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Project Manager in Agile Software Development Teams: is this role needed?

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Master's degree in Computer Science and Business Management

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Outubro, 2023

Department of Information Science and Technology

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Resumo

A adoção de metodologias ágeis tem levado a uma melhoria das taxas de sucesso no desenvolvimento de software, resultando na maior utilização destas metodologias. O Agile é caracterizado pela auto-organização, o que tem levado a alterações nas práticas de gestão de projetos. Na verdade, as metodologias ágeis não especificam o papel de um Gestor de Projeto, no entanto, existem relatos da existência deste papel em ambientes ágeis reais. Esta contradição motivou esta investigação que visa averiguar as razões pelas quais este papel ainda existe, compreendendo as responsabilidades de um Gestor de Projeto Ágil e descobrindo quais os fatores que influenciam a sua presença, para melhor compreender a necessidade deste papel.

Foi realizada uma Revisão Sistemática da Literatura que destacou diversas responsabilidades dos Gestores de Projetos Ágeis e dos Scrum Masters, visto que as sobreposições nas funções entre os dois papéis tornaram-se imediatamente evidentes, levando à diferenciação das suas tarefas e, subsequente identificação de pontos em comum. Para validar essas descobertas, foram realizadas entrevistas com ambos, Scrum Masters e Gestores de Projetos Ágeis. Estas discussões confirmaram muitas das responsabilidades apontadas e revelaram algumas sub-representadas na literatura. Foram também identificados vários fatores que podem contribuir para a necessidade de ter um Gestor de Projetos numa equipa Ágil.

Finalmente, o estudo forneceu perceções valiosas sobre o papel de um Gestor de Projetos Ágil, visto que as descobertas desta pesquisa contribuem para uma melhor compreensão da paisagem da gestão de projetos Ágil e ajudam as organizações a otimizar as suas práticas Ágeis.

Palavras-chave:

Gestão de Projetos Ágil, Desenvolvimento de Software Ágil, Gestor de Projeto, Scrum Master

Abstract

The adoption of Agile methodologies has led to improved success rates in software development, and as a result, more teams are using these methodologies. Agile is characterized by self-organization, which has resulted in changes to project management practices. In fact, Agile methodologies do not specify the role of a Project Manager, yet there are reports of the existence of this role in real Agile environments. This contradiction has prompted this research to investigate the reasons why this role still exists by understanding the responsibilities of an Agile Project Manager and finding out which factors influence the presence of this role, in order to better understand the need for this role.

A Systematic Literature Review was carried out, highlighting several responsibilities of Agile Project Managers and Scrum Masters, since overlaps in duties between the two roles were immediately evident, leading to the differentiation of their tasks, and subsequently commonalities identification. To validate these findings, interviews with both Scrum Masters and Agile Project Managers were undertaken. These discussions confirmed many of the noted responsibilities and revealed some underrepresented in the literature. The study further identified various factors that may contribute to the necessity of having a Project Manager within an Agile team.

Ultimately, the study provided valuable insights into the role of an Agile Project Manager, since the findings of this research contribute to a better understanding of the Agile project management landscape and help organizations optimize their Agile practices.

Keywords:

Agile Project Management, Agile Software Development, Project Manager, Scrum Master

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List Abbreviations and Acronyms

APM	–	Agile Project Manager
APMR	–	Agile Project Manager Responsibility
DSRM	–	Design Science Research Methodology
RQ	–	Research Questions
SLR	–	Systematic Literature Review
SM	–	Scrum Master
SMR	–	Scrum Master Responsibility

Project Manager in Agile Software Development Teams: is this role needed?

Section 1 – Introduction

Over the past few years, software development has been going through changes, namely with the growing adoption of agile methodologies, which have proved to be a valuable asset to these projects [1][2]. In fact, Agile managed to demonstrate improvements in terms of cost, timeline and quality [3], factors that define the success or failure of a project, which means the project performance and customer satisfaction. Agile is in fact, increasingly being adopted by software development teams, with reports of increased performance. There are a wide range of reasons that explain this effectiveness, as flexibility, collaboration, and client satisfaction [4], but one of the most important, is the capacity of response that agile brings to a changing market and VUCA environment [5].

While in Traditional Project Management it is assumed that all the events are predictable, and therefore well-designed plans and structures are drawn up [6], on the contrary, in Agile Project Management exists a continuous iterative planning and development cycles, which results in a constant results evaluation, greater responsiveness to the customer needs, and an easier adaption to new conditions [7][8]. Agile Project Methodologies leave up-front plans and strict control aside and rely on collaboration and coordination [9]. The most well-known and used agile methodology is Scrum, where titles such as Scrum Master and Product Owner were given life [10]. In Scrum, almost all typical project management tasks are distributed by the team members [2], therefore the Scrum Master is not a manager, as he doesn't distribute tasks among the team members [11], since they are self-organizing teams, which calls into question the role of Project Manager in Agile scenarios [1][12][2]. In fact, there is no empirical evidence about the existence of the Projects Manager role in Agile methodologies [1][10][12].

However, recent surveys show that the presence of the Project Manager role in Agile environment is quite common [12][11], in fact, a survey posted to Agile special interest groups, shows that the title of Project Manager is still used on 67% of the Agile organizations surveyed [10]. This makes it confusing whether the presence of a Project Manager is actually necessary [1].

It is for the reasons explained above, that this research aims to shed light on the role of an Agile Project Manager by finding out its responsibilities and discovering which factors influence the presence of this role, in order to better understand the need for this position. Consequently, the following research questions will be addressed in this investigation:

RQ1: What duties and responsibilities are entrusted to an Agile Project Manager?

RQ2: What factors contribute to the necessity of having a Project Manager within an Agile team?

The research approach selected for this research employs the Design Science Research Methodology (DSRM), in conjunction with a Systematic Literature Review and individual semi-structured interviews.

Following this introduction, the dissertation continues with chapter two which provides an overview of the theoretical background related to Traditional and Agile Project Management, and the role of the Project Manager in each. Chapter three introduces the Research Methodology implemented in the study. Chapter four outlines the study's design and development, detailing the planning, conduction, and reporting of the review. Chapter five is where the data retrieved from the interviews is presented. Finally, chapter six concludes the dissertation, exploring potential future work and identifying limitations encountered during the research process.

Section 2 – Theoretical Background

2.1 Traditional Project Management

The Traditional Project Management approach is indicated as a top-down approach, leaving the distribution of tasks and direction to follow for executive management. These are methodologies where the leadership style is based on command, control, hierarchy and standardization [13]. A very plan-driven approach, where this plan is very well established and structured from the beginning of the project, with focus on planning the future in detail, with reduced flexibility to be changed later, showing a certain inflexibility, slowness, and resistance to change [14][15].

One of the most used Traditional Project Management methodologies is Waterfall, where the priority is to deliver all the clear and fixed requirements proposed at the beginning of the project. Therefore, any changes to requirements, need strict approval, and these changes take a long time and significantly increase the cost of the project [16].

These Traditional methodologies, also have some strengths, such as the importance given to requirements and the well-designed process, leaving little room for error. However, the lack of flexibility and the slow response to requirement changes, are huge disadvantages in today's complex and volatile project environments [14].

2.2 Agile Project Management

Agile represents a set of values and principles based on face-to-face communication, self-organizing teams, collaboration, and frequent delivery, which can help the team to work more efficiently, think more effectively, and make better decisions [17][7][18].

Contrary to the linear sequence of well-defined activities of the Traditional Project Management, Agile Project Management relies on short cycles of iterative and incremental delivery and a continuous integration of changes made to the initial requirements. Therefore, a set of practices based on collaboration, coordination, communication, and transparency is born [9].

One of the biggest advantages of Agile Project Management is its flexibility and adaptability, because when living in a changing and volatile environment where we don't know what the future holds, the best way to minimize risk and succeed is to be the quickest and most productive [17][19]. Moreover, by adopting agile methodologies, it is possible to constantly satisfy customer and stakeholders needs and requirements, while still significantly improving product quality [20].

The most popular and most used agile framework is Scrum [21], a tool that brings flexibility but also control. Based on an iterative and incremental model [22], Scrum is composed by three main elements: roles, processes, and artifacts. Within the roles we have the Scrum Master, Product Owner, and Development Team [18]. The Scrum Master is seen as a key player, who is a facilitator, but also responsible for transmitting agile values, and removing obstacles during project activities [23][24][25].

2.3 Project Manager Role from Waterfall to Agile

Since Agile Project Management is based on self-organizing teams, the role of Project Manager as we knew doesn't makes sense anymore [12][1], because it is no longer needed a role which assigns work items to the team members [11], but one that prioritizes adaptability and flexibility [26][6][27]. Therefore, these self-organizing teams, divide Project Management activities, such as estimation, planning, and requirements analysis across the entire team. New job titles appear such as Scrum Master and Product Owner [10], where the Scrum Master, instead of command and control as the Traditional Project Manager [15], will lead and coach [28][29]. Although the adoption of Agile methodologies can be really challenging for Project Managers, facing several challenges, including lack of understanding of Agile principles and resistance to change from team members [5][17][30][31].

Section 3 – Research Methodology

3.1 Design Science Research Methodology

This dissertation employs the Design Science Research Methodology (DSRM) as the chosen research approach, building upon the works of Peffers [32], Gengler [33], and Hevner [34]. DSRM offers a systematic framework for conducting information systems research with a focus on creating and presenting IT artifacts to address practical problems.

The methodology guides the design and development of innovative artifacts to tackle identified organizational challenges [33]. In the context of this dissertation, DSRM provides a suitable approach to propose and assess a solution pertaining to the role of a Project Manager in Agile environments, by developing a list of its responsibilities.

Drawing upon the guidelines presented by Peffers in [32] and Hevner in [34], the research process in this dissertation adheres to the following activities:

- 1. Problem identification and motivation:** The initial chapter of this dissertation identifies and articulates the problem under investigation, highlighting its practical significance. The value and relevance of a solution to address the identified problem are justified. Research questions guiding the study are derived from the problem statement.
- 2. Define the objectives of a solution:** Then the author establishes the objectives of the proposed solution. Through an extensive review of existing literature, design recommendations related to the role of an Agile Project Manager in Agile methodologies will be synthesized. Additionally, suggestions for validating the proposed solution will be presented.
- 3. Design and development:** Involves the design and iterative development of the proposed solution. Leveraging insights from the literature review and empirical data, the solution will be designed and refined to effectively address the identified problem in Agile environments.
- 4. Demonstration:** The applicability and usability of the proposed solution will be demonstrated through qualitative methods, such as semi-structured interviews. By engaging with Agile teams and relevant stakeholders, the effectiveness of the solution in addressing the identified challenges will be evaluated.

5. **Evaluation:** In accordance with DSRM principles, the proposed solution will be evaluated aiming to assess the accuracy of the solution on Agile project management practices and its potential to optimize project outcomes.
6. **Communication:** The final phase of DSRM involves effectively communicating the problem's significance, the utility of the proposed solution, and the rigor and effectiveness of its design. The findings and conclusions of this dissertation will be disseminated through academic papers and presentations, contributing to the understanding of the Agile project management landscape.

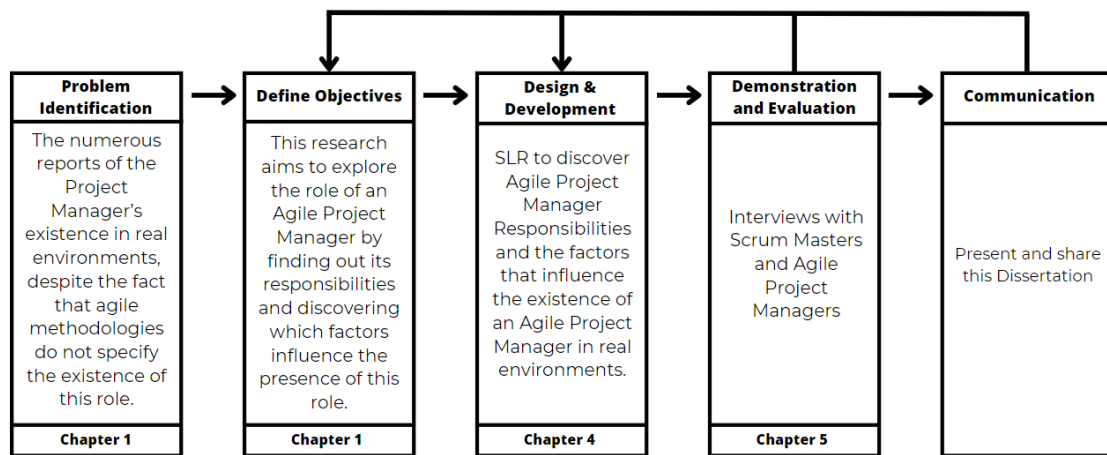


Figure 1 – DSRM applied guidelines

By adopting the DSRM methodology and following these activities contained in Figure 1, this dissertation aims explore the role of an Agile Project Manager by finding out its responsibilities and discovering which factors influence the presence of this role, in order to better understand the need for this position.

3.2 Systematic Literature Review

To investigate the role of an Agile Project Manager in Agile methodologies, a systematic literature review (SLR) was conducted. The purpose of this SLR was to identify and analyse existing literature on the responsibilities and factors that influence the presence of this role, in order to better understand the need for this position. By following the procedures outlined by Kitchenham for performing systematic reviews [35], along with Webster and Watson's centric approach [36], the following steps were undertaken:

- **Planning:** The need for the review was confirmed, and the research questions regarding the role of a Project Manager in Agile methodologies were formulated. A review protocol was developed, outlining the specific procedures to be followed in the review.
- **Conducting:** The review protocol was implemented to systematically search and select relevant studies that addressed the role of a Project Manager in Agile teams. Various scholarly databases were utilized to identify a comprehensive set of literature.
- **Reporting:** The findings of the systematic literature review were analysed and synthesized to address the research questions. The results will be presented and disseminated in the final phase of the research, contributing to the existing knowledge on Agile project management.

The SLR serves as a crucial foundation for the development of this dissertation, as it provides a comprehensive overview of the current understanding of the Agile Project Manager's role. By leveraging the insights gained from the SLR, subsequent steps in the research process, such as semi-structured interviews, will be conducted to further investigate and validate the role of an Agile Project Manager in ensuring successful Agile project management.

3.3 Semi-structured Interviews

Semi-structured individual interviews are a popular method of data collection in qualitative research, providing researchers with the flexibility to look deeper into specific areas of interest while maintaining a structured guide to ensure consistency across interviews [37]. This approach allows for both the exploration of predetermined questions and the ability to diverge in order to pursue an idea or response in more detail [38]. This adaptability makes semi-structured interviews particularly beneficial for studies that aim to capture the complexities of participants' experiences and perspectives, making it a prime choice for researchers looking to gain comprehensive insights into a particular phenomenon.

In the context of this dissertation, semi-structured interviews were conducted with professionals possessing relevant Agile experience. The semi-structured format enabled a balance between asking predefined questions about the role of Agile Project Managers and allowing the participants to share their real-world experiences, nuances, and challenges, which can be particularly enlightening in understanding the evolution and necessities of roles in Agile environments [38].

Section 4 – Design and Development

4.1 Planning the Review

Using a Systematic Literature Review (SLR) it is possible to identify the articles that will help us reach the objective explained in the Introduction. In the next Table 1 it is possible to see the Systematic Review Methodology.

Table 1 - Systematic Literature Review Methodology

Outlining systematic literature review	Conducting Systematic Literature Review	Reporting the review
Identification the need for a review: - The numerous reports of the Project Manager's existence in real environments, despite the fact that agile methodologies do not specify the existence of this role - Limited number of studies regarding the Project Manager role in Agile Software Development Projects	Applying filters and get final articles: - 50 articles Perform data extraction and analysis of the sample: - Explore the Transition from Waterfall/Traditional to Agile: Differences and Challenges - Explore Scrum Master and other Agile Roles Duties - Explore and Identify Project Manager Responsibilities in Agile teams	Report the findings: - Transition from Waterfall/Traditional to Agile: Differences and Challenges - Scrum Master and other Agile Roles Duties - Project Manager role in Agile teams and its Responsibilities
Objective of the review: - This research aims to explore the role of an Agile Project Manager by finding out its responsibilities and discovering which factors influence the presence of this role, in order to better understand the need for this position. Review protocol: -Search string, databases, and filters.		

4.1.1 Identification the need for a review

The numerous reports of the Project Manager's existence in real environments, despite the fact that agile methodologies do not specify the existence of this role, and the limited number of studies regarding this topic, justifies more research on the Project Manager role in Agile Software Development Projects [12][10][2][11].

4.1.2 Objective of the review

This Literature Review has the purpose to explore the role of an Agile Project Manager by answering these two research questions:

RQ1: What duties and responsibilities are entrusted to an Agile Project Manager?

RQ2: What factors contribute to the necessity of having a Project Manager within an Agile team?

4.2 Conducting the Review

4.2.1 Review Protocol

The main steps of this and any SLR are the identification of the keywords and search string, followed by the choice of databases and the inclusion and exclusion criteria, and finally the filters selection. The Table 2 below contains the Search String used.

Table 2 - List of Keywords/Search String

ID	Keywords/Search String
1	"Project" AND ("Agile" OR "Scrum") AND ("Project Manager" OR "Scrum Master")

The databases in which the searches were carried out, are represented in the following Table 3.

Table 3 - List of used Databases

ID	Database
1	ACM
2	IEEE
3	Web of Science
4	Scopus

The Inclusion and Exclusion criteria chosen, were the following ones, represented in Table 4.

Table 4 - Inclusion/Exclusion Criteria

Type	Criteria
Inclusion	English Documents Only
	Only documents published in Conferences and Journals
	Only documents published between 2010 and 2023
Exclusion	Documents written in other language than in English
	Other Content Type than Conferences and Journals
	All the documents published before 2010

Finally, in Table 5 are written the used filters during the selection process.

Table 5 - List of used Filters

ID	Filters
1	Abstract
2	Applying Inclusion/Exclusion Criteria
3	Duplicates
4	Manual Filter

4.2.2 Applying filters and get final articles

After all the 4 filters applied, were obtained 50 articles, as shown in Table 6, where all the numbers are also reported until it was reached the final articles, that would be studied.

Table 6 - Filter Application

	Keywords ID	Initial	Filter1	Filter2	Filter3	Filter4
DB1	KW1	1112	17	8	8	1
DB2	KW1	73	60	46	44	12
DB3	KW1	118	83	64	37	24
DB4	KW1	9206	696	294	224	5
Snowballing	-	-	-	-	-	+8
Total	-	-	-	-	313	50

4.2.3 Perform data extraction and analysis of the sample

Table 7 – Concept Matrix of the final articles selected for the SLR

Articles	Concepts		
	The Transition from Waterfall/Traditional to Agile: Differences and Challenges	Project Manager Role in Agile Teams and its Responsibilities	Scrum Master and other Agile Roles and Duties
[12]	X	X	X
[40]	X	X	X
[41]	X	X	X
[45]	X	X	X
[10]	X	X	
[2]	X	X	
[51]	X	X	
[53]	X	X	
[18]	X		X
[26]	X		X
[42]	X		X
[1]		X	X
[11]		X	X
[27]		X	X
[13]	X		
[14]	X		
[16]	X		
[17]	X		
[24]	X		
[28]	X		
[3]	X		
[30]	X		
[31]	X		
[4]	X		
[52]	X		
[54]	X		
[55]	X		
[56]	X		
[6]	X		
[8]	X		
[9]	X		
[15]		X	
[19]		X	
[20]		X	
[23]		X	
[29]		X	
[39]		X	
[47]		X	
[48]		X	
[49]		X	
[5]		X	
[50]		X	
[57]		X	
[7]		X	
[21]			X
[22]			X
[25]			X
[43]			X
[44]			X
[46]			X
Total	28	24	16

4.3 Reporting the Review

4.3.1 Agile Project Manager Responsibilities (RQ1)

In order to answer to RQ1, we started by looking for the Agile Project Manager responsibilities, however, it was noticed that there is a certain confusion and even contradiction regarding the duties of the Agile Project Manager compared to the Scrum Master, since some articles[1][39][12][40][11] by only considering the Scrum Master a facilitator, assign some of the responsibilities represented in Table 8, to the APM, reaching these overlapping roles [41]. Nevertheless, there is research [21][42] where many of these responsibilities are assigned to the Scrum Master, as it can be seen in Table 8 bellow. In fact, the Scrum Master role is frequently adapted, such as assigning it to the Project Manager, transforming the Scrum Master into a controller instead of a facilitator [43].

Through this research, several key responsibilities of Scrum Masters were identified, as outlined in Table 8. This comprehensive analysis sheds light on the crucial tasks performed by Scrum Masters and provides insights into the overlapping roles and confusion surrounding Agile Project Managers.

Table 8 - Scrum Master Responsibilities

ID	Responsibilities	Articles
SMR1	Ensuring the team adheres to Scrum practices, ceremonies, and values by facilitating Scrum events, including sprint planning, daily stand-ups, sprint reviews, and retrospectives.	[11][21][42][43][44][25][27][45][22][46]
SMR2	Coaching the team on Agile principles, practices, and mindset.	[11][21][42][43][44][25][46]
SMR3	Supporting the development team in identifying and removing impediments that may obstruct progress.	[11][21][42][43][44][25][46]
SMR4	Creating a culture of continuous improvement and learning.	[11][21][42][43][25]
SMR5	Shielding the team from external distractions and interruptions.	[11][21][43][46]
SMR6	Acting as a liaison between the development team and the product owner.	[11][43][44]
SMR7	Promoting communication, collaboration, and teamwork.	[44][25][27]
SMR8	Facilitating team decision-making processes.	[21][43]
SMR9	Providing support and guidance to team members, by acting as a servant leader.	[43][44]
SMR10	Communicating progress and status to stakeholders.	[43][44]
SMR11	Ensuring that the team has a clear understanding of the product backlog items and their priorities.	[11][43]
SMR12	Ensuring that the team remains focused on delivering high-quality products.	[43]
SMR13	Encouraging self-organization and autonomy.	[25]
SMR14	Helping the team to set their sprint goals.	[25]

First and foremost, the Scrum Master is responsible for ensuring that the team adheres to Scrum practices, ceremonies, and values. This includes facilitating essential Scrum events such as sprint planning, daily stand-ups, sprint reviews, and retrospectives [11][21][42][43][44][25]. By facilitating these events, the Scrum Master helps the team stay focused, maintain transparency, and achieve the desired goals [27][45][22][46].

In addition to event facilitation, the Scrum Master serves as a coach, guiding the team on Agile principles, practices, and mindset [11][21][42]. They support the development team in identifying and removing any impediments that may hinder progress. This guidance helps the team overcome challenges and optimize their performance [43][44][25][46].

Creating a culture of continuous improvement and learning is another significant responsibility of the Scrum Master [11][21][42]. By fostering an environment that encourages experimentation and innovation, the Scrum Master empowers the team to enhance their processes and deliver high-quality products [43][25].

The Scrum Master acts as a liaison between the development team and the product owner, facilitating effective communication and collaboration [11][43][44]. They ensure that the team has a clear understanding of the product backlog items and their priorities [11][43]. Furthermore, the Scrum Master plays a vital role in facilitating team decision-making processes [21][43] and providing support and guidance to team members, acting as a servant leader [43][44].

The Scrum Master also takes on the responsibility of communicating progress and status to stakeholders. By keeping stakeholders informed, they enable transparency and facilitate trust and collaboration among all parties involved [43][44].

Other key responsibilities include promoting communication, collaboration, and teamwork [44][25][27], ensuring the team remains focused on delivering high-quality products [43], encouraging self-organization and autonomy [25], and assisting the team in setting their sprint goals [25].

The findings from the research reveal the diverse and vital responsibilities undertaken by Scrum Masters in Agile software development teams. However, as it was mentioned before, it is important to note that there is some confusion and contradiction regarding the role of the Agile Project Manager compared to the Scrum Master, since certain articles assign responsibilities represented in Table 8 to the Agile Project Manager, blurring the lines between the two roles [41]. This confusion can be attributed to the lack of information about the Scrum Master role [21][42] and the complexities of control in Agile methodologies [28].

Moreover, in real environments, it has already been possible to identify Scrum Master's and other Agile roles with Project Management tasks [42][11], which is not considered adequate because it goes against the conventional wisdom that command and control managers cannot lead and coach like Scrum Masters [40].

Further exploration of the Agile Project Manager's responsibilities is essential to answer the research question of why this role persists in Agile contexts, thus despite this confusion, present in Table 9 it was possible to identify 13 responsibilities associated with the role of Agile Project Manager, a role not similar to the Traditional Project Manager, but a Project Manager applied to Agile, and therefore, with different responsibilities [1].

Table 9 - Agile Project Manager Responsibilities

ID	Responsibilities	Articles
APMR1	Facilitating communication, collaboration, transparency, and trust among team members.	[1][39][40][5][47][48][49][15][29]
APMR2	Managing project scope and budget.	[1][39][12][5][50][49][45]
APMR3	Being a servant leader, by supporting the team in their work.	[1][39][12][40][47][48][27]
APMR4	Removing obstacles and impediments that hinder progress.	[1][12][40][5][48][27][45]
APMR5	Ensuring the project stays on track and meets its objectives delineated by higher levels of the organization.	[11][39][5][7][49]
APMR6	Providing leadership and direction to the team.	[5][47][48][49]
APMR7	Coaching team members on Agile methodologies.	[39][12][48][49]
APMR8	Identifying and managing project risks.	[5][20][49][29]
APMR9	Ensuring that the project is delivered on time.	[5][20][49]
APMR10	Managing stakeholder expectations by ensuring effective communication.	[20][49][45]
APMR11	Facilitating agile ceremonies such as daily stand-ups, sprint planning, and retrospectives.	[48][49]
APMR12	Creating and maintaining project documentation.	[5][7]
APMR13	Encouraging continuous improvement and learning.	[47][48]

The Agile Project Manager plays a multifaceted role in Agile software development teams. They are responsible for facilitating communication, collaboration, transparency, and trust among team members [1][39][49][15][29]. By nurturing effective communication channels, the APM ensures seamless teamwork and alignment throughout the project [40][5][47][48].

Another critical responsibility of the APM is managing project scope and budget [1][39][12][5][50][49][45]. They oversee the project's scope, ensuring it remains within defined boundaries, and monitor the budget to optimize resource allocation. As a servant leader, the APM supports the team in their work [40][47][48][27]. They provide guidance, remove obstacles, and foster an environment that enables the team's success [1][39][12].

To ensure project success, the APM keeps the project on track, meeting objectives defined by higher levels of the organization [11][39][5][7][49]. They maintain focus on goals, timelines, and deliverables, aligning them with the organization's strategic objectives. Identifying and addressing obstacles and impediments that hinder progress is another key responsibility of the APM [1][12][27][45]. They proactively remove barriers, enabling the team to work efficiently and effectively [40][5][48].

The APM provides leadership and direction, guiding the team throughout the project lifecycle [5][47][48][49]. They also coach team members on Agile methodologies [39][12][48][49] and ensure adherence to Agile principles and practices. Managing project risks is a significant responsibility of the APM. They identify potential risks, assess their impact, and develop mitigation strategies to minimize their effects on the project [5][20][49][29].

Ensuring timely project delivery is crucial, and the APM monitors progress, manages dependencies, and takes necessary actions to meet deadlines [5][20][49]. Managing stakeholder expectations is vital, and the APM engages with stakeholders, understands their requirements, and ensures effective communication and alignment throughout the project lifecycle [20][49][45].

The APM facilitates Agile ceremonies, including daily stand-ups, sprint planning, and retrospectives. They ensure these ceremonies are conducted efficiently, fostering collaboration and continuous improvement within the team [48][49].

Furthermore, the APM is responsible for creating and maintaining comprehensive project documentation [5][7]. They ensure that project plans and reports are up-to-date and readily accessible to the team and stakeholders. Encouraging continuous improvement and learning is an essential aspect of the APM's role. They foster an environment that promotes innovation, learning from experiences, and continuously enhancing team performance [47][48].

The following Table 10 provides a comprehensive overview of the responsibilities that overlap or align between the roles of Scrum Masters and Agile Project Managers. By identifying these common/similar responsibilities, we can gain insights into the potential areas of collaboration and coordination between the two roles. However, it is important to note that the presence of common responsibilities does not necessarily imply an interchangeable nature between the roles.

Table 10 - Common Scrum Master and Agile Project Manager Responsibilities

ID	SMR ID	APMR ID
CR1	SMR1	APMR11
CR2	SMR2	APMR7
CR3	SMR3	APMR4
CR4	SMR4	APMR13
CR5	SMR7	APMR1
CR6	SMR9	APMR3
CR7	SMR10	APMR10

CR1 highlights that both the Scrum Master (SMR1) and Agile Project Manager (APMR11) are involved in facilitating agile ceremonies, such as daily stand-ups, sprint planning, and retrospectives. This indicates the shared responsibility of ensuring these ceremonies are effectively conducted to promote collaboration and progress within the team.

CR2 and CR6 draw attention to coaching and supporting team members. While the Scrum Master (SMR2) focuses on coaching the team on Agile principles and practices, the Agile Project Manager (APMR7) assumes a similar responsibility of coaching team members on Agile methodologies. Additionally, the Scrum Master (SMR9) acts as a servant leader by providing support and guidance to team members, aligning with the Agile Project Manager's (APMR3) responsibility of being a servant leader.

CR3 reveals that both roles have a role to play in removing obstacles and impediments that hinder progress. The Scrum Master (SMR3) supports the development team in identifying and removing impediments, while the Agile Project Manager (APMR4) shares the responsibility of removing obstacles that hinder progress.

CR4 highlight the shared focus on continuous improvement. The Scrum Master (SMR4) contributes to creating a culture of continuous improvement and learning, while the Agile Project Manager (APMR13) encourages continuous improvement within the project context.

CR5 emphasizes the importance of fostering communication, collaboration, transparency, and trust among team members. The Scrum Master (SMR7) promotes communication, collaboration, and teamwork, while the Agile Project Manager (APMR1) focuses on facilitating communication, collaboration, transparency, and trust among team members as well. Furthermore, CR7 reveals that both roles have a role to play in managing stakeholders' expectations (APMR10) by communicating project progress and status (SMR10).

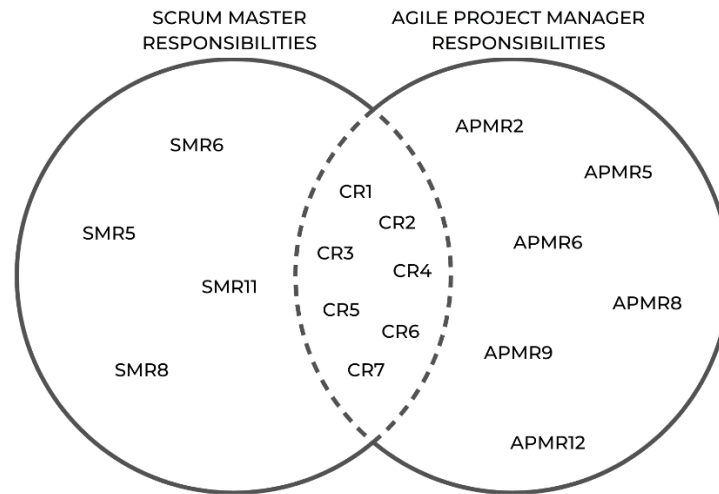


Figure 2 - Venn diagram of Scrum Master and Agile Project Manager Responsibilities

The Venn diagram, present in the above Figure 2, highlights the distinct responsibilities of Scrum Masters and Agile Project Managers (APMs) in Agile software development teams. It also reveals the overlapping areas where they share common responsibilities. By examining these responsibilities, we gain a deeper understanding of the unique contributions each role brings to the team.

The Scrum Master's responsibilities encompass ensuring adherence to Scrum practices and values, facilitating Scrum events, coaching the team on Agile principles, supporting the identification and removal of impediments, fostering a culture of continuous improvement, and promoting communication and collaboration (SMR1-SMR14).

On the other hand, the APM's responsibilities include facilitating communication, managing project scope and budget, acting as a servant leader, ensuring project alignment with organizational objectives, addressing obstacles and impediments, providing leadership and direction, managing risks, ensuring timely project delivery, managing stakeholder expectations, facilitating Agile ceremonies, maintaining project documentation, and encouraging continuous improvement (APMR1-APMR13).

In the overlapping area, both roles share responsibilities such as facilitating communication and collaboration, supporting the team, removing impediments, fostering continuous improvement, managing stakeholder expectations, and facilitating Agile ceremonies (CR1-CR7).

It's important to point out that there are certain jobs that the APM does which the SM does not. These include APMR2 (handling the project's budget and scope), APMR5 (making sure the project stays on course and meets goals set by the organization), APMR6 (leading the team and giving direction), APMR8 (spotting and dealing with project risks), APMR9 (making sure the project finishes on time), and APMR12 (keeping and looking after project documents). This raises a big question for Agile projects or teams that don't have a Project Manager: who would be responsible for these tasks? This is something that would be interesting to look into for future research.

By visually representing the unique and shared responsibilities, the Venn diagram allows us to appreciate the complementarity and collaboration between Scrum Masters and APMs in Agile software development teams. It serves as a valuable reference for understanding the diverse contributions these roles bring to project success and provides a foundation for further exploration and analysis.

4.3.2 Factors that influence the need for an Agile Project Manager (RQ2)

Pursuing an answer to RQ2, we started by finding out who performed project management roles in an Agile Team, and despite the Project Management tasks assignment to the Agile Team, Product Owner, and Scrum Master, not all the responsibilities are covered [11][2]. There are responsibilities that it is not clear who should assume, like “Achieve Objectives delineated by higher levels of the Organization” that you cannot assign to the Scrum Master, otherwise the daily Scrum, instead of a team communication meeting, becomes a managing reporting exercise [11]. These unassigned responsibilities will conduct to the leadership gap [51], and the topic of who oversees Project Management activities in Agile teams remain unanswered [2]. In fact, unlike traditional project management, where the PM's authority is well-defined, Agile Software Development necessitates a more adaptive and flexible approach, which it's not clear yet, leaving an inherent ambiguity that arises from the overlapping roles and responsibilities within these teams [41].

What is certain is that there is no empirical evidence of a Project Manager role contemplated in Agile methodologies [1][10][12], despite the fact that, as previously mentioned, there are numerous reports of real Agile environments that verify the presence of a Project Manager in Agile Teams [12][11]. With this in mind, we tried to understand

in which situations its existence is more common, which factors influence its presence and in which situations the presence of the Agile Project Manager can be really an advantage.

Three factors were then identified that actually influence the need for an Agile Project Manager, which are explicit in Table 11 below.

Table 11 - Factors that influence the need for an Agile Project Manager

Factors/Occasions	Articles
Transition/Adaptation Period	[51][16][42]
Team/Project Size	[10][9][52][53]
Team Co-Location/Distribution	[10][19][53]

During the Transition to Agile phase, several challenges arise, where the presence of someone with more controlling and coordinating duties would be advantageous to ensure that the transition goes smoothly [51][16].

One of the biggest challenges and also one of the most common failure causes of the transition to Agile, is when the transition is only made at the team level, while above the team level, the Traditional Project Management methods continue to be used [10]. For the change to occur in the best way and to be successful, there must be a change in the organizational culture [16][54][45][13], which means that, there is also the need for upper management to collaborate and integrate in the transition as well, otherwise the transition to Agile will probably fail [55][3]. In fact, the survey conducted in [30] showed that the most important success factor of an Agile Transformation was a supportive organizational culture that encourages collaboration, experimentation, and continuous improvement.

Another issue also related to the Agile adaptation period has to do with the Maturity of the Team Members, which naturally, will initially be reduced, and someone with a more coordinating and central role will be needed, until team members are mature enough to reach the self-organization point [51][42].

Finally, another issue that is also related to the Agile transition phase, and also to the team maturity, is the theme of shared responsibility. Agile methodologies' goal is to reach shared responsibility, but in a transition period, it is recommended that this transition of responsibilities should be gradual, as seen in Figure 3. If the transfer of responsibilities is sudden, we run the risk of reaching a problem of leadership gap, as responsibilities remain to be assumed, which can lead to reduced performance [51].

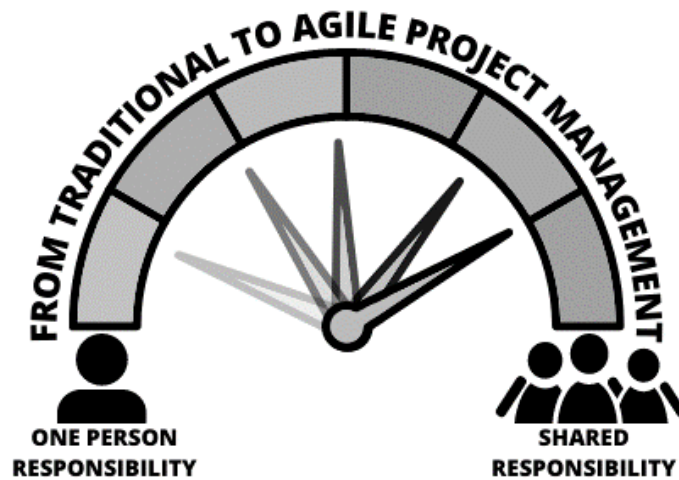


Figure 3 - Transference of Responsibility from Traditional to Agile Project Management

The second identified factor related to the Agile Project Manager presence, was the size of the team, specifically the number of team members. According to the Agile methodologies, the ideal number of members for a Scrum team is between 3 and 9, however, in the survey carried out in [10], it was found that there was a higher chance of the project manager being present in a 5-10 members team, than in a less than 5 members team, which suggests that the larger the team, the bigger the need for a role to coordinate it.

This subject is somewhat related to the Large Projects issue, as the larger the project, the more challenging is the implementation of Agile methodologies [9][31][53], which is already challenging in itself. In fact, project and team characteristic, also have an impact on the choice of methodologies, meaning that larger (team size) and more complex projects are more likely to use formal methodologies [52].

Finally, the third identified factor that influences the presence of a Project Manager in an Agile team is the Co-location of the team members, since distributed Agile teams are more likely to have a Project Manager. This suggests that coordinating distributed teams requires a specialized role [10], which makes sense, given the fact that Agile methodologies are based on face-to-face communication [54][56]. Moreover, the results of the survey conducted in [19] showed that some of the biggest challenges when adopting Agile are the cultural differences [31], language barriers and difficulties in coordinating across different time zones [53][56]. Furthermore, with the COVID-19 pandemic, distributed teams have become even more prevalent, posing a variety of challenges such as the lack of infrastructure and resources, as well as the absence of fast internet and necessary resources, which have further hindered effective communication among team members [57].

Despite the empirical inexistence of the Agile Project Manager role in Agile methodologies [1][10][12], there is research that conclude that there is a need for that role, and that it should be implemented and updated in the Agile methodologies [40][1]. However, despite this controversy, caused by the lack of information regarding the responsibilities of Agile roles [21][42], and the limited research regarding the decision-making process in Agile projects [23], in the aforementioned occasions it seems more consensual the need for at least someone, that it's not Scrum Master, to assume a more focused role and centred responsibility.

Section 5 – Demonstration and Evaluation

Between July and September 2023, a series of 15 semi-structured interviews were carried out with professionals related to the domain of software project management, particularly those operating within Agile environments and projects. This data was harvested from the two roles we've been studying within this sector, with 8 participants holding the position of Project Managers in Agile projects and 7 with the role of Scrum Masters.

In terms of participant demographics, an age span ranging from 26 to 42 years was observed, culminating in an average age of 33 years. Furthermore, the participants had professional experience in software development that varied between 3 and 15 years, culminating in a mean experience level approximating 9 years.

The interviews maintained variability in durations, the shortest was about 15 minutes, and the longest 35 minutes. This resulted in an average engagement time of approximately 22 minutes per session.

Regarding the modality of the interactions, it is important to mention that 3 interviews were conducted in a face-to-face format, ensuring an element of traditional interaction, while the substantive majority, amounting to 12 interviews, were facilitated remotely. The remote interactions were undertaken via digital communication platforms, namely Microsoft Teams and Zoom, supporting seamless engagement with participants, irrespective of geographical constraints.

All data delineated above was retrieved from the General Questions Section of the interview script, which is annexed to this document (Attachment A).

Figure 4 offers a clear visual comparison of the team sizes overseen by Agile Project Managers and Scrum Masters in the conducted interviews (Q2.1). This variance in team management between the two roles provides insightful data to the ongoing discussion regarding team management in Agile settings. Among the APM participants, four managed teams of 5-10 members, two handled teams ranging from 10-15 members, and two led teams of more than 15 members. Conversely, among the SM participants, three managed teams of fewer than 5 members, three handled teams of 5-10 members, and one led a team of more than 15 members.

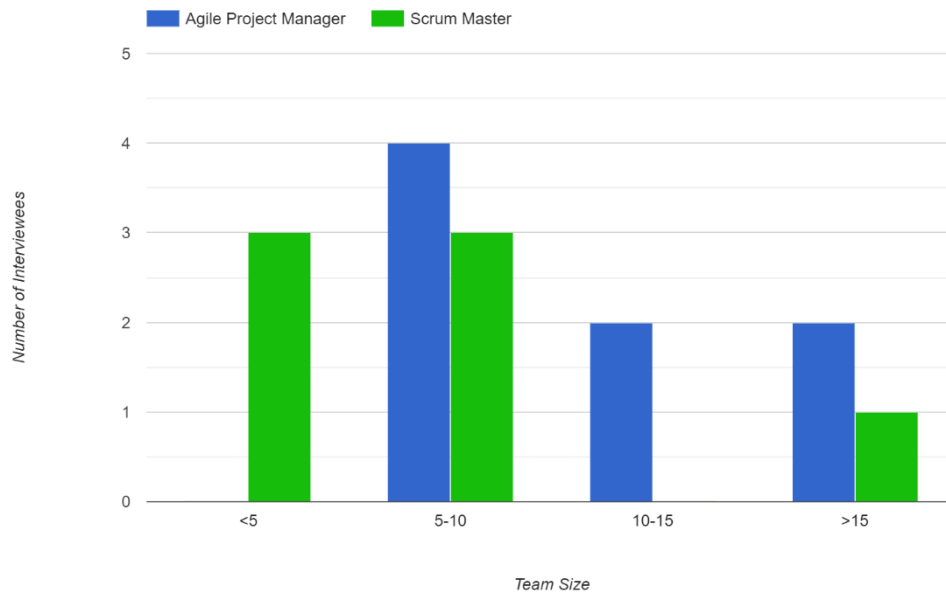


Figure 4 - Bars Graph indicating the Team Size of the Interviewees

This visual data suggests a slight, but possibly important, tendency for larger teams to be managed by Agile Project Managers. This observation aligns with the Systematic Literature Review findings, which indicate a relationship between larger team sizes and the probability of having an Agile Project Manager. Within the SLR's context, Agile Project Managers are often utilized more in larger teams, presumably due to the increased challenges and coordination efforts required to manage larger groups, which calls for a management role with wider oversight and strategic planning capabilities.

However, it is vital to acknowledge that the data here is sourced from a relatively small sample size and, therefore, should be approached with prudence. This limited sample restricts the broader applicability of these findings, emphasizing the need for further, more extensive research to validate and extend these initial observations. Nonetheless, the preliminary patterns highlighted in this exploration present an interesting basis for further study, potentially validating the role-specific demands and organizational intricacies identified within varying scales of Agile project management contexts.

Regarding question Q2.2, which explored the aspect of team colocation, a conclusive determination cannot be derived due to the equitability in the responses from both Scrum Masters and Agile Project Managers. Specifically, SM respondents reported managing 3 distributed teams and 4 co-located teams, while APM respondents provided a

symmetrically distributed response with 4 distributed and 4 co-located teams. This balanced distribution of responses provides no distinct pattern towards a particular modality of team location within either role, however, it's crucial to highlight again the necessity of prudence in interpreting these findings due to the constrained sample size. It is also vital to note that the answers were not always straightforward due to the varied experiences of respondents, some of whom have worked in both co-located and distributed team settings. For consistency in data analysis, we focused on the interviewees' current team situations, although this simplification omits the broader context of their historical professional experiences.

Table 12 provides insight into Scrum Master responsibilities, derived from the answers to question Q2.3 - "What are your responsibilities and tasks as a Scrum Master?" Notably, certain responsibilities identified from the SLR, labelled as SMR1 to SMR14, surfaced more frequently in responses, without interviewees having prior visibility of these identified responsibilities.

Table 12 - SLR identified Responsibilities mentioned by SM Interviewees

	SMR 1	SMR 2	SMR 3	SMR 4	SMR 5	SMR 6	SMR 7	SMR 8	SMR 9	SMR 10	SMR 11	SMR 12	SMR 13	SMR 14
Interview 3	●				●			●						
Interview 4	●	●		●										
Interview 8	●				●									
Interview 9	●	●	●											
Interview 11	●		●											
Interview 13	●						●							●
Interview 15	●	●												

The most frequently mentioned responsibility, SMR1 (Ensuring the team adheres to Scrum practices, ceremonies, and values by facilitating Scrum events, including sprint planning, daily stand-ups, sprint reviews, and retrospectives), was referenced in all seven Scrum Master interviews, highlighting its perceived universality among the professionals interviewed. Another responsibility that stood out in terms of recurrence was SMR2, which was cited in three instances. Responsibilities SMR3 and SMR5 were each mentioned twice, revealing a moderate acknowledgment among the interviewees.

Meanwhile, SMR4, SMR7, SMR8, and SMR14 were each brought up once, demonstrating their selective applicability or recognition in specific contexts.

The absence of other SMR references from some interviewees implies varied perspectives and experiences regarding the role and tasks of a Scrum Master, a variability that may warrant further exploration in future studies. This variability in perceived responsibilities, even within the frame of a defined role such as a Scrum Master, underscores the multifaceted and context-specific nature of agile project management roles.

Regarding Table 13 which illuminates the varied responsibilities and tasks associated with Agile Project Managers (APM) as gathered from the responses to the same question Q2.3 now applied to Agile Project Manager. As before, the participants were unaware of the responsibility identifiers (APMR1 to APMR13) extracted from the SLR during the time of questioning, ensuring unbiased, experiential responses.

Table 13 - SLR identified Responsibilities mentioned by APM Interviewees

	APMR 1	APMR 2	APMR 3	APMR 4	APMR 5	APMR 6	APMR 7	APMR 8	APMR 9	APMR 10	APMR 11	APMR 12	APMR 13
Interview 1					●					●			
Interview 2		●								●	●		
Interview 5		●			●							●	
Interview 6	●						●	●					
Interview 7	●	●							●	●			
Interview 10									●	●	●		
Interview 12					●			●	●				
Interview 14		●						●		●		●	

Significant attention was directed towards APMR10 (Managing stakeholder expectations by ensuring effective communication), mentioned by interviewees in 5 out of the 8 APM interviews, showcasing its pervasive relevance in practical Agile Project Management contexts. Not far behind, APMR2 was cited 4 times, underscoring its acknowledged importance among the professionals. APMR5, APMR8, and APMR9 were each mentioned thrice, indicating their recognized role in Agile Project Management according to the sampled professionals. Additionally, APMR1, APMR11, and APMR12 surfaced in two discussions each, while APMR7 was noted once.

Diving into insights from multiple interviews on Scrum Master and Agile Project Manager responsibilities, several noteworthy points arise, straying and aligning with the findings from the Systematic Literature Review.

Answering Q2.4, all participants agreed to most of the previously identified responsibilities in the SLR, affirming their accuracy and relevance to real-world practices. The overall consensus indicates a general alignment among Agile professionals with the tables presented as shown in the attachments of this research.

When dissecting the details, new responsibilities emerge. A recurring theme is the significant involvement of SMs and APMs in conflict resolution and maintaining team harmony (Interviews 8, 9, 15). In another interview was also pointed out two responsibilities that weren't highlighted in the SLR, which are "dealing with external suppliers" and "help product owner in maintaining and refining the product backlog" (Interview 5).

Additionally, the APM present in Interview 1 pointed out that "ensuring that the team has all the resources and support they need to execute their tasks" is another task that is not expressed in the presented mapping, which may be somewhat related to APMR3 where team support is mentioned, but the need to ensure the necessary resources is not expressed. These additions suggest SM and APM roles might be more encompassing and versatile than literature may initially indicate.

Still on the topic of the new identified responsibilities, another responsibility not present in the provided list was mentioned, which is "justifying delays" (Interview 2). This may be related to APMR9, as it somewhat has to do with the project deadlines. "Replan and relocate tasks and resources in an Agile manner" was another non identified responsibility retrieved from interview 2.

Concluding this topic of newly identified responsibilities, "coordinating between different distributed teams" (Interview 12) and "ensuring all team members are on the same page in terms of project objectives and deliverables" (Interview 7) are other responsibilities mentioned in responses to questions Q2.3 and Q2.4. Below is Table 14, which summarizes these responsibilities mentioned by the interviewees and not identified in the SLR.

Table 14 - Responsibilities mentioned by the interviewees not identified in the SLR

Project Role	Responsibilities	Interviews
Scrum Master	Conflict resolution and maintaining team harmony.	8,9,15
Agile Project Manager	Dealing with external suppliers.	5
	Assist product owner in maintaining the product backlog.	5
	Ensuring resources and support that the team members need to execute their tasks.	1
	Justify delays.	2
	Replan and relocate tasks and resources.	2
	Coordinating between different distributed teams.	12
	Ensuring team members understand project objectives and deliverables.	7

Several interviewees acknowledged the overlap of tasks, for example, in interviews 3 and 4, it is indicated that SMR10 and APMR10 are similar, which confirms the relationship made above in our research, recognizing these two responsibilities as Common Responsibilities (CR7). The same occurs in interview 10 where the interviewee recognizes the similarity between SMR1 and APMR11, corroborating with CR1 identified in the SLR.

Regarding disagreements about the responsibilities that were presented to the interviewees, regarding APMR12, we have interviewee 2 who says, “Creating and maintaining project documentation doesn’t make as much sense” also stating that “the Project Manager ensures that the teams keep the documentation updated.” Additionally, we have interviewee 14 who says that APMR11 may not make much sense in the case of having a Scrum Master on the project “as they handle most of the ceremony facilitation”.

It is also important to highlight a few relevant points discussed in interview 2, where the interviewee said that “Managing the project budget really only makes sense for the Project Manager”, and it doesn't make sense for the Scrum Master 'this more administrative part'. In additional notes, interviewee 2 also mentioned that it makes sense to have the 2 roles, and that the APM is necessary “because the change in priorities needs to be made by someone who reviews the plan and reorganizes the team”, also stating that “Teams don’t organize themselves”, which might demonstrate a misalignment regarding Agile principles.

The organization culture, mentioned several times in the SLR, was also mentioned in some interviews (Interviews 4,11) as being a crucial factor when considering these roles. Another factor also mentioned in the SLR, team size, came up in interviews 7 and 14, where it was said that “In large agile projects like the one I am in now, the presence of a Project Manager is crucial for overseeing project timeline.” (Interview 7).

In brief, while there’s a broad agreement on identified SM and APM responsibilities from the SLR, the reality on the ground introduces additional, often overlapping roles and responsibilities for these professionals. This speaks to the inherent adaptability in agile environments, as Interviewee 11 said “I think the need for each role depends on organization culture and the specific demands of each project.” and opens up discussions for further exploration and understanding in the agile context.

Project Manager in Agile Software Development Teams: is this role needed?

Section 6 – Conclusion

In this study, a systematic literature review was carried out to gain a more profound theoretical and hands-on insight into the role of Project Managers within Agile Software development teams. Subsequently, 15 qualitative interviews were held with Scrum Masters and Agile Project Managers. Their expertise assisted in confirming the responsibilities found in the literature review and in identifying previously unrecognized tasks.

In order to shed light on the role of an Agile Project Manager to better understand the need for this role, two research questions were answered during this research:

Regarding RQ1 (What duties and responsibilities are entrusted to an Agile Project Manager?) the SLR highlighted 13 responsibilities associated with Agile Project Managers (APMR1-APMR13). These included strategic planning, coordination, stakeholder management, and occasionally, bridging the communication between higher management and the agile team. Additionally, 14 responsibilities assigned to the Scrum Master (SMR1-SMR14) were also identified, due to the overlapping of responsibilities that was evident from the beginning of the literature analysis. After identifying the two sets of responsibilities for each role, overlapping and common roles were identified as well (CR1-CR7).

The interviews not only validated many of these responsibilities but also introduced some that were underrepresented in the literature. For instance, tasks such as dealing with external suppliers, justifying delays, and ensuring that team members are equipped with necessary resources, all emerged as significant tasks entrusted to Agile Project Managers in real-world scenarios.

Respecting RQ2 (What factors contribute to the necessity of having a Project Manager within an Agile team?) the SLR emphasized factors like team size, team distribution, and adaptation period to Agile methodologies. Larger teams, especially, were identified as environments where an Agile Project Manager's role becomes particularly indispensable due to the increased challenges of coordination.

Interviews further cemented these findings where it was frequently indicated the importance of a Project Manager in scenarios where projects span across multiple distributed teams, or where organizational objectives necessitate an alignment that goes beyond typical Scrum ceremonies.

Conclusively, this research establishes a clearer demarcation of the Agile Project Manager's role in the contemporary Agile landscape, providing valuable insights into the position and its need. However, the inherent adaptability of Agile methodologies means roles and responsibilities will remain fluid, warranting further exploration and understanding.

6.1 Limitations

While this research presents a comprehensive investigation into the roles of APMs and SMs, certain limitations are noteworthy such as the lack of information on the subject, since the SLR, while extensive, encountered a reduced number of articles specifically detailing the Agile Project Manager role. This limitation possibly stems from the embryonic stage of this role's recognition in academic literature and its blurred boundaries with other roles.

Another limitation was the information ambiguity caused by the lack of concrete information and standardized definitions concerning both roles. This ambiguity was particularly pronounced in literature, leading to some uncertainties and potential overlaps in responsibilities.

The sample size of the interviews, although insightful, remains small, also representing a limitation to this research. With a larger and more varied sample, broader generalizations and deeper nuances could be extrapolated.

6.2 Future Work

Given the revelations and the inherent limitations of this study, several avenues for future research emerge such as expanding the interview sample since a broader and more diverse set of interviews across different cultural, and industrial contexts can yield richer insights. In-depth exploration of new responsibilities would also be interesting in terms of future work since the interviews unearthed several responsibilities not identified in the SLR, and further exploration of these responsibilities could provide a more comprehensive understanding of the roles.

As Agile practices continue to evolve, a longitudinal study observing how these roles adapt and change over time could be of significant value. As it would be also interesting to investigate who assumes the Agile Project Manager duties that don't align with the Scrum Master Role responsibilities. A crucial question arises for Agile projects or teams without a Project Manager about who will manage the more administrative duties, providing a valuable topic for future research.

Project Manager in Agile Software Development Teams: is this role needed?

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Attachments

Attachment A – Interviews Script

GENERAL QUESTIONS

Q1.1	Age
Q1.2	Project Role
Q1.3	How many years of experience do you have in Software Development field?

AGILE PROJECT MANAGER / SCRUM MASTER QUESTIONS

Q2.1	How would you describe the size of the teams you work with? Answer according to the number of team members based on the following scale: (<5/5-10/10-15/>15)
Q2.2	Do you work with a co-located or distributed teams?
Q2.3	What are your responsibilities and tasks as an Agile Project Manager/Scrum Master?
Q2.4	Looking now at Tables 1 and 2 which contain a list of responsibilities of the Scrum Master and the Agile Project Manager respectively, tell me if you agree with this mapping of tasks, and if you don't, tell me why you don't agree.
Q2.5	Is there anything else you would like to share or any additional insights you think would be valuable for this research?

Table 1 – Scrum Master Responsibilities

ID	Responsibilities
SMR1	Ensuring the team adheres to Scrum practices, ceremonies, and values by facilitating Scrum events, including sprint planning, daily stand-ups, sprint reviews, and retrospectives.
SMR2	Coaching the team on Agile principles, practices, and mindset.
SMR3	Supporting the development team in identifying and removing impediments that may obstruct progress.
SMR4	Creating a culture of continuous improvement and learning.
SMR5	Shielding the team from external distractions and interruptions.
SMR6	Acting as a liaison between the development team and the product owner.
SMR7	Promoting communication, collaboration, and teamwork.
SMR8	Facilitating team decision-making processes.
SMR9	Providing support and guidance to team members, by acting as a servant leader.
SMR10	Communicating progress and status to stakeholders.
SMR11	Ensuring that the team has a clear understanding of the product backlog items and their priorities.
SMR12	Ensuring that the team remains focused on delivering high-quality products.
SMR13	Encouraging self-organization and autonomy.
SMR14	Helping the team to set their sprint goals.

Table 2 – Agile Project Manager Responsibilities

ID	Responsibilities
APMR1	Facilitating communication, collaboration, transparency, and trust among team members.
APMR2	Managing project scope and budget.
APMR3	Being a servant leader, by supporting the team in their work.
APMR4	Removing obstacles and impediments that hinder progress.
APMR5	Ensuring the project stays on track and meets its objectives delineated by higher levels of the organization.
APMR6	Providing leadership and direction to the team.
APMR7	Coaching team members on Agile methodologies.
APMR8	Identifying and managing project risks.
APMR9	Ensuring that the project is delivered on time.
APMR10	Managing stakeholder expectations by ensuring effective communication.
APMR11	Facilitating agile ceremonies such as daily stand-ups, sprint planning, and retrospectives.
APMR12	Creating and maintaining project documentation.
APMR13	Encouraging continuous improvement and learning.