In the screening process, duplication checks, and literature screening were carried out based on titles, abstracts, and keywords. In this process, literature that cannot be accessed in the full text does not pass the screening stage. Furthermore, the literature that has successfully passed this stage will be forwarded to the stage of the feasibility assessment process.

C. Eligibility

This stage is carried out by reading the entire literature that has passed the screening stage to obtain eligibility according to the research question. The selected literature will be a reference candidate to be used as a reference in research.

D. Included

The last process of the PRISMA method is the determination of the literature that is included and can be used as a reference in research according to the results of the previous stages.

The results of the workflow using the PRISMA method in this study can be seen in Figure 2. Figure 2 explains the identification process based on the search string and the inclusion criteria used, then obtained 595 records with library details, namely 397 Scopus, 155 ACM, 39 Emerald, and 4 IEEE. Furthermore, 579 works of literature were obtained after checking for duplication.

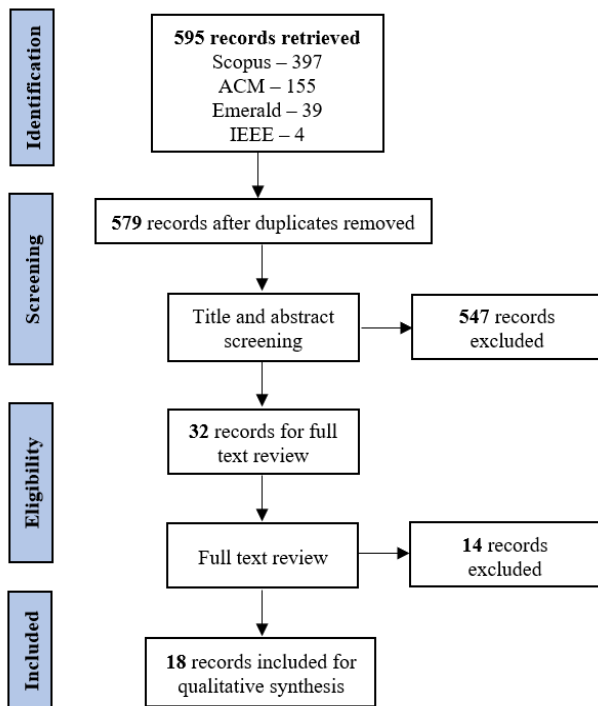


Fig. 2 SLR Workflow Based on PRISMA

The screening process was continued with title and abstract screening, with thirty-two studies that were continued at the

next stage and five hundred and forty-seven studies that did not pass the screening. The next stage is a feasibility test by conducting a full-text review of thirty-two studies, fourteen studies were excluded, and eighteen studies were included in the qualitative synthesis of this study.

TABLE I
DISTRIBUTION OF STUDY PER YEAR

Year	Frequency	Percentage (%)
2017	4	22
2018	2	11
2019	1	6
2020	8	44
2021	3	17
Total	18	100

Table I shows the distribution of relevant papers by year from 2017 to 2021. Year of 2020 is the year with the most distribution of relevant papers, with a percentage of 44%. Then followed by 2017 at 22%, 2021 at 17%, 2018 at 11%, and 2019 at 6%. This shows that 2020 is a time of many papers discussing agile implementation in the public sector.

Furthermore, Table II is detailed information from the 18 papers that have been selected, consisting of the year, digital library source, title, citation, and code.

TABLE II
DETAILED PAPERS

No	Year	Source	Title	Citation
1	2020	ACM	Agility in Public Sector IT Projects	[17]
2	2017	IEEE	What Contributes to the Success of IT Projects? Success Factors, Challenges and Lessons Learned from an Empirical Study of Software Projects in the Norwegian Public Sector	[18]
3	2018	SCOPUS	Acceptance of an agile methodology in the public sector	[7]
4	2018	ACM	Contracting Agile Developments for Mission Critical Systems in the Public Sector	[19]
5	2020	SCOPUS	Development of a hybrid agile management model in local self-government units	[20]
6	2020	ACM	Scaling Agile Software Development Approach in Government Organization in New Zealand	[21]
7	2020	SCOPUS	When Doesn't Formal Planning Enhance The Performance Of Government Projects?	[22]
8	2017	ACM	Coordination in the large: A research design	[23]
9	2020	IEEE	Human Related Challenges in Agile Software Development of Government Outsourcing Project	[24]
10	2020	IEEE	Agile-Based Requirement Challenges of Government Outsourcing Project: A Case Study	[25]
11	2020	SCOPUS	Exploratory analysis of cultural influences on requirements engineering activities based on stakeholders' profile	[26]
12	2021	SCOPUS	Incorporating agile practices in public sector IT management: A nudge toward adaptive governance	[27]
13	2017	ACM	Analysis of DILRMP Project: Identifying the Applicability of Agile Project Management for Digital Transformation Projects in Government and Public Sector	[28]
14	2020	SCOPUS	Project management and sustainability: Playing trick or treat with the planet	[29]
15	2019	EMERALD	Project governance and portfolio management in government digitalization	[30]
16	2021	SCOPUS	Organizational issues in embracing Agile methods: an empirical assessment	[31]
17	2017	SCOPUS	Lifecycle management in government-driven opensource projects - practical framework	[32]
18	2021	SCOPUS	How to Outsource Agile Projects Effectively: Suppliers and client advisors need to work closely with client organizations to ensure key enablers are in place to increase success when outsourcing Agile projects	[33]

III. RESULTS AND DISCUSSION

This section discusses the results of a systematic literature review in detail on 18 selected studies by categorizing challenges, and next is to map the challenges found with best

practice solutions to solve each challenge. Each of these processes is described in more detail in the following subsections.

TABLE III
LIST OF CATEGORIZATION CHALLENGES

No	Domain Category	Issues	Citation
1	Stakeholder	Low stakeholder involvement, competence and transparency Top management is not interested in Agile development methods There are laws that prevent sharing of information with stakeholders Lack of coordination, communication and control between stakeholders There is a negative influence from stakeholders on requirements Stakeholders have various conflicts of interest such as different perspectives	[18], [21] [19], [31], [33] [21] [24] [26] [28], [32]
2	Team	There is a division of labor with command dominance from the leader/supervisor There is resistance to change and lack of adaptability Lack of empowerment of employee skills so that employees find it difficult to understand new roles Difficulty organizing an Agile team remotely Human related problems such as lack of coordination and trust between teams Lack of team performance evaluation and rewards There are incompetent managers and developers	[17] [7], [27], [22] [21], [27], [31], [32] [21] [18], [23], [24], [27], [33] [31] [31]
3	Development Approach & Lyfecycle	Public organizations have a hierarchical principle of authority that is difficult to adapt to the Agile way Public organizations use a dominant rule-based (regulation) approach The public sector has a formal communication-oriented documentation compliance principle The public sector's agile innovation and development is slower than the private sector's During the project, the project team will be given a new set of information Agile nature with iteration can be burdensome and does not fit into large and rigid government organizational structures Public organizational structure unfamiliar with Agile practices Public organizations do not have the skills or culture to support Agile development	[17], [7] [17], [7], [23], [27] [17], [7], [21] [7], [28] [28] [20], [31] [21], [27] [31], [33]
4	Planning	Problems in project planning and management Difficulty in being ready to apply Agile methodologies and achieving the ideal balance in order to master new skills Unclear about the effectiveness of project planning in the public sector	[18], [28] [21] [22]
5	Project Work	There are technical problems in Agile implementation Project contract issues that need flexibility A priori implementation (knowledge that exists before meeting experience) in the public sector Difficulty in integration into legacy systems Troubled in project management and project processes Communication challenges in Agile processes Long implementation of change management and long execution Lack of knowledge and skills towards sustainable project management and acquisition	[18], [31] [19], [30], [33] [20] [21] [24] [25], [26], [28] [28] [29], [31]
6	Delivery	Product delivery transition issues to user organizations Requirement problems such as changing requirements, etc Scope problems such as overscooping, etc Pressure on government to ensure rapid implementation while maintaining quality standards Poor service provision in Agile delivery	[18] [24], [25] [25], [29], [31] [28] [33]
7	Measurement	Project is having problems with over budget (cost) or deficit Project takes (schedule) longer than planned Challenges in validating and measuring project results against predetermined targets Lack of detailed cost evaluation	[28], [32] [28] [30] [31]
8	Uncertainty	Poor risk management in the public sector Ensuring the long-term sustainability of the project	[22] [32]

A. Mapping the Challenges and the Categorizations

This section outlines the challenges based on related research and for answering RQ1: what are the challenges of applying Agile project management in government. The SLR

findings revealed challenges in implementing Agile in the public sector are categorized based on the project performance domain of PMBOK 7th edition.

After analyzing and categorizing by domain, 43 challenges linked to Agile adoption in the public sector were discovered

as shown in Table III. The category mapping process results found that the Development Approach and Lifecycle domain and Project Work had the most issues, with 8 issues. Then followed by the Team domain with 7 issues, Stakeholder domain with 6 issues, Delivery domain with 5 issues, Measurement domain with 4 issues, Planning domain with 3 issues, and Uncertainty domain with 2 issues.

From 43 issues, several challenges are mentioned in more than 3 research literatures. First, human-related issues such as lack of coordination and trust between teams are the most common challenges mentioned [9], [19], [20], [21], [22]. Second, the lack of empowerment of employee skills so that employees find it difficult to understand new roles is a challenge that is also widely mentioned [23], [21], [24], [25]. Third, public organizations use a dominant rule-based (regulation) approach [26], [7], [19], [21].

Furthermore, several challenges are mentioned in 3 research literatures, such as top management, which are not interested in Agile development methods. Thus it results in without support [10], [24], [22], resistance to change and lack of adaptability from the team [7], [21], [27]. Also, it results in the public sector has the principle of compliance with documentation oriented to formal communication [26], [7], [23], and project contract issues need flexibility [10], [28], [22]. However, it results in the existence of a communication challenge in Agile processes [29], [30], [31], and scope problems such as over scooping [29], [32], [24].

Several other issues are found in implementing Agile in the public sector. In the stakeholder domain, namely the existence of low stakeholder involvement, competence, and transparency [9], [23], laws that prevent information sharing with stakeholders [23], lack of coordination, communication, and control between stakeholders [20], there is a negative influence of stakeholders on project requirements [30], and stakeholders have various conflicts of interest [31], [25]. In the team domain, there is a division of labor with command dominance from the leadership [26], difficulties in organizing an Agile team remotely [23], and lack of evaluation and performance awards by the team [24], and incompetent managers and developers [24].

In the Development Approach and Lifecycle domain, there are challenges for public organizations with a hierarchy of authority principles, making it difficult to adapt to the Agile method [26], [7]. The public sector's agile innovation and development is slower than the private sector's [7], [31]. A collection of new information is provided to the project team during the project [31]. The nature of Agile with iterations that do not conform to rigid government organizational structures [33], [24]. Public organizational structures are unfamiliar with Agile practices [23], [21] and do not have the skills or culture to support Agile development [24], [22].

In the Planning domain, there are problems in project planning and management [9], [31], difficulties in being prepared to apply Agile method and achieving the ideal balance to master new skills [23], lack of clarity on the

effectiveness of project planning in the public sector [27], and technical problems in Agile implementation [9], [24].

In the Project Work domain, there are technical problems in Agile implementation [9], [24], a prior implementation (knowledge that exists before meeting experience) in the public sector [33], difficulties in integration into old systems [23], problems with management and processes projects [20], change management implementation and long execution [31], and lack of knowledge and skills towards sustainable project management and acquisitions [32], [24].

Furthermore, in the Delivery domain, there are problems with the transition of product delivery to user organizations [9], requirements problems such as changing requirements [20], [29], pressure on the government to ensure fast project implementation by maintaining quality standards [31], and service provision. poor in Agile delivery [22].

In the measurement domain, there are challenges for projects that have problems with exceeding budget (costs) or deficits [31], [25], projects taking longer (schedule) than planned [31], challenges in validating and measuring project results against the targets set been determined [28], and the lack of a detailed cost evaluation [24]. Finally, the challenges in the uncertainty domain are poor risk management in the public sector [27] and challenges in ensuring the project's long-term sustainability [25].

B. Mapping of Best Practices Solution

This section is done to answer RQ2: what is the best practice solution for overcoming problems in government while applying Agile project management? The best practices solutions for each identified challenge were obtained from 18 extracted literature and PMBOK 7th edition Guide. Each best practice solution mapped to the issue in each category is the result of an analysis tailored to the problems found. Multiple solutions can be provided in more than one issue in each category.

For example, in the Stakeholder domain, the application of Agile methodologies that can help better engage stakeholders [31] can be implemented on two issues, namely top management is not interested in Agile development methods [10], [24], [22] and lack of coordination, communication, and control between stakeholders [20]. Small-scale trials will be used to introduce Agile to the public sector [21] is a solution that can be applied to problems of public organizational structure unfamiliar with Agile practices [23], [21] and public organizations do not have the skills or culture to support Agile development [24], [22]. Furthermore, implement a governance structure that is adapted to the approach or type of project used, such as the Agile model [28], which can be applied to overcome the challenges in validating and measuring project results against predetermined targets [28] and lack of detailed cost evaluation [24]. Table IV and Table V present a complete mapping of best practice solutions for each challenge in Agile implementation in the public sector.

TABLE IV
BEST PRACTICES SOLUTION MAPPING (1/2)

No	Domain	Issues	Best Practices Solution
1	Stakeholder	<p>Low stakeholder involvement, competence and transparency [18], [21]</p> <p>Top management is not interested in Agile development methods [19], [31], [33]</p> <p>There are laws that prevent sharing of information with stakeholders [21]</p> <p>Lack of coordination, communication and control between stakeholders [24]</p> <p>There is a negative influence from stakeholders on requirements [26]</p> <p>Stakeholders have various conflicts of interest such as different perspectives [28], [32]</p>	<p>Have a good dialogue between providers (project team) and stakeholders [18]</p> <p>Application of Agile methodologies can help better engage stakeholders [28]</p> <p>Implementing transparency as a context in Agile in which information should be disclosed to stakeholders [21]</p> <p>Application of Agile methodologies can help better engage stakeholders [28]</p> <p>Good collaboration between organizations and vendors is required to practice Agile methodologies properly [24]</p> <p>Apply alignment of interests [19]</p>
2	Team	<p>There is a division of labor with command dominance from the leader/supervisor [17]</p> <p>There is resistance to change and lack of adaptability [7], [27], [22]</p> <p>Lack of empowerment of employee skills so that employees find it difficult to understand new roles [21], [27], [31], [32]</p> <p>Difficulty organizing an Agile team remotely [21]</p> <p>Human related problems such as lack of coordination and trust between teams [18], [23], [24], [27], [33]</p> <p>Lack of team performance evaluation and rewards [31]</p> <p>There are incompetent managers and developers [31]</p>	<p>Every leader must understand leadership skills [10]</p> <p>Confidence in the team to perform the tasks assigned by the product owner [21]</p> <p>Empowering employees by establishing a solution office and introducing virtual teams so that consultants and employees can collaborate more efficiently [27]</p> <p>IT departments bend the rules of public sector organizations by creating virtual solutions offices on top of existing structures [27]</p> <p>Applying general aspects of project team development: realizing the project vision and objectives, understanding roles and responsibilities, creating project team operations, establishing guidance, and identifying growth areas [10]</p> <p>A successful Agile development team requires product ownership, both from within the team and within the organization, which understands and supports the iterative nature of the Agile process [21]</p> <p>Hiring consultants to cover resource gaps in the Agile development process is a smart alternative for IT teams [27]</p>
3	Development Approach & Lifecycle	<p>Public organizations have a hierarchical principle of authority that is difficult to adapt to the Agile way [17], [7]</p> <p>Public organizations use a dominant rule-based (regulation) approach [17], [7], [23], [27]</p> <p>The public sector has a formal communication-oriented documentation compliance principle [17], [7], [21]</p> <p>Agile innovation and development speed in the public sector is slower than in the private sector [7], [28]</p> <p>There is a new set of information provided to the project team during the project [28]</p> <p>Agile nature with iteration can be burdensome and does not fit into large and rigid government organizational structures [20], [31]</p> <p>Public organizational structure unfamiliar with Agile practices [21], [27]</p> <p>Public organizations do not have the skills or culture to support Agile development [31], [33]</p>	<p>Organizations and teams must agree on a shared Agile workflow perception before starting a project [25]</p> <p>Transforming organizational culture has a big role in the success of agile implementation [27]</p> <p>Bottom-up agile is a suitable way to drive large-scale project transformation in public sector [27]</p> <p>Collaboration is crucial to small-scale Agile progress to help to make the switch to adaptive governance [27]</p> <p>The concept of an iterative method will help learning during iterations in increasing project efficiency [28]</p> <p>Using the Hybrid Agile Model by defining a new flexible management structure for government units [20]</p> <p>Small-scale trials will be used to introduce Agile to the public sector [27]</p> <p>Small-scale trials will be used to introduce Agile to the public sector [27]</p>
4	Planning	<p>Problems in project planning and management [18], [28]</p> <p>Difficulty in being ready to apply Agile methodologies and finding the right balance to learn new skills [21]</p> <p>Unclear about the effectiveness of project planning in the public sector [22]</p>	<p>Using planning strategies and techniques, estimates for projects, and verified [7], [22]</p> <p>Using planning strategies and techniques, estimates for projects, and verified [7], [22]</p> <p>Discuss key challenges in the early stages of project planning and use them as a basis for frequent dialogue during procurement, contract negotiations, and subsequent mobilization [33]</p>

TABLE V
BEST PRACTICES SOLUTION MAPPING (2/2)

No	Domain	Issues	Best Practices Solution
5	Project Work	<p>There are technical problems in Agile implementation [18], [31]</p> <p>Project contract issues that need flexibility [19], [30], [33]</p> <p>A priori implementation (knowledge that exists before meeting experience) in the public sector [20]</p> <p>Difficulty in integration into legacy systems [21]</p> <p>Troubled in project management and project processes [24]</p> <p>Communication challenges in Agile processes [25], [26], [28]</p> <p>Long implementation of change management and long execution [28]</p> <p>Lack of knowledge and skills towards sustainable project management and acquisition [29], [31]</p>	<p>Support project team members as they solve problems and create a culture that fosters trust and collaboration [10]</p> <p>- Establish time and material contracts and involve clients [18]</p> <p>- Manage contracts the Agile way [19]</p> <p>Applying the “Plan-as-you-go” principles of Agile project management will work better for managing projects efficiently due to ignorance of actual scale and reality [28]</p> <p>Agile methods suggest that developers or teams often integrate new software into the underlying software architecture [31]</p> <p>Receiving feedback which refers to providing information about performance and receiving suggestions given on project work [21]</p> <p>Create project communication management plans and communication artifacts [10]</p> <p>Implement effective change management by using a motivational strategy rather than a strong strategy. Engagement and two-way communication can identify valid concerns of disapproving users [10]</p> <p>The successful management of project scope is very important in sustainable project management [29]</p>
6	Delivery	<p>Product delivery transition issues to user organizations [18]</p> <p>Requirement problems such as changing requirements, etc [24], [25]</p> <p>Scope problems such as overscooping, etc [25], [29], [31]</p> <p>Pressure on government to ensure rapid implementation while maintaining quality standards [28]</p> <p>Poor service provision in Agile delivery [33]</p>	<p>Prepare for the adoption and behavioral sustainability of the new and different processes required for the transition process [10]</p> <p>Create the easiest change requirements document to fill out [7]</p> <p>Create flexible project scope and frequent delivery [18]</p> <p>Agile deployments can create products or services that can be deployed more quickly, monitor projects more closely, and increase citizens' trust in government [28]</p> <p>Intervening for the successful delivery of individual projects and as an enabler of wider adoption of Agile, or both [33]</p>
7	Measurement	<p>Project is having problems with over budget (cost) or deficit [28], [32]</p> <p>Project takes (schedule) longer than planned [28]</p> <p>Challenges in validating and measuring project results against predetermined targets [30]</p> <p>Lack of detailed cost evaluation [31]</p>	<p>Carry out budget management practices by calculating budget estimates and developing a cost baseline [10]</p> <p>Implement schedule compression methods [10]</p> <p>Implement a governance structure that is adapted to the approach or type of project used, such as the Agile model [30]</p> <p>Implement a governance structure that is adapted to the approach or type of project used, such as the Agile model [30]</p>
8	Uncertainty	<p>Poor risk management in the public sector [22]</p> <p>Ensuring the long-term sustainability of the project [32]</p>	<p>- The government can use a planning strategy according to the risk level of each project [22]</p> <p>- In the face of high risk, project managers in the public sector are advised to ensure the assignment of appropriate team members for each project activity [22]</p> <p>- Project managers must identify which competencies they need to build in order to manage projects in a long-term manner [29]</p> <p>- Stakeholder engagement can help reduce the amount of uncertainty that exists in the project [10]</p>

C. The Implication of the Study

This study has several implications for academic and practical research. For academic research, this study provides the latest literature on Agile challenges in the public sector from a project management perspective. The new contribution of this research is categorizing the challenges found grouped by project performance domain from the PMBOK 7th edition standard. Then the solution was obtained from the process of mapping the results of the SLR literature and the 7th edition of the PMBOK Guide. This research can provide knowledge and recommendations for relevant case studies for practitioners. Practitioners can learn from the challenges and solutions found in this study for public sector organizations with similar problems.

IV. CONCLUSION

The research was conducted to obtain challenges in the application of Agile project management in the public sector.

Then mapped best practice solutions for these challenges. After the SLR process was carried out, 18 literatures relevant to the research objectives were obtained. SLR results show that there are 43 issues with applying Agile project management in the public sector.

The challenges with the most issues are in the Development Approach and Lifecycle and Project Work domains. Then followed by Team, Stakeholder, Delivery, Measurement, Planning, and Uncertainty domains. Moreover, several challenges are mentioned in more than three research literatures. First, human-related issues such as lack of coordination and trust between teams. Second, the lack of empowerment of employee skills so employees find it difficult to understand new roles. Third, public organizations that use a dominant rule-based (regulation) approach.

Next, we mapped out best practice solutions based on 18 literatures from the extracted papers and PMBOK 7th edition guide. One or more issues can use the mapped solution according to the results of the problem analysis. This study focuses on finding general challenges and solutions to Agile

implementation in the public sector from a project management perspective. Further research needs to be more specific for the challenge method used in this paper. It can be explored more on challenges and solving solutions from specific project performance domain categories so the research results can be more focused on one area and are more in-depth.

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REFERENCES

- [1] A. Junaideen, H. Blogg, A. Rigoni, and J. Mariani, "Cybersecurity and the government: Government's broader role in cyber," *Deloitte*, pp. 88–98, 2021, [Online]. Available: <https://www2.deloitte.com/us/en/insights/industry/public-sector/government-trends/2021/cybersecurity-and-the-government.html>.
- [2] G. E. DeSeve, "The Road to Agile Government: Driving Change to Achieve Success," p. 43, 2020, [Online]. Available: www.businessofgovernment.org.
- [3] S. Ganapati, "Adopting Agile in State and Local Governments Adopting Agile in State and Local," 2021.
- [4] J. O'Leary, R. Cota, and G. Otis, "Successful Agile in government: Supporting the product owner," *Agil. Gov. A Playb. from Deloitte Cent. Gov. Insights*, pp. 24–32, 2017, [Online]. Available: https://www2.deloitte.com/content/dam/insights/us/articles/3897_Agile-in-government/DUP_Agile-in-Government-series.pdf.
- [5] V. Veeraperumal, "The Challenges of Implementing Agile in Information Technology Shared Services by Malaysian Public Sector," no. April, pp. 0–8, 2020.
- [6] J. Nuottila, K. Aaltonen, and J. Kujala, "Challenges of adopting agile methods in a public organization," *Int. J. Inf. Syst. Proj. Manag.*, vol. 4, no. 3, pp. 65–85, 2016, doi: 10.12821/ijispm040304.
- [7] A. Ribeiro and L. Domingues, "Acceptance of an agile methodology in the public sector," *Procedia Comput. Sci.*, vol. 138, pp. 621–629, 2018, doi: 10.1016/j.procs.2018.10.083.
- [8] M. Bogdanova, E. Parashkevova, M. Stoyanova, D. Ph, and T. Academy, "Agile Project Management in Governmental Organizations – Methodological Issues," *IJASOS- Int. E-journal Adv. Soc. Sci.*, vol. 6, no. 16, pp. 262–275, 2020, doi: 10.18769/ijasos.616037.
- [9] P. Mohagheghi and M. Jorgensen, "What Contributes to the Success of IT Projects? Success Factors, Challenges and Lessons Learned from an Empirical Study of Software Projects in the Norwegian Public Sector," in *Proceedings of the 39th International Conference on Software Engineering Companion*, 2017, pp. 371–373, doi: 10.1109/ICSE-C.2017.146.
- [10] D. Russo, G. Taccogna, P. Ciancarini, A. Messina, and G. Succi, "Contracting Agile Developments for Mission Critical Systems in the Public Sector," in *Proceedings of the 40th International Conference on Software Engineering: Software Engineering in Society*, 2018, pp. 47–56, doi: 10.1145/3183428.3183435.
- [11] T. Raharjo and B. Purwandari, "Agile project management challenges and mapping solutions: A systematic literature review," *ACM Int. Conf. Proceeding Ser.*, pp. 123–129, 2020, doi: 10.1145/3378936.3378949.
- [12] Axelos and S. Office, *Managing Successful Projects with PRINCE2*. Stationery Office, 2017.
- [13] P. M. Institute, *Guide to the Project Management Body of Knowledge (PMBOK Guide) and the Standard for Project Management*. Project Management Institute, 2021.
- [14] J. T. Marchewka, *Information Technology Project Management, 5th Edition*. Wiley, 2015.
- [15] K. Schwalbe, *Information Technology Project Management*. Cengage Learning, 2018.
- [16] J. C. Goodpasture and an O. M. C. Safari, *Project Management the Agile Way: Making it Work in the Enterprise*. J. Ross Publishing, 2015.
- [17] B. Kitchenham and S. Charters, "Guidelines for performing Systematic Literature Reviews in Software Engineering," 2007.
- [18] A. Liberati *et al.*, "The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: explanation and elaboration," *BMJ*, vol. 339, 2009, doi: 10.1136/bmj.b2700.
- [19] F. O. Bjørnson, K. Vestues, K. H. Rolland, F. O. Bjørnson, K. Vestues, and K. H. Rolland, "Coordination in the large: A research design," in *Proceedings of the XP2017 Scientific Workshops*, 2017, vol. Part F1299, doi: 10.1145/3120459.3120477.
- [20] A. K. Nisyak, K. Rizkiyah, and T. Raharjo, "Human Related Challenges in Agile Software Development of Government Outsourcing Project," in *2020 7th International Conference on Electrical Engineering, Computer Sciences and Informatics (EECSI)*, Oct. 2020, pp. 222–229, doi: 10.23919/EECSI50503.2020.9251899.
- [21] M. Ylinen, "Incorporating agile practices in public sector IT management: A nudge toward adaptive governance," *Inf. Polity*, vol. 26, no. 3, pp. 251–271, 2021, doi: 10.3233/IP-200269.
- [22] A. Aoufi, M. Schoeman, and N. Turner, "How to Outsource Agile Projects Effectively: Suppliers and client advisors need to work closely with client organizations to ensure key enablers are in place to increase success when outsourcing Agile projects," *Res. Technol. Manag.*, vol. 65, no. 1, pp. 59–66, 2021, doi: 10.1080/08956308.2022.1987792.
- [23] D. Ghimire, S. Charters, and S. Gibbs, "Scaling Agile Software Development Approach in Government Organization in New Zealand," in *Proceedings of the 3rd International Conference on Software Engineering and Information Management*, 2020, pp. 100–104, doi: 10.1145/3378936.3378945.
- [24] A. Mishra, S. Abdalhamid, D. Mishra, and S. Ostrovska, "Organizational issues in embracing Agile methods: an empirical assessment," *Int. J. Syst. Assur. Eng. Manag.*, vol. 12, no. 6, pp. 1420–1433, 2021, doi: 10.1007/s13198-021-01350-1.
- [25] K. Henttonen, J. Kääriäinen, and J. Kylmäaho, "Lifecycle management in government-driven open source projects - practical framework," *Int. J. Inf. Syst. Proj. Manag.*, vol. 5, no. 3, pp. 23–41, 2017, doi: 10.12821/ijispm050302.
- [26] M. Dietel and M. Heime, "Agility in Public Sector IT Projects," in *Proceedings of the 13th International Conference on Theory and Practice of Electronic Governance*, 2020, pp. 803–806, doi: 10.1145/3428502.3428625.
- [27] O. Zwikael, "When doesn't formal planning enhance the performance of government projects?," *Public Adm. Q.*, vol. 44, no. 3, pp. 331–362, 2020, doi: 10.37808/paq.44.3.1.
- [28] T. M. Lappi, K. Aaltonen, and J. Kujala, "Project governance and portfolio management in government digitalization," *Transform. Gov. People, Process Policy*, vol. 13, no. 2, pp. 159–196, 2019, doi: 10.1108/TG-11-2018-0068.
- [29] K. Rizkiyah, A. K. Nisyak, and T. Raharjo, "Agile-Based Requirement Challenges of Government Outsourcing Project: A Case Study," in *2020 3rd International Conference on Computer and Informatics Engineering (IC2IE)*, 2020, pp. 267–273, doi: 10.1109/IC2IE50715.2020.9274659.
- [30] T. Alsanoosy, M. Spichkova, and J. Harland, "Exploratory analysis of cultural influences on requirements engineering activities based on stakeholders' profile," in *Procedia Computer Science*, 2020, vol. 176, pp. 3379–3388, doi: 10.1016/j.procs.2020.09.059.
- [31] A. Nerurkar and I. Das, "Analysis of DILRMP Project: Identifying the Applicability of Agile Project Management for Digital Transformation Projects in Government and Public Sector," in *Proceedings of the Special Collection on EGovernment Innovations in India*, 2017, pp. 34–38, doi: 10.1145/3055219.3055242.
- [32] D. Toljaga-Nikolić, M. Todorović, M. Dobrota, T. Obradović, and V. Obradović, "Project management and sustainability: Playing trick or treat with the planet," *Sustain.*, vol. 12, no. 20, pp. 1–20, 2020, doi: 10.3390/su12208619.
- [33] D. Car-Pušić, I. Marović, and G. Bulatović, "Development of a hybrid agile management model in local self-government units," *Teh. Vjesn.*, vol. 27, no. 5, pp. 1418–1426, 2020, doi: 10.17559/TV-20190205140719.