UTILIZATION OF AGILE METHODS TO DEVELOP EMPLOYEE INTERPERSONAL SKILLS: A SYSTEMATIC LITERATURE REVIEW

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Abstract: Interpersonal skills in employees are an important part of technology companies in achieving their goals through the development of skills in their employees. The application of agile methods for application development has been widely carried out by technology companies. The agile method has the main principle of communication between employees, requiring skills to face these principles. The method used in this study is the systematic literature review (SLR) method to know how the use of agile methods can develop interpersonal skills in karyawan. In the initial search conducted using the Publish or Perish application, 740 journals were found in the range of 2015 to 2022. Next, journal filtering and cluster search continued using Microsoft Excel, Zotero, Mendeley, and VOS Viewer applications, resulting in 53 journals selected based on Q1. In the final stage of screening, researchers re-screened 9 journals that were used as a reference regarding the use of agile methods to develop employee interpersonal skills. The results showed that the agile development method can affect the development of employee interpersonal skills. 11 skills develop because of the use of this agile development method including team working, emotional intelligence, negotiation and persuasion, problem-solving, communication skills, conflict resolution, decision making, time management, organizational skills, listening, and relationship building. Of the 11 skills, the most mentioned is team working.

Keywords: agile development methods; interpersonal skills; literature review

Abstrak: Interpersonal skill pada karyawan menjadi bagian penting bagi perusahaan teknologi dalam mencapai tujuannya melalui berbagai pengembangan keterampilan. Penerapan metode agile untuk pengembangan aplikasi sudah banyak dilakukan oleh perusahaan-perusahaan teknologi. Metode agile memiliki prinsip utama berupa komunikasi antar karyawan sehingga membutuhkan keterampilan untuk menghadapi prinsip-prinsip tersebut. Metode yang digunakan pada penelitian ini yaitu metode systematic literature review (SLR) dengan tujuan untuk mengetahui bagaimana pemanfaatan metode agile dapat mengembangkan interpersonal skill pada karyawan. Pada pencarian awal yang dilakukan menggunakan aplikasi Publish or Perish, ditemukan 740 jurnal pada rentang tahun 2015 sampai 2022. Selanjutnya, penyaringan jurnal menggunakan aplikasi Microsoft Excel dan Mendeley Desktop yang menghasilkan 53 jurnal yang dipilih berdasarkan penilaian kualitas. Pada tahap akhir penyaringan, peneliti menyaring kembali menjadi 9 jurnal yang digunakan sebagai acuan mengenai pemanfaatan metode agile untuk mengembangkan interpersonal skills karyawan. Hasil penelitian menunjukan bahwa metode agile development dapat mempengaruhi pengembangan interpersonal skill karyawan, faktanya terdapat 11 skill yang berkembang karena pemanfaatan metode agile development ini diantaranya adalah team working, emotional intelligence, negotiation and persuasion, problem solving, communication skills, conflict resolution, decision making, time management, organizational skill, listening, dan relationship building. Dari 11 skill tersebut yang paling banyak disebut yaitu team working.

Kata kunci: interpersonal skills; metode agile development; literature review;

INTRODUCTION

The application *of interpersonal skills* to employees is a demand of the company in achieving its goals. This *interpersonal skill* development can provide understanding and improvement of performance to have loyal skills in carrying out their work. The strategy that can be used to find out these skills is to utilize agile development methods.

The Agile Manifesto is the main principle in the application of agile development methods. The Agile Manifesto is a set of values applied when running agile software development [1]. The principles related to this research are direct communication in the software development process, accepting all forms of changes during the software development process, the existence of a good cooperation process between developers, and can produce a product within a relatively short time [2]. Therefore, the need for skills in carrying out these principles.

The agile development method is now widely used by many researchers as an alternative to complete their research. As with any [3] demonstrating agile software development methods can facilitate perceptions and insights into the organization. The study tested 1894 software developers across 217 projects using agile methods. The final results show that the use of agile software development methods can reduce fatigue at work.

Other studies were conducted [4] which learns about metrics for assessing agile development processes. A quantitative study was conducted on 191 responses from companies adopting the Scrum methodology. The results show that the role of agile scrum is not the determining factor, while individuals with years of experience have a higher percep-tion of the importance of metrics in team performance.

Research by [5] conduct a literature review of agile software developments in healthcare. The study identified 224 journals indexed by Scopus. The final results show agile methods can improve healthcare settings and strengthen cooperation.

Research by [6] learn about the influence of agile development methods on leadership knowledge. The literature review was conducted on 33 studies in the Scopus database. The results suggest that leadership in agile method development requires further study to better understand in general.

Research by [7] conduct a literature review of the project manager's role in Agile Software Teams. The study examined 35 journals and concluded that there is no independent work on the role of project managers in agile methods.

Research conducted by [8] about aspects of software quality through the development process of agile software methods. A total of 71 studies were selected to answer the research questions in the study. Four important categories were drawn in the study. First, there are 118 critical success factors, 137 agile practices, 102 metrics, and 70 quality attributes influencing the development of agile development methods.

Research by [9] conducted literature on 11 selected studies on the use of agile methods in education. Agile education can create a learning environment that supports the creation of a sense of responsibility and can foster sustainability competencies.

Research by [10] analyze challenges to handling scope and change in agile project management. A total of 21 studies were discussed to answer best practices in addressing these challenges.

Seven categories and eighteen issues were found. The most significant challenges come from people and organizations, prioritization of user needs, and communication and coordination. One of the practices that can be done is to conduct appropriate training to manage scope and change.

Research by [11] conduct a literature review of agile project management challenges and mapping solutions. A total of 23 studies identified SLR extraction results. The biggest challenge arises from the management of project stakeholders and resources. The mapping solution refers to the PMBOK (Project Management Body of Knowledge) guidelines. As well as proposing the process of developing teamwork through training.

Another study was conducted [12] about literature review the knowledge management strategies and processes in agile software development. A total of 32 studies were analyzed and as many as 33 practices were found that implemented personalization strategies, and 7 practices implemented codification. Personalization strategies engage closely between team members and customers.

Previous research has not conducted literature studies on what skills are obtained from the use of agile development. Therefore, this study will find out how the use of agile methods can develop interpersonal skills in employees. Problem-solving is carried out by *systematic literature review* (SLR) covering various related journals published from 2015 to 2022. Final results of the study.

METHOD

Researchers use the Systematic Literature Review (SLR) method based on guidelines provided by Kitchenham et al. [13]. The guidelines are divided into three phases, namely planning the review phase, conducting the review phase, and reporting the review phase.

Image 1 describes the flow of the SLR method in general which begins with selecting a journal, determining search keywords, and then running a search the primary study is found, but if it is not found, make improvements to the string. Furthermore, the selection of primary studies, quality assessment, and producing appropriate studies for review.
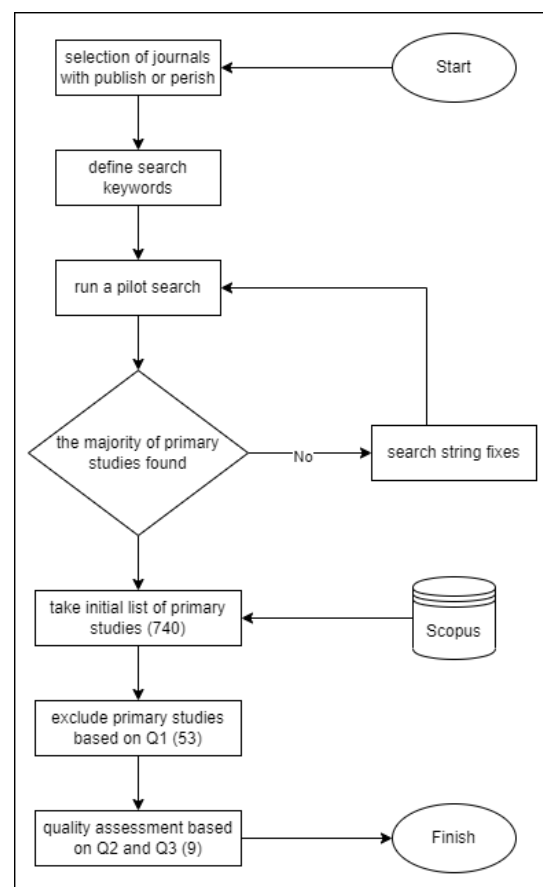

Image 1. Prosedur Systematic Literature Review

Planning the Review Phase

The initial phase is to create a *research question* (RQ) to answer the research question. The *research questions* we use are RQ1 "*How many journal publications are there that discuss* agile development methods *that affect employee* interpersonal skills?", and RQ2 "*What interpersonal skills develop because of agile methods in each journal?".*

Conducting the Review Phase

The next phase is to search for journals that index "agile methods" and "interpersonal skills". The tools we use are *publish or perish* which is a software program by citing from various sources, such as IEEE Xplore, Springer, ACM, Science Direct, Google Scholar, etc. Then extract the data findings in the Mendeley Desktop application to update journal metadata.

The next stage is to extract data from Microsoft Excel to analyze all the information needed in the research. The data result in information from selected studies is collected in the form of data extraction: year, author, title, publisher, URL address, and abstract.

The first stage of analysis is to assess the quality *of journals in the* form of questions used to assess the quality of each journal. The criteria for assessing the quality of each journal include: Q1 "Are the criteria for inclusion and exclusion of reviews explained and appropriate?", Q2 "Has the literature search covered all relevant studies?", and Q3 "Do reviewers assess the quality/validity of the included studies?".

These quality assessments are assessed based on how well they meet the quality criteria listed in Table 1. The following points system is used to determine individual criteria scores: Yes (Y) = 1 point, Partial (P) = 0.5 points, and No (N) = 0 points.

Table 1. Journal Quality Assessor

Q	Criteria		
	Yes (skor 1)	Partial (skor 0,5)	No (skor 0)
Q1, Q2, and Q3	Inclusion criteria are explicitly defined	Inclusion criteria are implicit	Inclusion criteria are not defined and cannot be concluded

Reporting the Review Phase

Search results on October 25, 2022, using predetermined keywords, 740 journals between 2015 and 2022 have been published on Scopus. Next, journal filtering and cluster search are continued using the Microsoft Excel application. The final list of selected primary studies has 9 journals that match the criteria to be discussed. Then, the full text of the 9 journals was analyzed.

RESULTS AND DISCUSSION

The results of the journal screening process produced 9 papers related to the discussion of agile development methods to develop interpersonal skills. As shown in Table 2.

Table 2. Filtration Journal Findings

No.	Description	Discovery Results
1	Studies found 2015 - 2022	740
2	Relevant studies based on Q1	53
3	Studies that meet the quality of Q2 and Q3 assessments	9

Quality Assessment Results

Table 3 shows the evaluation results of selected journals evaluated based on *Q2 and Q3* quality assessment.

RQ1 Results: Significant Journal Publications

In this Systematic Literature Review (SLR) research, 8 journal publications analyze the effect of agile development on employee interpersonal skills. As shown in Table 4.

Table 4. RQ1 Results

No.	Publisher Name	Year	Total
1	Probation Journal	2016	1
2	Global Journal of Flexible Systems Management	2017	1
3	IEEE Software	2019	1
4	IEEE Access	2020	1
5	Global Journal of Flexible Systems Management	2022	1
6	Astronomy and Computing	2019	1
7	Information and software technology	2017	2
8	Information Systems Frontiers	2020	1

RQ2 Results: Interpersonal Skills Developed

Based on the results of *research question* 2 (RQ2) there are 11 skills developed by agile development from 9 journals that have been studied. These skills include *team working, emotional intelligence, negotiation and persuasion, problem-solving, communication skills, conflict resolution, decision-making, time management, organizational skills, listening, and relationship building*. As many as 7 out of 9 journals agree that agile development affects the development of *Interpersonal Skill Team Working*. The following can be seen in Table 5.

CONCLUSION

This study aims to identify and analyze the significance of interpersonal skills journals developed by *agile development*. There are 9 journals obtained based on the results of the study search selection. Interpersonal skills developed by *agile development* are *team working, emotional intelligence, negotiation and persuasion, problem-solving, communication skills, conflict resolution, decision-making, time management, organizational skills, listening, and relationship building*.

Table 3. Quality Assessment Results

No.	Writer	Q1	Q2	Q3	Result
1	Patri, R.; Suresh, M.	1	1	1	3
2	Calefato, F.; Ebert, C.	1	1	1	3
3	Anseel, F.	1	1	1	3
4	Gren, L.; Torkar, R.; Feldt, R.	1	1	1	3
5	Alzoubi, Y. I.; Gill, A. Q.	1	1	1	3
6	Fitzgerald, K.; Browne, L. M.; Butler, R. F.	1	1	1	3
7	Shrivastava, S. V.; Rathod, U.	1	1	1	3
8	Gren, L.; Knauss, A.; Stettina, C. J.	1	1	1	3
9	Hemon, A.; Lyonnet, B.; Rowe, F.; Fitzgerald, B.	1	1	1	3

Table 5. RQ2 Results: Interpersonal Skills Developed

No.	Interpersonal Skill	Research Journal	Total Journal
1	Team-working	[14]–[20]	7
2	Emotional Intelligence	[19], [21]	2
3	Negotiation and Persuasion	[14], [17], [19], [21]	4
4	Problem Solving	[16], [18], [20]	3
5	Communication Skills	[14]–[17], [22]	5
6	Conflict Resolution	[21]	1
7	Decision Making	[16], [19], [21]	3
8	Time Management	[15], [17]	2
9	Organizational Skill	[20], [21]	2
10	Listening	[14], [16]	2
11	Relationship Building	[22]	1

The results of the *research question* (RQ1) contained 8 significant journal publications discussing *agile development* in interpersonal skills. In the *research question* (RQ: 2), of the 9 interpersonal skill journals the most mentioned is *Team Working* which is found in 7 journals.

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