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Agile adoption challenges in insurance: a systematic literature and expert review

Krishna Yudhakusuma Putra Munanda, Teguh Raharjo
Department of Information Technology, Faculty of Computer Science, University of Indonesia,
Jakarta, Indonesia

Article Info	ABSTRACT
	The drawback of agile is struggled to function in large businesses like banks, insurance companies, and government agencies, which are frequently associated with cumbersome processes. Traditional software development techniques were cumbersome and pay more attention to standardization and industry, this leads to high costs and prolonged costs. The insurance company does not embrace change and agility may find themselves distracted and lose customers to agile competitors who are more relevant and customer-centric. Thus, to investigate the challenges and to recognize the prospect of agile adoption in insurance industry, a systematic literature review (SLR) in this study was organized and validated by expert review from professional with expertise in agile. The project performance domain from project management body of knowledge (PMBOK) was applied to align the challenges and the solution. Academicians and practitioners can acquire the perception and knowledge in having exceeded understanding about the challenge and solution of agile adoption from the results.

Corresponding Author:

Krishna Yudhakusuma Putra Munandar
Department of Information Technology, Faculty of Computer Science, University of Indonesia
Salemba Raya No. 4, 10430, Jakarta, Indonesia
Email: krishna.yudhakusuma@ui.ac.id

1. INTRODUCTION

Corporate information technology (IT) departments are formed as a result of the transformation of internal and external operations, and many of them eventually transition to an agile organization. The reasons for this are well-known: an agile development cycle allows projects to be conceived and produced more rapidly; they are of higher quality because they are more sensitive to changes in the environment or consumer preferences [1]. According to one research, agile initiatives have four times as many successes and one-third fewer failures than traditional programs [2]. Furthermore, the notion of agility has expanded [3], extending to ever bigger sizes at the organizational level while also infiltrating other, "atypical" industries.

Agile is currently being implemented not only in software development teams, but also in non-IT operations in the public sector. A multitude of systems, processes, goods, and services, for example, in the banking and insurance industries, healthcare, defense, and central and local government, require digitalization. It is not simple to transition from a traditional to an agile working paradigm in the public sector. It is more than difficult to promote innovative teams in a rigidly hierarchical, bureaucratic atmosphere [1].

The drawback of agile is struggled to function in large businesses like banks, insurance companies, and government agencies, which are frequently associated with cumbersome processes. Furthermore, agile necessitates the participation of both users and team members. As a result, the success of development is strongly dependent on the communication and performance of the entire team. However, due to challenges

with managing face-to-face communications and the complications of setup, agile may not be the ideal solution in a group of more than twenty individuals [4].

The team may encounter disputes due to organizational structure and culture, and members prefer to avoid design thinking activities and habits, as well as not adopting the proper mentality toward the procedures [5]. The hierarchical structure and operation of company silos have command and control bias with a focus on compliance and cost reduction. Moreover, their legacy products and IT systems are outdated and inflexible. Traditional software development techniques were cumbersome and pay more attention to standardization and industry, this leads to high costs and prolonged costs [6]. Insurance company that does not embrace change and agility may find themselves distracted and lose customers to agile competitors who are more relevant and customer-centric [6]. Furthermore, Tunbjer sees that a lot of governance, regulation, command, and control culture in insurance companies, will require a major transformation that must be carried out by moving deep and slowly hierarchically [7].

Studies on insurance companies in Indonesia that implement agile it was discovered that the team should focus on specific requirements rather than general requirements, which resulted in the silo. Another problem is the shorter cycle time from requirement collection to software development, as business customers' requirements frequently change. They have an influence on the learning process since it is difficult to learn a specific or related function. Furthermore, system enhancements relating to a certain feature are handled by the same person who previously managed it, which has an influence on the reliance of some people. This situation deteriorates as a result of the team's reliance on tacit knowledge. As a result, the difficulties at this firm are related to agile deployment, people, knowledge, and the learning process [8].

Finding an effective project management approach is critical to the insurance industry [9]. The study intends to investigate the likelihood of agile adoption, the challenges, and solutions in the insurance industry in Indonesia. Hence, shall support the insurance industry address the importance of agile and how to improve company performance. Project performance domains were used to map the challenges of this research. The research challenges of agile adoption for the insurance industry were limited according to previous paper. Thus, the research question in this study is, what are challenges of agile adoption in insurance industry?

Literature related to the application of agile adoption specifically for the insurance industry has not been found. Works of literature often address a certain knowledge area for a specific organization. The 7th project management body of knowledge (PMBOK) project performance domain was also not included in those researches. Though there are several works of literature review studies that discuss agile project management in startups and agile businesses, there is no literature from an insurance viewpoint. As a result, this research contributes to the uniqueness for agile practitioners in the insurance sector, as well as academicians, primarily for the obstacles of agile adoption in the insurance industry with 7th PMBOK project performance domain.

2. METHOD
2.1. Agile methodology

Derived from agile software development, it is iterative and incrementally between self-organizing, cross-functional teams with requirements and solutions originated. Agile develop software that is grouped and broken into smaller, backlogged and more specialized deliverables. Moreover, the agile method is direct to the waterfall method for enlarging and testing software incrementally [10]. The contrasts between agile development and conventional development are based on an unpredictable reality, as well as stressing the value skilled people and their relationships contribute to software development. Agile methodologies handle the difficulty of an unpredictability by stressing the importance of competent people and their connections in software development [11].

2.2. Agile adoption

Many firms are making changes to integrate agile alternatives as a result of the agile manifesto [12]. Organizations use agile methodologies to respond to and learn from changes while increasing customer value [13]. Agile offers organizations unique benefits when compared to a plan-driven development approach. The initial motivation for moving to agile is often a desire to develop software more quickly, especially in situations where user requirements are difficult to define [14].

Agile adoption is typically launched from the top down or from the bottom up. Top-down adoption occurs when an executive or senior management becomes an advocate for agile, generally owing to dissatisfaction with an existing approach or the potential benefits that agile promises. In a bottom-up method, a developer or small group of developers finds the benefits of agile over plan-driven techniques and requests management to authorize a pilot agile project [15].

2.3. Project performance domain

A project performance domain is a set of associated tasks which are key for the successful project outcome. This is derived from the PMBOK guide 7th edition. The project performance domain is a focus area that is interactive, interrelated, and interdependent. Where these things will work together in achieving the demanded project outcomes. There are eight project performance domains, namely, stakeholders, team, development approach and life cycle, planning, project work, delivery, measurement, and uncertainty as seen in Figure 1. The performance project domains are brought together simultaneously to form one thing, which they can operate as an integrated system. In addition, the work of each domain is interdependent with other performance domains to increase project success and expected results [16].
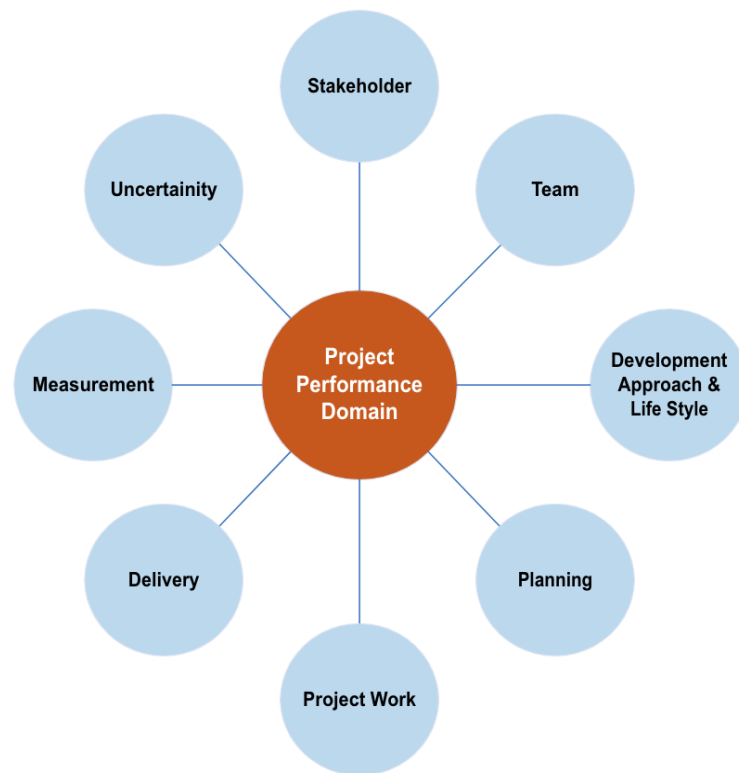
Figure 1. Project performance domain

2.4. Planning

A systematic literature review (SLR) involves distinct stages: planning, implementation, and reporting. These stages encompass activities such as formulating research questions, defining research strategies, literature selection, and data extraction, as outlined by Cavalcanti *et al*. [17]. The specific stages utilized in the present study can be found in Table 1 for reference.

Table 1. Picoc formula

Population	Intervention	Comparison	Outcome	Context
Challenges or solution	Agile approach or agile software development	-	Adoption, scale, and implementation	Insurance

The following research questions were expanded according to Table 1 is, what is challenges of agile adoption in insurance industry? In this paper, the search use database, namely Association for Computing Machinery (ACM) Digital Library, Taylor and Francis, Springer, SageJournals, Scopus, IEEE, and ScienceDirect. Furthermore, the search also used Google Scholar index. The search strategy was constructed and implemented to obtain research that have correlate with the research goals. The boolean search utilized in this research were: (("Challenges" OR "Solution") AND ("Agile Approach" OR "Agile Software

Development") AND ("Implementation" OR "Adoption" OR "Scale") AND ("Insurance")). After keywords have been undertaken, the filtering step is implemented to determine which research to involve. The criteria for the filtering step are represented in Table 2.

Table 2. The search strategy

Stage	Inclusion criteria	Exclusion criteria
Initial stage (selection based on Boolean search)	Boolean search string	-
Stage 1 (selection based on titles and abstracts)	Linked to insurance industry adopting agile	Linked to insurance industry not adopting agile
Stage 2 (selection based on full text)	Considering challenges of agile adoption in insurance industry	Not considering the agile adoption in insurance industry
Stage 3 (selection based on full-text and year of publication)	− 2017 – 2023 publication period − Publication in English or Bahasa Indonesia − Downloadable publication	− Non 2017 – 2023 publication period − Non downloadable publication − Opinions, white papers, books, and company report

2.5. Implementation

After the planning phase is conducted, the next phase is the implementation. In this stage, a database search is carried out with the criteria determined at the planning stage. After screening, numerous papers were applied and examined as a connection with the research questions. Moreover, the studies that have relevance will be downloaded for advance investigating and the insight gained after these studies were extracted and synthesized. The paper selection process carried out is shown in the Figure 2.
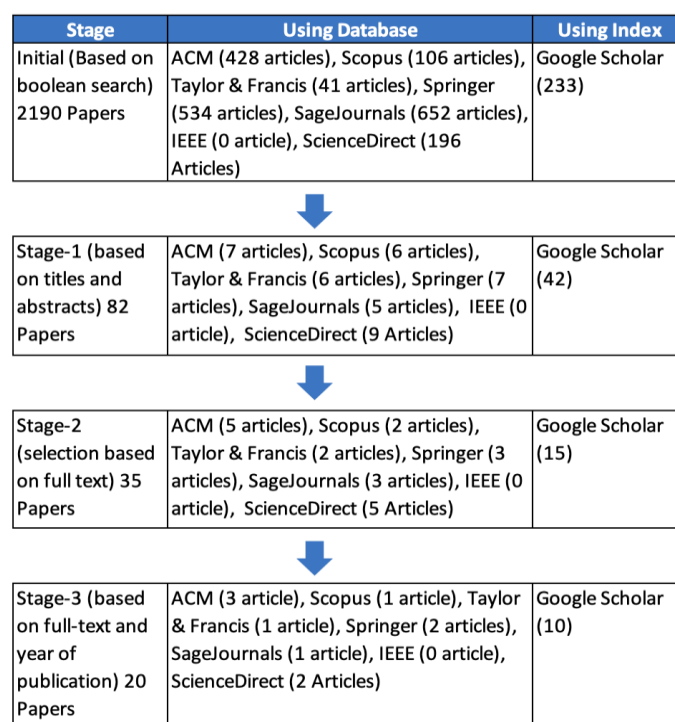
Stage	Using Database	Using Index
Initial (Based on boolean search) 2190 Papers	ACM (428 articles), Scopus (106 articles), Taylor & Francis (41 articles), Springer (534 articles), SageJournals (652 articles), IEEE (0 article), ScienceDirect (196 Articles)	Google Scholar (233)
Stage-1 (based on titles and abstracts) 82 Papers	ACM (7 articles), Scopus (6 articles), Taylor & Francis (6 articles), Springer (7 articles), SageJournals (5 articles), IEEE (0 article), ScienceDirect (9 Articles)	Google Scholar (42)
Stage-2 (selection based on full text) 35 Papers	ACM (5 articles), Scopus (2 articles), Taylor & Francis (2 articles), Springer (3 articles), SageJournals (3 articles), IEEE (0 article), ScienceDirect (5 Articles)	Google Scholar (15)
Stage-3 (based on full-text and year of publication) 20 Papers	ACM (3 article), Scopus (1 article), Taylor & Francis (1 article), Springer (2 articles), SageJournals (1 article), IEEE (0 article), ScienceDirect (2 Articles)	Google Scholar (10)

Figure 2. Selection phase for choosing the final articles

2.6. Reporting

At the report stage, there is an analysis of the insights that have been obtained at the implementation stage. All challenges, insights, lessons learned, success stories, and solutions that have been obtained, are analyzed to be carried out in the project performance domain. There are eight domains owned by the project performance domain. After conclusions are drawn, the results will be reported. Table 3 shows the publications that were analyze.

Table 3. Analyzed publication

Title	Country	Year	Reference
Adoption of agile methodology in information, communication, and technology (ICT) software projects in Kenyan Insurance Companies	Kenya	2021	[6]
Investigating the "Socio" in socio-technical development: the case for psychological safety in agile information systems development	Germany	2021	[18]
Anti-patterns in agile adoption: a grounded theory case study of one irish IT organisation	Ireland	2017	[19]
How are agile release trains formed in practice? A case study in a large financial corporation	Denmark	2019	[20]
Agile development in practice: lessons from the trenches	USA	2019	[15]
Supporting large-scale agile development with domain-driven design (DDD)	Germany	2018	[21]
Establishing architecture guidelines in large-scale agile development through institutional pressures	Germany	2019	[22]
Discovering adoption of agile management paradigm in software development at PT. Asuransi Allianz Life Indonesia	Indonesia	2019	[23]
Challenges and success factors of scaled agile adoption – a South African perspective	South Africa	2021	[24]
Adoption level and challenges of implementing agile project management methodology in the private banking industry in Ethiopia	Ethiopia	2019	[25]
Developing an agile performance management information system	Netherlands	2020	[26]
Participatory establishment of guidelines through automated testing and gamification in large-scale agile software development	Germany	2018	[27]
Derivation of an agile method construction set to optimize the software development process	Switzerland	2020	[28]
A sentiment scale for agile team environments in large organizations: a grounded theory	South Africa	2020	[29]
Agile methodology implementation in a remote digital environment a case study of a large-scale insurance company	Sweden	2021	[30]
Challenges in agile transformation journey: a qualitative study	Brazil	2020	[31]
The agile success model: a mixed-methods study of a large-scale agile transformation	Denmark	2021	[32]
Agile project management challenges and mapping solutions: A SLR	Indonesia	2020	[33]
Satisfaction and its correlates in agile software development	Switzerland	2020	[10]
Agile vs. traditional approach in project management: strategies, challenges, and reasons to introduce agile challenges and reasons to introduce agile	Serbia	2019	[34]

3. RESULTS AND DISCUSSION

The examined paper has been translated into project performance domain that derived from PMBOK in this paper. All domains were synthesized in the analyzed research. The examination of the solution was conducted after the challenges were recognized.

3.1. Challenges and categorization

Preceding papers have been outlined after determining the challenges that have relevance respectively to the domain. The project performance domain has eight domains introduced in the principle. The recognized challenges perceived in preceding papers to project performance domain showed in Table 4. In the preceding papers, there are stakeholders, team, development approach, life cycle, planning, project work, delivery, measurement, and uncertainty. In other words, all the domains are examined in this paper.

In Table 4, the most recognized domain that has the most relevance respectively to the domain was the stakeholder domain and followed by the team domain and project work domain. The stakeholder domain was escalated by twelve research. Moreover, team and project work domains were escalated by eleven and eight research.

Table 4. Examination project performance domain

ID domain	Number	Related research
Stakeholders	18	[6], [10], [15], [19]–[21], [23]–[34]
Team	17	[6], [10], [15], [18]–[20], [22]–[27], [30]–[34]
Development approach and life cycle	8	[6], [15], [19], [24], [28], [31], [32], [34]
Planning	9	[6], [10], [20], [23]–[25], [31], [33], [34]
Project work	11	[6], [10], [15], [19], [20], [23]–[25], [30], [32], [34]
Delivery	10	[6], [10], [19], [21], [24], [25], [27], [29], [31], [33]
Measurement	3	[24], [25], [33]
Uncertainty	9	[6], [20], [21], [23], [24], [26], [27], [32], [33]

3.2. Challenges and solution

The segment considered entire the challenges and solutions established in preceding papers. Following that, expert opinion is used to validate the project performance domain using an online questionnaire. The questionnaire includes five value options to quantify the impact of each challenge, with 1 indicating strongly disagree and 5 indicating strongly agree. The expert judgement respondent is someone

who has/currently works in the insurance sector and has used agile approach. The expert evaluated have as much as 4-5 years of agile experience, working in several prominent insurance businesses in Indonesia. Respondent response values will be tabulated and graphs will be shown.

3.2.1. Stakeholder domain

There were no well-timed and relevant actions to keep project execution on schedule in this domain. This concluded due to underestimating the amount of time needed [24] and lack of well-timed feedback [25] that slow down the facilities of testing results and acceptance of systems and features. Schedule project execution could be addressed by increasing flexibility and decreasing development lead times changes [24]. To address this problem, insurance firms should adhere to software engineering standards, and agile scrum is the most recommended agile technique for building accurate and adaptable software solutions [6]. The result of expert review for stakeholder domain are shown in Figure 3. The stakeholder domain is identified as the most common challenge found in the literature review, in general experts agree regarding this domain, even though there are answers that disagree and are neutral regarding this domain.
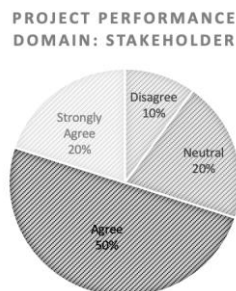
Figure 3. Challenges of agile adoption for stakeholder domain evaluated by expert review

3.2.2. Team domain

Shared ownership is one of the outcomes of this domain, but there were challenges such as there being no distributed organizational definition, understanding, or agreement of when agile work is "Done" [19] and lack of transparency [27]. Meanwhile, there were the project team does not trust each other and collaborates. They thought the practice is all nonsense and does no good [18] also they would not like to transform their method of working [20]. Moreover, suitable leadership and further interpersonal skills were not showed by project team members due to confusing suggestion of guidelines [27], and an IT manager perceive the agile approach were not always the finest methodology to be applied generally [30].

The conducted solution is discovering commonality which possibly reused and shared for having running circumstances to empower collaboration [23]. Also, to enlarge team motivation, the whole team unit is required through the activity of feature planning in the early stage and their presents are welcome in the planning. While top managers take part in an important role in driving employees in transforming into new ways of working [24]. A research presents a lightweight framework that may be utilized as guidance for architecting in large-scale agile development initiatives by agile teams. DDD address this issue by allowing for the flexible evolution of complicated system design and provides fundamental architectural notions that can benefit not only agile teams but the program as a whole [21]. Figure 4 shows that most experts agree regarding this domain as a challenge in adopting agile in the insurance industry.
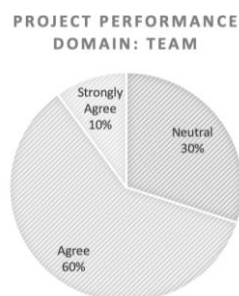

Figure 4. Challenges of agile adoption for team evaluated by expert review

3.2.3. Development approach and life cycle domain

The most recognized problem in this domain was about on the case in which the insurance organizational culture is traditional and hierarchical management [6], [15], [19], [24], [27] challenges made development approaches not consistent with project deliverables. Traditional and hierarchical management can be overdue by cooperative organizational culture instead of hierarchical [6] and escalating agile by beginning small and not too quick [23]. Also, picking and customizing agi practices in the adoption activity is the major key for organizations to focus on particular areas and choose specific customized practices to be implemented.

Remain everything straightforward by customizing the agile method sensibly. While piloting is needed to begin a pilot to obtain acceptance. In addition, piloting aid in producing confidence that agile is working and assembling insights from a pilot [24]. Figure 5 shows the challenges of agile adoption for development approach and life cycle domain evaluated by expert review. Most experts agree that this domain is a challenge, although there are those who disagree and are neutral.
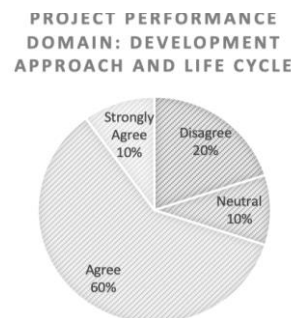
Figure 5. Challenges of agile adoption for development approach and life cycle domain evaluated by expert review

3.2.4. Planning domain

In this domain, the project was not progressing in an organized, coordinated, and deliberate manner due to the lack of an agile progress tracking mechanism [6]. Furthermore, the availability of resources [23] and the projects had a different planning horizon than the release trains [20] causing an uncomprehensive approach to delivering the project outcomes. Delayed support from high-level management [24] and resistance to change and absence of total commitment to the process also cause planning information not enough to control stakeholder belief and inconsistent requirement was a challenge for process the adaptation of plans throughout the project.

The requirement solution to address the above challenge was a good progress-tracking mechanism for agile progress [6]. Providing training and coaching to the team on agile values and principles, is the resolution to resistance, management, and commitment challenges [6], [24]. While engaging an organization to obtain acceptance of the digital transformation can be done by starting with an agile champion involving the person with previous agile exposure [24]. Figure 6 shows the challenges of agile adoption for planning domain evaluated by expert review. Most experts think that this domain is challenging, although some strongly disagree and are indifferent.
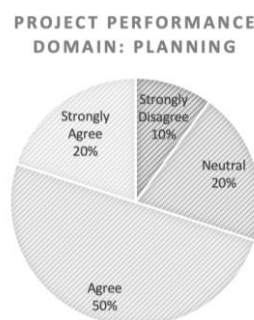

Figure 6. Challenges of agile adoption for planning domain evaluated by expert review

3.2.5. Project work domain

The communication and engagement with stakeholders and ineffective handling of changes were the main challenges for this domain. There were competing priorities, competing stakeholder work requests that reduce the effectiveness of an agile development team [19], delayed support from high-level management [24], and management putting ongoing projects on hold while in the middle of the development process [6]. While ineffective handling of changes caused by unclear project scope and requirements affects insurance firms' use of agile methodologies and lack of a single and coherent set of requirements and individuals have different expectations of how the system should work [6].

Making sure that the organization is committed and carrying out the change for everyone are the key to embracing communication and engagement [24]. While collaboration, feedback circles, and deliberation of bottom-up outlook can address ineffective handling of change. Thus, the answer should also attain the requirement to stimulate and ease better communication between teams. Counting representatives of numerous teams in the group within the viewpoint as well as documenting and presenting teams. Which can help aid with utilizing determining guidelines in the tool support [27]. Figure 7 shows the challenges of agile adoption for project work domain evaluated by expert review. All experts agree that this project work domain is a challenge for agile adoption.
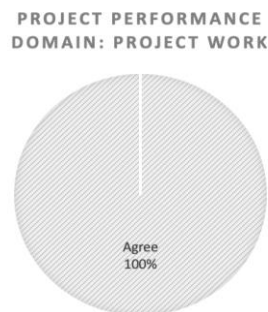

Figure 7. Challenges of agile adoption for project work domain evaluated by expert review

3.2.6. Delivery domain

There was the lack of a common continuing ICT development strategic plan particularly to the improvement of the software development process [25] and project team had an unclear understanding of requirements because the team was not given comprehensive requirements [24]. While stakeholders are not accepted and are satisfied with project deliverables since multiple involved stakeholder groups [27] and active inference from stakeholders with unnecessary management involvement in daily work processes and unnecessary involvement in technical decisions [29]. The need to deliver the key major requirement first could support the strategic plan challenges [25]. While the understanding of requirements could strengthen by requirement management by recognizing the important role of the project owner and put money into education to refine requirements. Communication and transparency to stakeholders regularly to make a brand-new method of working that is able to accept and create positive experiences. While increasing flexibility in options made about work so that teams are flexible in assisting the delivery of projects [24]. Figure 8 shows the challenges of agile adoption for delivery domain evaluated by expert review. Most experts agree that this domain is a challenge, although some are neutral.
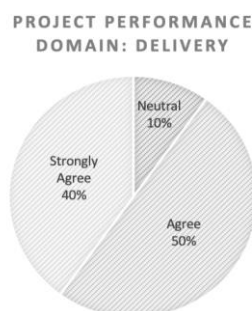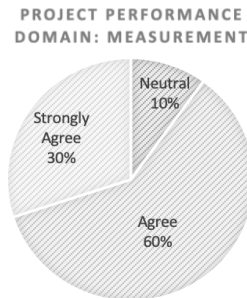

Figure 8. Challenges of agile adoption for delivery domain evaluated by expert review

3.2.7. Measurement domain

There were no well-timed and relevant actions to keep project execution on schedule in this domain. This concluded due to underestimating the amount of time needed [24] and lack of well-timed feedback [25] that slow down the facilities of testing results and acceptance of systems and features. Schedule project execution could be addressed by increasing flexibility and decreasing development lead times changes [24]. Figure 9 shows the challenges of agile adoption for measurement domain evaluated by expert review. Most experts agree that this domain is a challenge, despite some are neutral.

PROJECT PERFORMANCE
DOMAIN: MEASUREMENT

Neutral
10%

Strongly
Agree
30%

Agree
60%

Figure 9. Challenges of agile adoption for measurement domain evaluated by expert review

3.2.8. Uncertainty domain

An awareness of the environmental projects is needed for this domain, but there was a lack of awareness and compliance with guidelines [27] and the organizational culture is too political [6]. There was no recognition of the correlative of multiple variables of project [6], [23], [24] such as challenges due to dependencies [20], large organizations face challenges when scaling agility such as inter-team coordination, and dependencies on other programs [21]. Furthermore, the team not utilized mechanisms to associate opportunities due to a lack of agile progress-tracking mechanisms [6]. The proposed solution to the need for awareness could be addressed through a collaborative point of view with instrument support. While ascending agile could be done by stabilizing the empowerment of the team and not initiating duplicating jobs [27]. A study recommends using architecture principles and guidelines to coordinate large-scale agile development efforts and extending traditional enterprise architecture management (EAM) by taking an influence-centric approach to the establishment of architecture principles and guidelines. The EAM governance method can help large-scale agile development projects by bringing together all essential parties [22]. Figure 10 shows the challenges of agile adoption for uncertainty domain evaluated by expert review. Most experts agree on this domain as a challenge, although there are those who are neutral and disagree.
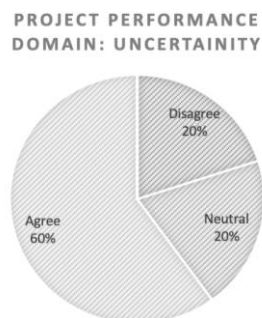
PROJECT PERFORMANCE
DOMAIN: UNCERTAINITY

Disagree
20%

Agree
60%

Neutral
20%

Figure 10. Challenges of agile adoption for uncertainty domain evaluated by expert review

4.   CONCLUSION

A systematic literature study was conducted for the insurance business regarding agile adoption in order to identify the barriers. The purpose of this research is to determine whether it is viable for an insurance to embrace agile as a large-scale, what problems the insurance has experienced, and what solutions exist.

According to preliminary study, the insurance industry can implement agile while adhering to laws. The researchers examined data from six sources, which ACM, Scopus, Taylor and Francis, Springer, SageJournals, and Google Scholar Index, and found 20 publications that fulfilled the parameters given by the formula search. The challenges found in preceding papers have been plotted into project performance domains of PMBOK. Most of the challenges are stakeholders, team, and project work.

Previous research discovered that the insurance business may rely on a framework to support the smooth implementation of agile. Also, insurance industry can use DDD as a lightweight framework that may be utilized as guidance for architecting in large-scale agile development initiatives by agile teams and use architecture principles and guidelines to coordinate large-scale agile development efforts and extending traditional EAM. Some experts also validate these domain as a domain that is a challenge in adopting agile in the insurance industry. Some experts also validate these domain as a domain that is a challenge in adopting agile in the insurance industry. These major categories can be utilized for promoting the insurance industry's agile adoption challenges. Most studies have looked at the success factors and obstacles of agile in general, but this article presents scientific findings focused on the challenges of agile adoption using the SLR technique and categorizing them to the project performance domain from the 7th PMBOK and validated by some experts.

Future studies might look at broadening the data sources over the six databases used in this SLR and adding more respondents for expert review. Examine extensive the framework utilized for insurance organization concerning agile adoption is the future work for this paper. When the insurance industry starts to proceed for agile development it will be a challenging condition. Hence, focus on the earlier term of the adoption will be appropriate. Following the paper sole scoping challenges to project performance domains of PMBOK, afterwards the upcoming research could be investigating an actual framework which talk about a particular.

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BIOGRAPHIES OF AUTHORS

Krishna Yudhakusuma Putra Munandar ⓘ 🔗 SC ◐ is a master candidate student in Faculty of Computer Science, University of Indonesia, majoring in information technology with a concentration in governance with learning about IT governance and IT risk management. He is informatics engineering bachelor in Faculty of Computer Science, University of Brawijaya, majoring in informatics engineering and concentration in software engineering. He is also a professional working as a business continuity at Prudential Life Assurance Indonesia. He can be contacted at email: krishna.yudhakusuma@ui.ac.id and krishnayudhaa@gmail.com.

Teguh Raharjo ⓘ 🔗 SC ◐ currently works at the Faculty of Computer Science, University of Indonesia. He does research in supply chain management, organizational studies, and business administration. His research interest includes software engineering and IT project management. He is also a professional working as a senior project manager at IBM Indonesia. He got a professional certification for PMP, PMI-ACP, Prince2, Prince2 Agile, Certified Scrum Master (CSM), and SAFe Agilist (SA). He can be contacted at email: teguhr2000@gmail.com.