Why is it not important to follow guidelines when conducting Daily Standup Meetings?

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The authors declare that they are the sole authors of this thesis and that they have not used any sources other than those listed in the bibliography and identified as references. They further declare that they have not submitted this thesis at any other institution to obtain a degree.

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ABSTRACT

Agile practices are widely used in the software development process to quickly adapt and respond to the challenges occurring during the whole software development lifecycle. Daily standup meetings are a common practice to share an update about the status and impediments with the team. However, how much value this practice adds to help the team members is uncertain. **The purpose of the study is to fill this uncertainty and map the duration and frequency of daily standup meetings that is always a challenge for teams to cope with.** This study aims to identify that there are different needs for different teams depending upon the context like team size, geographic location, and project progress.

This study is conducted by observing the meetings, taking feedback, and interviewing agile practitioners from different companies and categorizing them as small teams and large teams, and then the results were compared to highlight the difference and their needs. It also encountered what are challenges when Daily Standup Meetings (DSMs) are scheduled every day and if daily standup meetings are helpful for all team members.

Since 15-minutes are assumed to be the ideal duration according to the guidelines of daily standup meetings but we also observed, in addition to what we got as a response from the respondents of the study, that 15-minutes are not enough for daily standup meetings, especially for the larger teams and people want it to be scheduled at least for 30 minutes. The result shows that there is a difference in conducting DSM for small teams and large teams and instead of sticking to the guidelines we can follow the manifesto of agile that along with the principles of agile methods are based on adapting the changes and making choices that help the team and make it more organized. It is not very important to follow the guidelines instead the needs of the team should be analyzed and conduct daily standup meetings as per the need of a team depending on its size, discussion duration, and frequency. 15-minutes for daily standup meetings are effective when there are fewer people in a team, otherwise, with too many people and too many issues to highlight, meetings are ineffective, and everyone does not get a chance to highlight their issues and report the status. Further research can focus on new ways of working after covid pandemic when the IT industry is closer to a hybrid way of working.

Keywords:

Agile, Daily Standup Meetings, DSM, Scrum

Terminology

Term/ Abbreviation	Definition
DSM	Daily Standup Meeting
Scrum Master	A role in the scrum team who helps in facilitating Daily standup meetings.
PMO	Project management office

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1. INTRODUCTION

Agile software development practices are becoming standard for the software industry. In Agile, the progress of every activity is monitored closely, and various meetings are held each day. There are four types of meetings in each Sprint, i.e Sprint Planning, Daily Standup, Sprint Review, and Sprint Retrospective.

Daily standup calls are one of the main meetings being held every day when working with Agile practices [1]. A daily stand-up meeting is a short 15-minute meeting, within a team to discuss the progress of the work.

The main purpose of the Daily standup is to discuss what was accomplished yesterday, what will be done today, if there is any blocker or if there are delays in the work [1]. A study investigated the impact of agile practices on communication and reported that DSMs keep team members aware of project status and examined that agile practices help reveal problems early in the software development process and improve the transparency between the team members [2]. Prior studies reference also show that these daily meetings are important and play an important role in software development progress. Some studies say these daily meetings are valuable, but these are conducted concerning developers and do not consider teams that not only have developers but also architects, testers, managers, etc. [3]

The obstacles to the DSMs are also being studied in a case study in which the duration of the meeting was the biggest obstacle towards efficient daily meetings. It is mentioned that many of the observed meetings took longer than 15 minutes [5]. According to the grounded study that identified the positive and negative factors of DSM, it is an absolute result that participants are almost neutral about DSMs, while prominent positive factors were that all the team members are aware of what others are doing and they have this opportunity for discussion and solving the problems and prominent negative factors are reporting the progress to the scrum master and frequency too high [11].

Most of the respondents reported that 15 minutes are never enough and most of the time the meeting exceeds the recommended timing for DSM [9]. Also, they think it's one of the few opportunities to meet team members face-to-face and discuss non-work-related topics thus, it becomes an opportunity where things can be quickly discussed with the team [9]. There is a lack of evidence that explains how these daily meetings are effective within different teams working in different sets of environments. Also, how these meeting frequencies should be optimized in different domains, is not covered in existing studies.

Existing studies are either based on why some people think that the standup meetings are not for everyone and advocate that they don't prefer it, or why they think these are effective and make it mandatory for all team members to participate [4]. Some studies state how to improve these daily

meetings [5] and why these meetings are not to build trust within the team [6] and what are the obstacles to making the standup meeting efficient [5]. First, discuss why conducting standups daily may not be effective. In daily standup meetings, there are repetitive discussions every day [7]. Developers, architects, and designers give the same status for a few days. After all, it takes a few days to design or write code for a particular functionality because it is never a one-day job. Every relevant work needs a few days to get completed. But discussing the same thing daily doesn't help in any way.

There are often misalignments in the team. Even when the activity being discussed concerns only a few people or sometimes even one, the remaining whole team must listen to what is irrelevant to them. Due to this, people lose focus, and they often miss the information which is of importance to them [11]. Many times, these meetings run overtime when people start to discuss problems and find solutions then and there. This result is wasting others' time again. In meetings, people are more conscious of what to say in the meeting and they do not focus at all on what is being said. Again, people tend to lose important information [8].

1.1   Purpose:

A study done in 2016 [12] and 2020 [7], stated that the team members complained about the time duration of the DSMs that 15 minutes are never enough to complete the status and have a problem-oriented discussion between the team members. It is therefore important to map the time and frequency of the DSMs according to the circumstances of different teams where the size of the team plays an important role. This paper represents how we can optimize DSM for different teams small or big considering duration, frequency, team size, and issues in the projects. This thesis would help agile practitioners to understand why we think that just following the standard guidelines to conduct DSMs may not be always helpful and what factors should they consider when planning to conduct DSM in a project.

2   BACKGROUND

Scrum is an Agile process framework for managing work on complex products in short iterations (Sprints), with an emphasis on software development [1]. A scrum team consists of different roles such as Scrum Master, Project Manager, Product Owner, Developers, Designers, and Testers. Whereas the product owner is responsible for managing the product backlog which contains the required tasks and requirements of the product that are needed to achieve the vision. The Scrum Master facilitates the Scrum meetings and supports the team in overcoming issues. The development team, the product owner, and the testers validate and verify the requirements and do the quality check. Work is carried out in cycles called Sprints [1].

2.1   Related work:

As per scrum methodology, all the team members do their work and update the work status in daily stand-ups, usually held every day in the morning. All the work whether in progress, blocked, done, or planned to start soon is reported in this meeting and there should not be any informal communication or discussion that distracts the daily standup meeting [11]. There are challenges involved in running meetings in Agile that include the relevance of the participants in the meeting and the issue being discussed. This results in leading to a decrease in engagement and loss of interest and even important things can easily become unheard by other team members. Moreover, all meetings are not relevant for all team members, and it is the reason for a decrease in participants' engagement [3].

A grounded study was held in 2016 with 12 software teams, interviewed 60 people, and observed 79 daily standup meetings. It is stated that the daily standup meetings are helpful to the team members since it allows for discussing and solving problems. The thing daily-standup-meeting participants do not like is the attitude to report the status to the manager instead of sharing information with the whole team. Additionally, they proposed that the focus should be kept on discussing and solving the problems and planning rather than reporting what has been done. It is also suggested to stand in the daily standup meeting and conduct the meetings by a task board [12].

It is also observed and stated that team members keep focusing on their turn to talk and they do not listen to other participants [4]. Participants also state the same task multiple times as they are unable to finish it in one day and repeatedly report it daily either if they have got an issue that can't be addressed in the specified time, or the task is too big to complete in a day [4]. A common practice is that the team members do not follow the name of the meeting, which is a stand-up meeting, which makes them too relaxed, and they take more time to explain the updates and sometimes lose the scope of the meeting [4]. If the team prepares for the 3-questions before the meeting, i-e What was done yesterday? What will be done today? and If there are any blockers? that could be the key to a successful stand-up meeting [4].

In another case study, interviews were conducted and the obstacles that decreased the efficiency were identified [5]. The main ones were that daily stand-up meetings lasted a bit too longer than planned, team members reported their work to the scrum master instead of sharing information among all team members, and there was an interruption that caused the meetings to require substantially more time than the actual meeting time, and several team members have negative attitudes towards the daily meetings [5]. It also identifies investigations like team meeting interaction, cultural differences in meeting norms, team meeting attitudes, public meeting facilitation, and how they are designed [5]. These all aspects need to be addressed and the daily meeting organizers should evaluate them and work on solutions according to the needs of the team members [5].

While studying different sizes of teams that follow the scrum methodology and doing research on how Scrum works in different companies with a different number of team members, it was concluded that Scrum is more suitable for products with a size of 3-9 persons and larger teams, there is another mechanism called Scrum of scrums [6]. It distributes the product in chunks between several teams and regular meetings are organized to control the quality and speed of work [6].

To gather different perspectives on the daily standup meetings, almost 60 project members with roles at all levels in 15 different teams were interviewed, and research was done on teamwork and meetings with a particular focus on daily stand-up meetings [7]. Hence, it was summed up that daily stand-up meetings are common in an agile way of working and commonly used for software development teams to collaborate and exchange information but conducting them in a way to benefit the whole team is still challenging [7]. The research is being done in almost four software companies to identify all the aspects of daily stand-up meetings and then recommend how to make them more valuable [7]. It was suggested to all agile teams to try to improve their meetings by experimenting and breaking the rules that they are following. By challenging the old mindset like having standups daily in the morning and discussing three scrum questions, adjustments can be made according to the needs of the team [7].

Although face-to-face interaction helps form a personal bond and makes communication at work more effective [10] during the covid-19 pandemic, software development teams could not conduct face-to-face meetings and communications daily. Due to less internal communication and collaboration, daily standup meetings were a mandatory thing to do for all the agile software development teams to know the status of the work. It is difficult to report complete status in 2-3 minutes, Hence, it takes a bit more time to describe the updates for all team members, and this affects the time frame of the meeting. A recent study states that the whole work environment changed for the entire IT industry, so every agile practitioner team changed the ways of work accordingly. People like to have face-to-face meetings every day and prefer to socialize a bit before or after standup [9]. According to the survey held in different Jordanian universities, nearly 300 students participated in it, the results show that there are significant benefits of daily meetings, communication, and updates. It

keeps the team updated about the status of the product and makes it easy for the scrum master to highlight and remove the blockers so the team can continue to work [8].

Above mentioned work has much information about daily standup meetings, their problems, and solutions. The obstacles, efficiency, collaboration between team members, etc. are discussed already but how we can decide the frequency of the meetings when working on bigger and smaller projects and the right participants is still a question. Since the working style has changed after the covid pandemic, most IT companies switched to remote or hybrid ways of working so we also need to go through the needs of the team for standup meetings and adapt to the changes needed. **Here in this paper, we mapped the time and frequency of the daily standup meetings according to the circumstances of different teams.** We also optimized why time is the biggest challenge to conduct a daily standup meeting and how team members' explanations play an important role in exceeding the time of daily standups.

2.2   Research Gap:

No research paper clearly states why and when we should follow the standard guidelines to conduct the Daily standup meetings. There is a study, Start Breaking the Rules [7] that focuses on making changes to Daily standup meetings by breaking rules but doesn't cover all aspects and factors that states that daily standup should be conducted based on the needs of the project. Also, there is no research available that practitioners can refer to study different factors when planning daily stand-up meetings. The scope of this thesis is limited to the IT software development industry. It is the generic study where we have studied 2 different projects and concluded common findings to conduct daily standup meetings in a development project.

2.3   Delimitation:

The scope of this thesis is limited to the IT software development industry. It is a generic study where we have studied 2 different projects and concluded common findings to conduct daily standup meetings in a development project.

There were only 10 people interviewed from both the teams and mainly working in the large project.

3 RESEARCH METHODOLOGY

The purpose of this section is to give an overview on the research questions and methods used in the case study. It also explains the various data collections techniques used.

3.1 Research Questions

Aim: How to decide the right approach to conduct the daily stand-up meetings in different size projects and different teams considering agenda, duration, team size, and participation In IT software development teams.

Objective: To collect perceptions and study the impact of daily standups on the success of the project. To understand this, the challenges and benefits of these daily standups will be investigated. To work on the thesis below research questions will be analyzed.

RQ1: Why following standard guidelines is not always important and required and how should one plan and conduct the Daily stand meetings when considering the below points
- Importance
- Purpose
- Participants
- Team size
- Meeting duration
- Time of meeting
- Meeting Frequency

RQ2: How do these daily standups help in the success of the project considering positive and negative impacts?

3.2 Research method

According to Dawson (2000), there are 4 different research methods: Experiment, Survey, Case study, and action research.

The **experiment** is not a possible option in this case since it is not possible to perform an experiment involving so many people. Changing the routines and processes in the existing project is also not an option to experiment.

The **survey** is also not suitable for this study because the survey only asks questions that will be answered based on the experience of the practitioners. Also, the opinions and viewpoints of practitioners that are not covered directly or the unknown factors cannot be addressed by Survey.

Action research could not be performed in this study since this approach is about observing the results of the actions taken and in a real word it is not possible to make changes in the working ways of the project to observe effects.

The **case study** is a research design that can help you learn a lot about a specific topic in detail. It lets you explore what are the key factors, their consequences, and how things work in the real world. Case studies can help you stay focused when you're doing your research project.

As we wanted to study and analyze the Daily standup meetings in-depth, so case study was the best approach for us to follow. This method could help us to study this real practical problem by studying and understanding every aspect of these meetings. We should get answers to our how, why, and what questions in our studies. Being part of these Agile projects where daily standup meetings were the norm, it is much easier and convenient for us to also gather information by closely observing these meetings daily. In addition, working with people having many years of experience allowed us to conduct interviews and get an understanding of their ideas.

Our research is exploratory as this helped us to get answers to our how's and there are no single sets of answers to our questions. We further followed an inductive approach that is also suggested by Yin (2013) to perform a case study and is considered more appropriate [15]. Further, when the results can be measured, it is possible to perform a quantitative analysis but when the results are based on characteristics and situations, it is better to perform a Qualitative analysis. In our case, we gather information by analyzing different situations in depth then calculate numbers and perform quantitative analysis.

Quantitative analysis is also done on the analysis of qualitative results to perform a validity check. Later results of the quantitative analysis and feedback survey are studied to make sure the results are unbiased. It is a mixed research approach where qualitative is the main research and quantitative analysis is further done as a validity check.

Details of the Projects studied in a case study

Research Type	**Case Study**
Research Purpose	**Exploratory**
Research Approach	**Inductive**
Research Strategy	**Qualitative + Quantitative**

We further followed 5 steps to perform a case study as suggested by Yin [15].

● Design case Study – We defined the objective and decided the information that we wanted to collect.

- Preparation to collect data – We finalized methods to collect data i.e., Interviews, feedback questionnaires, and self-observations.

- Data evidence – Collected data by recording transcripts of interviews, also conducted interviews in person and took notes, collected daily feedback after meetings, observed meetings closely, and participants in those.

- Analysis – Using the Thematic method we analyzed data.

- Report – Results are concluded in the report.

3.3 Case Study design

This section explains the design of case study performed.

3.3.1 Case selection and Projects for Analyzes

The case study has been performed on 2 different projects of IT, Software development companies. This study is specific to IT, Software development companies only and does not cover other industries. In this study, one large implementation project is studied by an IT software and service company providing IT solutions and another small IT project is studied by a company providing an OTT platform that provides streaming services to different partners all over the world.

In the larger project, around 80 people are working in 10 teams in different roles. This is a new IT implementation from scratch where all these teams are working together to deliver a common solution that is still not live in production. It is a new implementation project. These are different teams because of technology being used like salesforce, and NetSuite, but these teams are dependent on each other since all functionalities being delivered are interdependent. This is considered complex because of complex functionality and interdependencies. All 80 people are working to deliver one common Solution

A smaller project consists of 32 people working together in 3 teams in different roles to deliver streaming services on different platforms. It is already live in production and available to the users. It is a stable project where these teams work mostly independently to work on new enhancements and have very few dependencies. Both projects follow Agile ways of working where people have daily standup meetings. We represent these projects as project 1 (Large) and project 2 (Small).

Complete details of the Projects are as below:

Table 1 :Details of the Projects studied in a case study

Project 1 - Large project			Interviewed	Observed	Feedback
	Specialty	**Locations**	**Interviewed**	**Observed**	**Feedback**
Team 1	CRM - Customer relationship management	Sweden, India, Latvia	Yes	Yes	Yes
Team 2	ERP- Enterprise resource planning	Sweden, India	Yes	Yes	Yes
Team 3	API - Application programming interface	Sweden, India	Yes	Yes	Yes
Team 4	CMS - Content Management Service	Sweden	Yes	Yes	Yes
Team 5	SIT Testing team (System Integration testing)	Sweden, India, Finland, Norway	Yes	Yes	Yes
Team 6	UAT testing team (User acceptance testing team)	Sweden, India, Finland, Norway	Yes	Yes	Yes
Team 7	E2E testing team (End to test testing team)	Sweden, India, Finland, Norway	Yes	Yes	Yes
Team 8	PMO - Program management office	Sweden	Yes	Yes	Yes

	Specialty	Locations	Interviewed	Observed	Feedback
Team 9	E2E Architects	Sweden, Finland	Yes	Yes	Yes
Project 2 - Small project					
	Specialty	**Locations**	**Interviewed**	**Observed**	**Feedback**
Team 1	Web - TV - Console team (Frontend team)	Sweden, Ukraine	Yes	Yes	Yes
Team 2	Mobile team	Sweden, Ukraine	No	Yes	Yes
Team 3	Platform team (Backend team)	Sweden	No	Yes	Yes

3.4   Data Collection Procedures

Data collection is done using three different ways.

1.   Interviews
2.   Observing the daily stand-up meetings
3.   Collecting the feedback in the Survey

Table 2 :Data Collection details

Method	Volume	Description
Interviews	10	Semi-structured interview with experts having work experience of 10+ years.

Method	Volume	Description
Observing the daily stand-up meetings	34	Attended and observed 22 meetings with 10 different teams of Large Projects. Attended 12 meetings with 3 different teams of small Project.
Collecting the feedback in the Survey Note: For Validation of data	30	Collected feedback from people working on these 2 projects on different roles.

3.4.1 Interviews:

Semi-structured interviews were conducted for 1 hour with each interviewee. Questions were prepared before the interview and interviewees were asked to answer them based on their experience of work.

Table 3: Details of Interviewees

Expertise	Year of experience	No. of interview
Agile Coach	20	1
Scrum Master	12	1
Architect	15	1
Test Manager	16	1
Development Manager	25	2
Developer	15	2
Tester	11	2

3.4.1.1 Selection of Interviewees:

Interviewees were selected from different teams and considered the factor that they must have different roles from each other. All people who were interviewed also had 10+ years of working experience and had a very good level of understanding of the Agile ways of working.

An informal discussion explaining the purpose of the interview was done before sending an invite for the interview. Formal meeting invites were sent to 12 people. Interviews were done with 10 people and 2 had declined the invite because of their unavailability. All 10 meetings were recorded, and later transcripts were analyzed in detail.

Note: In this document, these interviewees are referred to as experts. They are the people who have vast knowledge with 10+years of working experience and have between 8-15 years of experience in Agile ways of working specifically. They all were Agile certified and work in different roles on Agile teams.

3.4.1.2 Interview design:

Each interview was scheduled for 1 hour. The interview was planned in 4 parts. The first part started with explaining to them the purpose of the meeting and seeking approval for recording the meeting with transcripts. Further, it was explained to them why they are selected for the interview and why we think their viewpoint about these daily standups is important. In the second part, the recording was turned on and the interviewee was asked about his experience and role. In the third part, open-ended questions were asked about daily standup meetings like the purpose of the meeting, durations, overtime, team participation, and positive and negative aspects. In the final part, interviewees were asked to conclude and give inputs that they think were important and should be considered.

3.4.1.3 Interview Questionnaire:

One of the important steps in empirical study is to understand the real problem and understand the prior knowledge on the subject. To design questionnaire and build knowledge we performed below steps:

1.   **Literature Review -** We performed a literature search and referred to all the research work related to this issue. Relevant keywords were used to find the related article. Data collected from these research work and articles helped us to create a questionnaire on our research about daily standup meetings. We performed search online in Google Scholar and IEEE and our search we limited to English language only.

2.   **Refer to old interview and survey questions –** We referred to the questionnaire of the old interview conducted related to this subject. We focus mainly on case studies, but we also studied a few studies that were survey-based to understand different questions.

3.   **Review from subject experts and supervisor -** To further improve our questions, we also discussed these questions with the people who have good knowledge about the subject and asked for review comments. The questionnaire was also reviewed by the supervisor. To start with, we conducted a few sample interviews and revised questions based on the interview results and feedback.

3.4.2 Observing the daily Stand-up meeting

We participated in daily standup meetings of all the teams in these 2 projects. We listened in and observed these meetings, took notes on paper, and later also studied the transcripts. We observed and studied these meetings for all teams in project 1 and project 2.

Table 4: Details of meetings observed

Project - Large			
Teams	**Area**	**Team Size**	**Meetings Observed**
Team 1	Architect	5	3
Team 2	CRM	6	3
Team 3	ERP	8	2
Team 4	API	5	2
Team 5	CMS	5	2
Team 6	SIT testing	6	1
Team 7	UAT testing	8	2
Team 8	E2E Testing	8	1
Team 9	PMO	6	4
Team 10	Cross-track Daily	32	2
Project - Small			
Teams	**Area**	**Team Size**	**Meeting Observed**
Team 1	Frontend	9	6
Team 2	Mobile	5	4
Team 3	Platform	8	2

3.4.2.1   Protocol followed to observe meetings:

To help us conclude results of the Daily standups being observed, we focused on below Protocols:

- What was the planned duration of meetings?
- If meetings were conducted in timeframe
- Attendance of people
- Involvement and active Participation of people
- If issues raised by people were addressed
- Atmosphere of meeting
- If meetings were overtaken by external people when present
- If Meeting discussions followed the agreed agenda

3.4.3   Collection of daily feedback:

After the daily standup was over for these teams, we randomly selected different people to give feedback on their daily standup meeting of that day. We took feedback from people from all teams working on different roles. We asked them to answer a few direct questions. These were mostly direct questions about that day's daily standup meeting.

Table 5: Details of feedback collected

Role	Project Large	Project Small	Total
Architect	2	0	2
Developer	5	8	13
Development Manager	3	2	5
Project Manager	2	3	5
Scrum Master	3	1	4
Tester	5	6	11
Grand Total	20	20	40

Refer Appendix B at the end of documents for completed set of Survey questions.

3.5   Data Analysis Approach

We collected the data from interviews and by observing the meetings of various teams. **Qualitative analysis** is done on the data collected from interviews and observations. We further chose the Thematic Synthesis approach that is used to identify, analyze, and report the findings in research. This approach is useful while working with large qualitative data sets. It encounters various aspects of research and organizes and describes the data precisely. We analyzed the interviews and observation

notes using a tool called MAXQDA. This tool is used to perform a qualitative analysis using a thematic approach.

We loaded the interview transcripts into the tool, then marked data into separate groups by marking statements together under different kinds of codes. Each code was then further segregated into different kinds of statements, and similar statements were grouped under one abstract to conclude them into results. In the same manner, we tried to mark observations and feedback with different codes and performed the analysis in excel. We also performed quantitative analysis on the feedback received on the direct questions which were answered as Yes/No. In the end, we tried to conclude the results by referring to the inputs received from all three methods.

3.5.1   Inductive Thematic Analysis:

To perform the data analysis, we followed the Inductive Thematic approach suggested by Braun and Clark following 6 steps. [14]

Table 6 : Steps in Inductive Thematic Analysis [14]

Steps in Inductive-thematic Analysis	
Steps	**Description**
Step 1	Understand and get familiar with the data
Step 2	Generate Initial code
Step 3	Search themes
Step 4	Review the themes
Step 5	Defining and naming the Themes
Step 6	Generation of report

Step 1: Understand and get familiar with the data

All the conducted interviews were recorded with transcripts. Later all the transcripts were extracted in pdf forms for Thematic analysis. Similarly, in all the meetings which were observed, we were present in those meetings and made notes, and later also revisited the transcripts. Later all the observations were collected in the excel sheet.

Step 2: Generate the Initial code

Initial coding was done as part of the data analysis. Data was highlighted and collected in a meaningful order. It was manually done using a tool called MAXQDA. Transcripts were uploaded and we manually read the text and highlighted important points.

Step 3: Search themes

Here, we grouped codes under the broader level themes. Codes were created considering the important factors and research questions.

Step 4: Review the themes

Now once again we looked at the themes and compared them to each other. We revisited and reconsidered them and looked at similar themes and then tried to map those to the available data sets. First, we tried to relate the themes and data under them. Then revisited the data and mapped the data under themes that we had missed before.

Steps 5 and 6: Defining and naming the Themes and Generation of the report

In this final step of thematic analysis, we tried to define and refine the themes and named them based on available data sets. Once data was fully analyzed under each theme, we tried to generate a report of the analysis.

Figure 1 : Thematic analysis steps

Familiarize with Data	Create Initial Codes	Search Themes	Review Themes	Generate Report
• Transcribe data • Re-read the data • Highlight and note ideas	• Collaborate Initial ideas • Code interesting features	• Collaborate Themes for potential ideas • Gather data for potential Themes	• Check themes against level 1 and level 2 • Generate Themes map	• Report of analysis
Phase 1	Phase 2	Phase 3	Phase 4	Phase 5

3.5.2   Quantitative analysis:

To further enhance our exploratory research, we performed Quantitative analysis on data that was collected in the feedback form and later we formulated results based on the answers received. We have manually compiled all the results in the excel sheet and formulated results in excel using formulas (Sum, Percentage etc.).

3.5.3   Validation of Data:

To further validate the results of the transcripts, feedback was collected in the form of a survey. After the daily standup was over for these teams, we randomly selected different people to give feedback on their daily standup meeting of that day. We took feedback from people from all teams working on different roles. We asked them to answer a few direct questions and all these questions were formulated based on the results derived from the transcripts. These were direct questions to be answered with Yes or no and later we did the quantitative analysis to match the results.

3.6   Threats to Validity

There are several ways in which empirical research can be invalid, and by identifying and mitigating these threats, empirical research can be more successful. Yin [15] discusses four threats to the validity of empirical research in a case study. The tests used to validate the quality of the research are construct validity, internal validity, external validity, and reliability [15]. The threats to the validity of this study include measures taken to mitigate the threats, as well as the case studied.

3.6.1   Construct validity:

The study found that there is a risk that data collected may not be accurate because there are not enough operational measures in place to ensure it. Below ways were used to increase the accuracy of the data collected

1.   **Data Triangulation -** The data gathered from multiple sources can help us to learn more about a topic in a more accurate way [15]. In our study, we have conducted interviews to get a clear picture of what is happening. We also collected data by direct observations to see if the participants are following the instructions they have been given and how productive these daily standup meetings were. To further validate our results, we also collected data in the survey and quantitative analysis is done on the same. Quantitative analysis is also done on the output of qualitative analysis. Later quantitative analysis of both is studied to avoid and find any biased opinions.

2.   **Maintaining traceability -** To ensure the accuracy of data collected during a case study, a chain of evidence is maintained. This includes tracking the derivation of results from data collected, as well as documenting the transcript of the interview in which the data was collected. This was done and information was stored in a tool called MAXQDA. By doing so, it was easy to track the analysis steps and ensure their accuracy.

3.   **Selection of people for interview-** One potential threat to the success of this research is that the people who are best suited to answer the research questions. So, to have best inputs, all the people

who have many years of experience of Agile ways of working were selected. Also, it was made sure that all the people have worked in different roles.

3.6.2 Internal Validity:

Internal validity is the assurance that the findings of a study can be attributed to the factors under study, rather than random chance or other factors. To address this, interviewees were selected based on their experience working in Agile. It was made sure they all belonged to different domains of IT and are working on different roles. Also, we studied all the different teams of both projects to get a clear understanding and to avoid any selection biases.

One threat to validity is that only two cases have been studied, so it could be assumed that produced results do not apply to other organizations. But we tried to study two different projects in are IT industry covering all contexts in detail so that it is possible to generalize the identified issues to other organizations with similar contexts.

3.6.3 External Validity:

One threat to validity is that only two cases have been studied, so it could be assumed that produced results do not apply to other organizations. But we tried to study two different projects in the IT industry covering all contexts in detail so that it is possible to generalize the identified issues to other organizations with similar contexts.

3.6.4 Reliability:

This threat is about the risk that if you do the study again, the same results will happen. There can be a risk that the results of the study are affected by how the data gets interpreted by the researchers. To reduce this risk, the study has been conducted by collecting data from multiple sources i.e., interviews and self-observation meetings. And, importantly, all interviews were recorded, and the correct interpretation of the data has been verified. Transcripts were studied multiple times to avoid any confusion and missing important information.

3.7 Ethical Reflection

The research should follow the four main principles of research ethics: Giving complete information, getting consent, keeping information confidential, and Using requirements. (The Swedish Research Council, 2002). As per giving information and seeking consent, all people participating in the interviews were informed about the purpose of the study being conducted and the content of the study.

All the interviews were scheduled online and were recorded only after consent was given by the interviewee. Also, in all the observed meetings, participants were informed at the beginning of the meeting about the meetings beings studied, and participants were asked if they had any concerns. Complete information about a study being performed was also given when conducting the survey.

In addition, personal information or any sensitive data of the people involved in the study has not been linked in the study to maintain confidential requirements. Also, for usage requirements, everyone was informed to everyone about the usage of the information collected and not selling to any third party.

4 RESULTS

In this case study, qualitative analysis is done on interviews and meeting observations using Thematic analysis. Answers in the Questionnaire-feedback form about their daily standup meeting for that day are analyzed using quantitative analysis.

4.1 Thematic Analysis of the Interviews:

Table 7 : Description of codes

| Themes	Codes	Definitions
Purpose	Purpose Of DSM	Need to conduct DSM
	Defined Definition	Teams follow the defined definition and if it is important
Planning	Meeting Frequency	The frequency at which DSM is conducted
	Time to conduct	Conducting the DSM during a particular of the day
	Duration	Conducting meetings for a duration of time
Participation	Team Size	Number of people being invited to participate
	Participants	People attending these DSM
Aspects	Positive Aspects	Positive factors from DSM help the teams
	Negative Aspects	Negative factors from DSM that affect the team negatively
Opinion	Feedback	Opinion of the people about the DSMs
	Contribution to success	Contribution of DSMs toward the success of the project

4.1.1 Purpose

4.1.1.1 Purpose of DSM

In the interviews conducted, most of the experts believed that the purpose of the daily stand-up meeting is much more than just sharing status. In these meetings team members tell what the person had done yesterday, and what he will be doing today, and highlight impediments. In addition to this, people share essential information with their teammates and spread awareness among team members on the critical objects and things that need to be focused on. So, it is not just a daily stand-up meeting but also works as a team sync-up meeting.

After the pandemic when working from home and working from a different location is a very common practice, these daily standup meetings help people to get motivated to work as a team. There is better collaboration and issues are discussed and solved at a faster pace. In addition, these meetings also help managers to track the progress of the work and get a clear picture when there are any deviations.

Figure 2 : Details about the Purpose of DSM
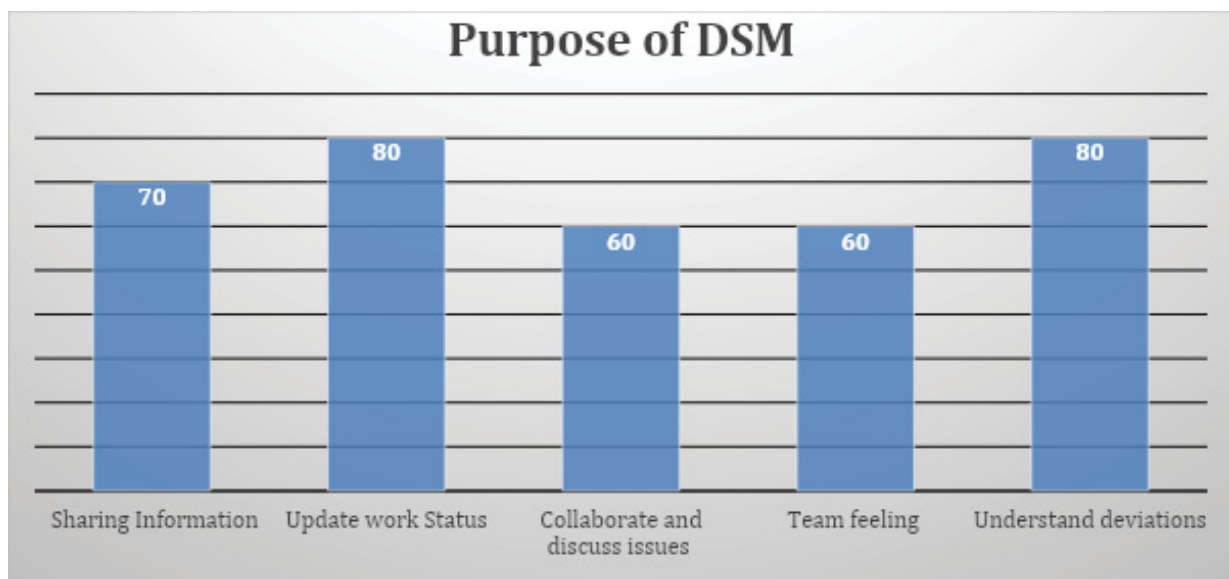
4.1.1.2 Defined Definition

In the interviews conducted with the experts, it was asked how efficient and fruitful the daily standups are if they are conducted as per the defined guidelines. They highlighted that the daily stand-up meetings should be customized based on the needs of the project. It is much easier to discuss the issues and follow-on status when following the task board. Standard guidelines work best only when the project is very stable, not otherwise. So, they believed that it is not the guidelines that are important

but the efficiency of the meeting. These DSMs should be quick and fast, and people should be able to talk about the impediments. These meetings should help people to progress faster and be efficient in their work.

Figure 3 : Details about Define definition of DSM
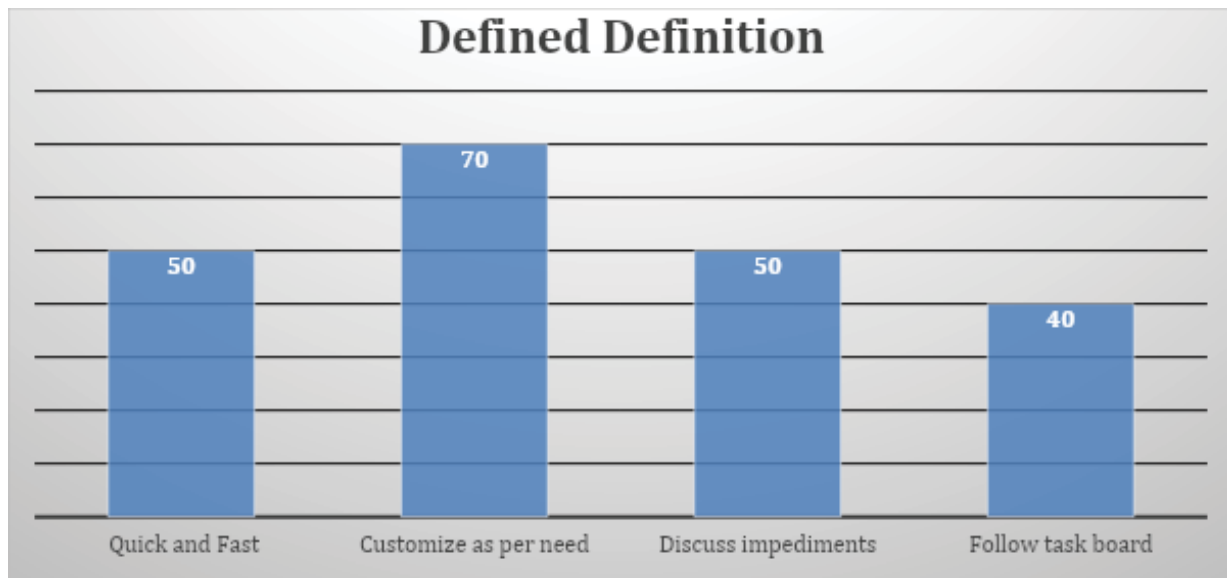
Below is a transcript with a few important points said by the experts.

Figure 4 : Expert comments regarding the Purpose of the DSM

Document	Code	ö
Interview	Interview Code > Purpose	Update Day-to-day work., Check team has any hindrance.Short summary of work status.
Interview	Interview Code > Purpose	**To collaborate on issue, track progress of work, highligh issues.**
Interview	Interview Code > Purpose	It is to get this kind of team feeling and as well the kind of spread, the awareness of what kind of critical objects needs to be focused on.It is to highligh clear focus on task at hand.
Interview	Interview Code > Purpose	he **purpose of this is standup meetings is more than just the status here,It is status, impedments and few other important things**
Interview	Interview Code > Follow defined defination	**Doesn't matter if they follow the same guidelines**. Meeting needs to be quick and short.
Interview	Interview Code > Follow defined defination	ctually there is a also a custom way of this guidelines because in a development project where one task will be taking a week or two, So what was done yesterday and what will be done today will not be having any little meaning because the team member will be reporting the same thing that is developing task A. Focus on all thre points equally. Do not over discuss impendments.
Interview	Interview Code > Follow defined defination	NO, People tend to discuss impedments in detail. So it's easy to tell what you did and what you plan to do when when we get into the third part impediments which is the main part. So people do report the issues that they are facing and sometimes people tend to you know. Education of poeple is really important to sucessfully run these meetings.
Interview	Interview Code > Follow defined defination	When the when the days are rosy. This makes a lot of sense and it becomes very efficient. But in practical days, when the things are complex, this just serves as a formality.
Interview	Interview Code > Follow defined defination	Discuss through the task board or important issues.
Interview	Interview Code > Follow defined defination	ONly if team sizeis 5- 8 , **Scrum master is very expert and has deep knowledge and very few issues to hightlight.** People make sure not to discuss issues in detail.

4.1.2 Planning

4.1.2.1 Meeting Frequency

In the interviews conducted with the experts, they expressed that it is good to have meetings every day, but the required frequency of the meeting should be based on the need and requirements of the project. They should be as often as the team needs and the frequency can change as often as the change happens. It will not be wrong even with all these daily stand-up meetings as regular status meetings are sync-up meetings in the team.

Figure 5 : Details about Meeting frequency in DSM
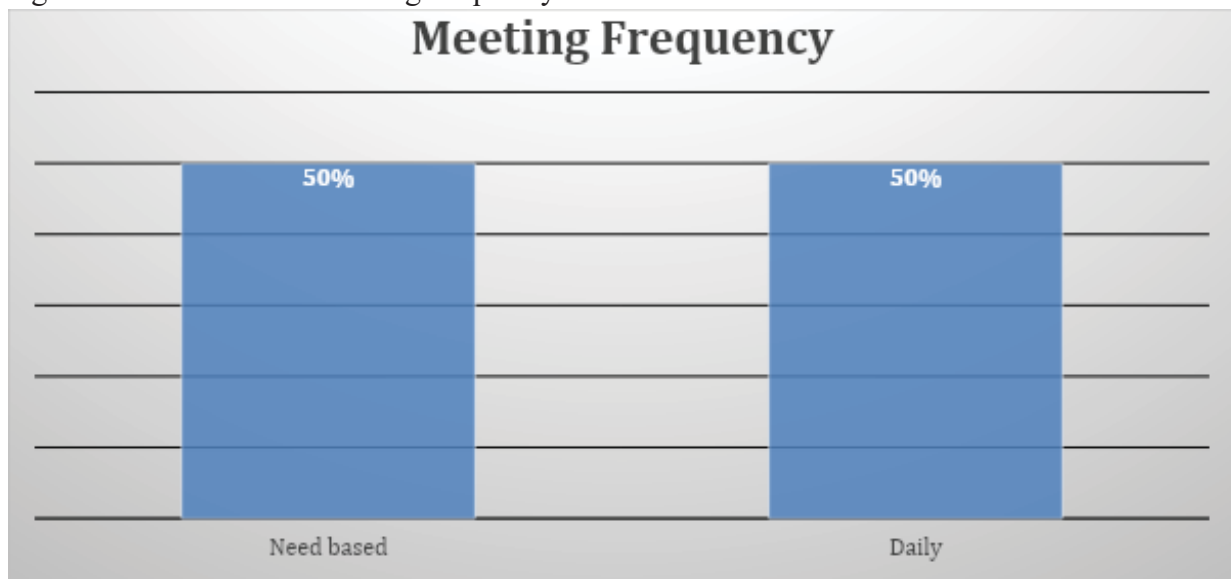
4.1.2.2 Time to conduct

Most experts believe that the best time to conduct DSM meetings is as early as possible from the time you start your day. When meetings are conducted in the early morning it is easy for people to change the prioritization of their work if required. They can plan their day better. Just one person felt that even

Figure : Details about Time to Conduct DSM
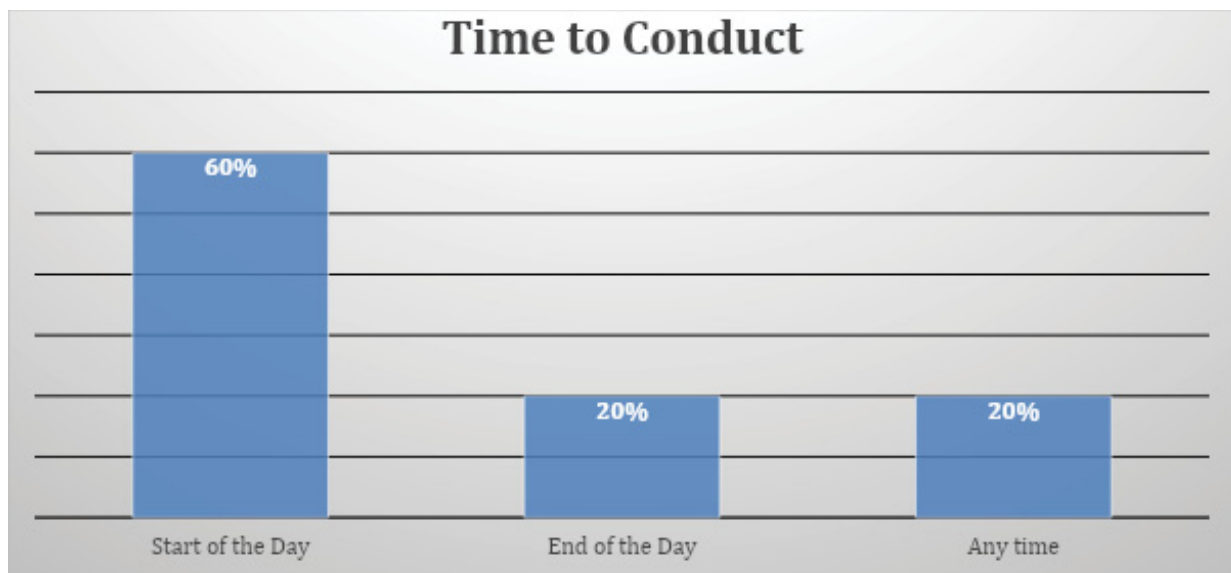
if the meeting is at the end, it will be equally helpful. All said that it is important to have meetings at the same time every day as it gives consistency to the workflow.

4.1.2.3   Meeting Duration

In the interviews conducted with experts, they highlighted that the required meeting duration is again dependent on the needs of the teams and the project. It also depends on how often the meetings are conducted. Most of them said 15 minutes is good enough only if the team sizes are 5-6 people and each person gets to talk for 2 minutes. In normal scenarios, 15 minutes are too short to have these meetings efficiently and, in that case, meetings often are not very productive and overrun the agreed duration. They make sense only when the project is very stable and there are very few issues. But when things are complex it is very challenging to make these meetings effective in 15 minutes and they are just formality.

In the interviews we conducted with the experts, most of them said that it is very challenging to complete a meeting in 15 minutes when the project is in an unstable state. These daily DSMs are often extended. Most of the projects which have DSMs for 30 minutes are often completed on time. In addition, the Scrum master plays a very important role in conducting these meetings and making sure that people do not deviate from the agenda and conclude these meetings within time.

Figure 7 : Details of Meeting Duration of DSM
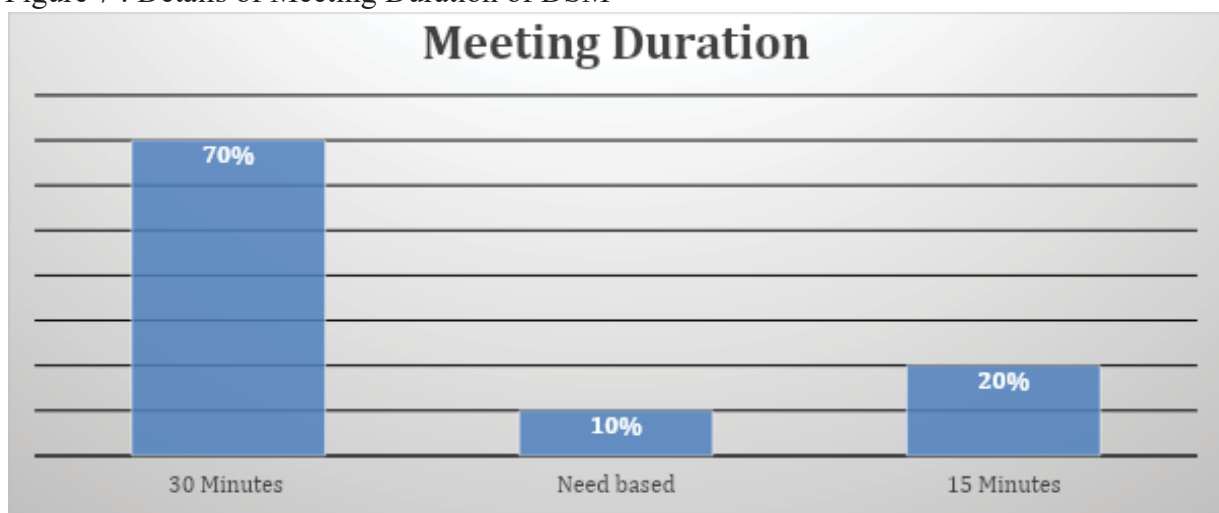
Below picture shows comments from the transcript made by the experts in the interview:

Figure 8 : Expert comments on the Planning of the DSM

| Docume	Code	Transcription
Interview	Interview Code > Meeting frequency	**it has to be as often as the team needs it and the team needs it on the frequency that we talked about as often as change happens**
Interview	Interview Code > Meeting frequency	**It should be based on need.** Mainly testers need daily sync up.
Interview	Interview Code > Meeting frequency	Everyday at same time
Interview	Interview Code > Meeting frequency	**It should be daily but as we move along , when things are stable it can reduced as per need.**
Interview	Interview Code > Meeting frequency	**Everyday is good.**
Interview	Interview Code > Meeting frequency	Good everyday
Interview	Interview Code > Meeting frequency	Daily. But these meetings are mor like daily sync meetings.
Interview	Interview Code > Right time to conduct	As early as possible when team can report the status.At same time everyday. To see each other. Because we're doing this virtually overtones. continuity is very important
Interview	Interview Code > Right time to conduct	it will be a good if you're having an end of every day because then we can plan for tomorrow because instead of planning on the morning, it will be good if we can plan at the end of the day. It should be at same time.
Interview	Interview Code > Right time to conduct	
Interview	Interview Code > Right time to conduct	During the morning, every day the same time.
Interview	Interview Code > Right time to conduct	**every day the same time in the morning**
Interview	Interview Code > Right time to conduct	As early as possible , around 8:30 - 9:00 CET.At same time everyday.
Interview	Interview Code > Required meeting duration	Based on need of project, how often meeting is conducted and issues to discuss. 30 mintues is common.
Interview	Interview Code > Required meeting duration	15 mintues if there are 5-6team members. Should be 30 if 7 or more.
Interview	Interview Code > Required meeting duration	15 mintues is enough if all stick to 2 minutes and do not
Interview	Interview Code > Required meeting duration	**15 mintutes are too short. 30 mintutes is good.**
Interview	Interview Code > Finish in agreed Timeframe	**It is for 30 mintues.**
Interview	Interview Code > Finish in agreed Timeframe	In the beginning of the project, when things are unclear, people have many you know questions. So in in those times, I think people tend to overrun these meetings and once things stabilizes, people know what needs to be done then, you know, then probably it's easy to manage in 15 minutes.
Interview	Interview Code > Finish in agreed Timeframe	**Mostly when meeting is of 30 mintues**

4.1.3 Participants

4.1.3.1 Team Size

From the interviews, experts suggested that the right team size to have 15 minutes effective meeting is 5 to 6. If the team size increases from 7 it is very difficult to have effective meetings in 15 minutes. Some of them also highlighted that we really shouldn't focus much on the team size but instead if the team size is bigger the duration of the meeting should be increased. Also, based on the need of the project, team size can be bigger as well but in that case, it should be mandatory for all to attend but only people having relevant information should speak. So, it is also important to educate people to understand the agenda of the meeting and the scrum master should hold responsibility that the DSM should not be hijacked and go out of scope.

Figure 9 : Details of Team size in DSM

Team Size

60%	
5 - 8	40% Doesn't Matter
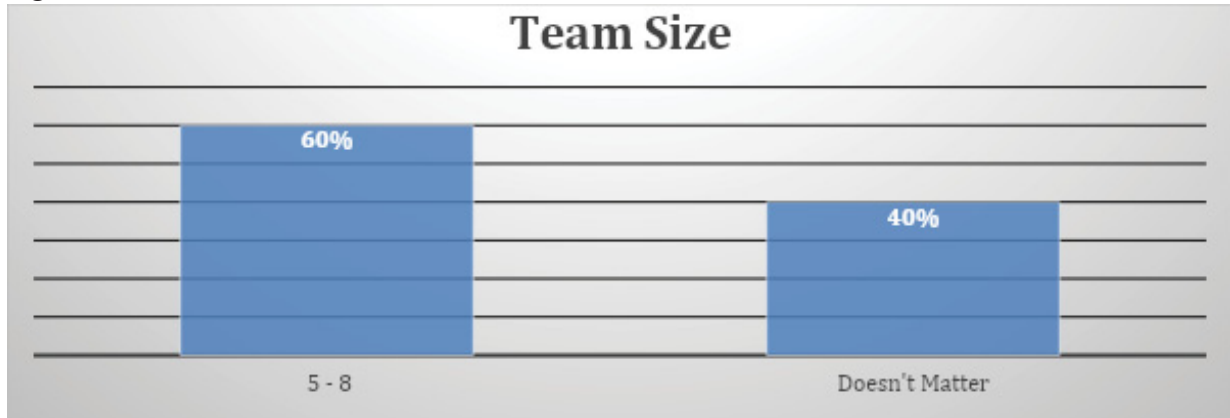
4.1.3.2 Participation

In the interviews conducted with the experts, they believed it is important for everyone on the team to attend the meeting so that everyone needs to be updated about the ongoing issue and important information. Each person feels accountable for the assigned task. It is an opportunity to know each other, and team members build trust.

Figure 10 : Details about participants in DSM

Participants

90%	
Mandatory	10% Optional
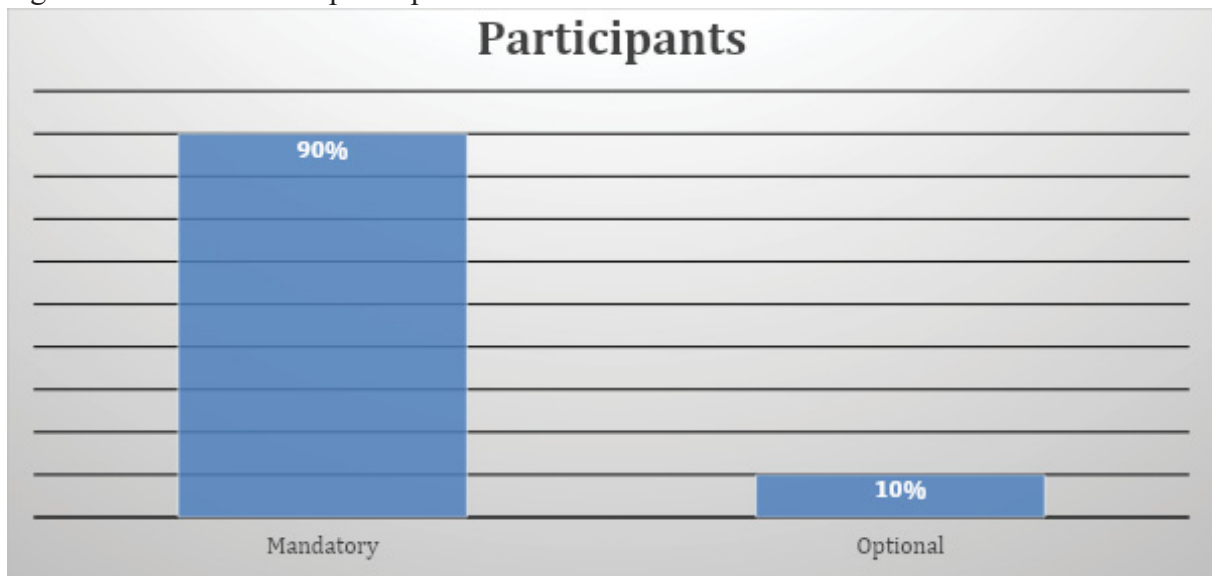
Below is a transcript with a few important points said by the experts.

Figure 11 : Expert comments on participation in DSM

Docume	Code	Transcription
Interview	Interview Code > Right team Size	**as early as possible when team can report the status.At same time everyday.**
Interview	Interview Code > Right team Size	**5-6 is right size for 15 mintutes quick call not otherwise.**
Interview	Interview Code > Right team Size	Required people should be present. Team size can be lesser or more. It is important to educate to people to talk relevant with correct participation to complete meeting in right time.There are retro meetings where overall things about sprint are discussed but not about opinion of people about meets. Good to have this.
Interview	Interview Code > Right team Size	**requirement is should be set according to the the need of the project but should be limited people.**
Interview	Interview Code > Right team Size	,Based on need of project
Interview	Interview Code > Right team Size	**5 to 9 is right size.**
Interview	Interview Code > Right team Size	**if the team size is bigger than eight then the meetings are not that efficient.** And then, you know, also adhering to this 15 minutes time is also becoming a becomes very big challenge When the when the days are rosy. This makes a lot of sense and it becomes very efficient. But in practical days, when the things are complex, this just serves as a formality.
Interview	Interview Code > Participation - Mandatory or op	**Everybody needs to be there every day, consistency.**
Interview	Interview Code > Participation - Mandatory or op	Should not be mandatory.Good to attend for information.
Interview	Interview Code > Participation - Mandatory or op	it should be mandatory.around the dependencies and get the answers in the same meeting
Interview	Interview Code > Participation - Mandatory or op	**it is good that it's considered mandatory.** sometimes not all people can attend for for different reasons, but then they need to go and and watch or listen to the the meeting afterwards.
Interview	Interview Code > Participation - Mandatory or op	**Mandatory . Talk important things.**
Interview	Interview Code > Participation - Mandatory or op	**Should be mandatory.**

4.1.4   Aspects

4.1.4.1   Positive Aspects

In the interviews conducted with experts, many of them believe that these meetings have a very positive aspect. In the digital world where we do not have the opportunity to meet each other, and people are working from multiple locations, these meetings give a good opportunity to meet each other daily. These meetings help improve the coordination within the team. Blockers are addressed quickly and are fixed at a faster pace. In addition, these meetings help us track progress and know if there are any deviations from the agreed timelines.

An expert also mentioned that being agile, there are often new changes, and these meetings help to bring change easily and help people to adapt to handle changes frequently. DSM also makes people accountable for the work they are doing.

Figure 12 : Details of Positive aspects of DSM
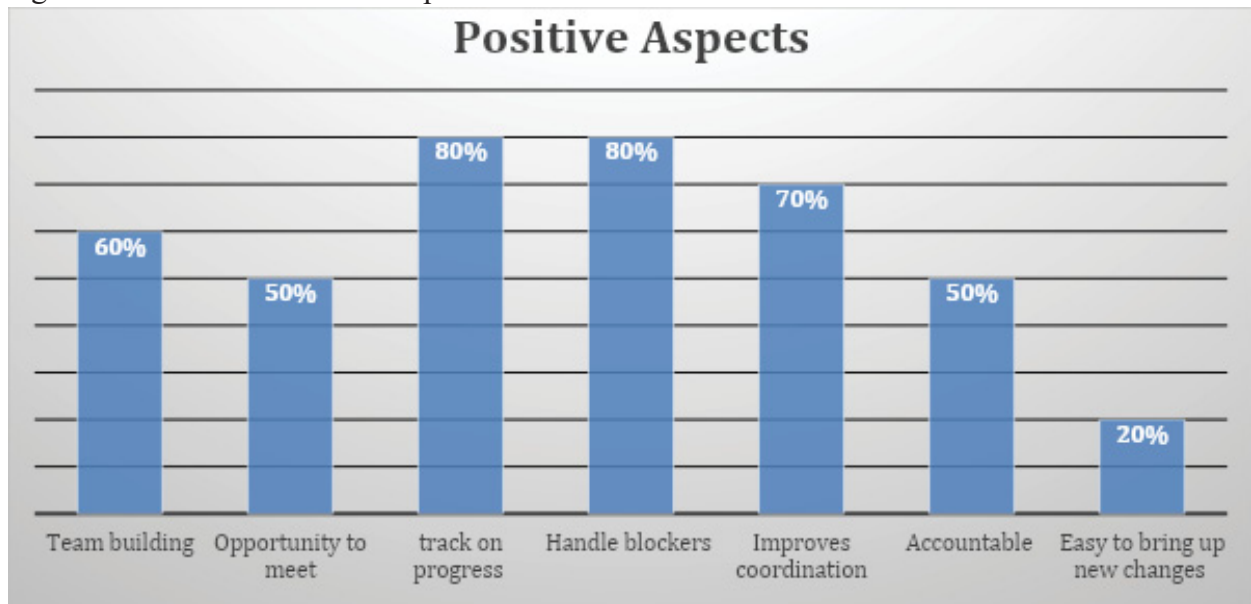
4.1.4.2 Negative Aspects

In the interviews conducted with the experts, many believe that it is very easy to lose control of the meeting when people start to discuss issues in detail. This leads to meetings getting extended. Many times, when the team size is big, it is not possible for all to highlight their issues. As per the ScrumGuide (2017), Scrum master should help the team finish meeting in 15 minutes and in case other people apart from the development team are present they don't disrupt the meeting. So, it is very important that the Scrum Master controls the meeting and makes sure people do not deviate and stops them when needed. Sometimes when there are disagreements, they can lead to heated arguments which impact the team atmosphere negatively.

Figure 13 : Details of Negative aspects in DSM
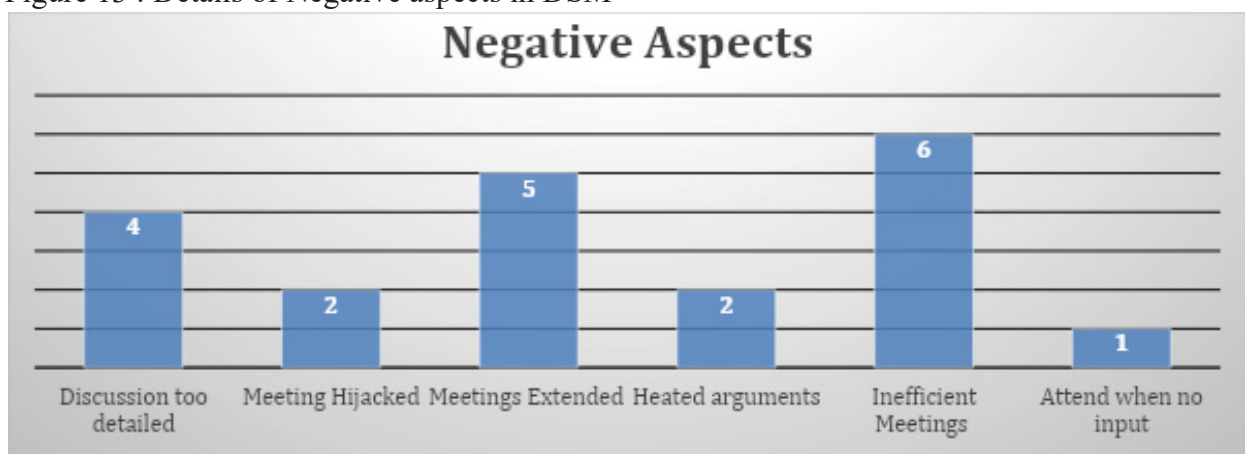
Below is a screen of the transcript with a few important points said by the experts.

Figure 14 : Expert comments on Aspects of DSM

Docume	Code	Transcription
Interview	Interview Code > Positive aspect	it's a way of helping people to know each other. Follow up regularly so we don't forget .
Interview	Interview Code > Positive aspect	virtually working digitally like we do on teams, this is an opportunity to meet everybody. can efficiently reach all the important people at once. consistent regular meeting that happens every day that you can depend on it. It gives you one point of stability in a world that is very, very flexible, very changing and very complex. Set the pase for each day
Interview	Interview Code > Positive aspect	it should be mandatory, informative for the whole team, Hindrance to be cleared
Interview	Interview Code > Positive aspect	collaborating on regular basis it. In agile when requirements are changing often so it was. I found that since we were having these meetings opened it was easy to to bring up those new requirements and then try to adapt. people are more open, it improves the coordination
Interview	Interview Code > Positive aspect	It creates this team feeling it. Everybody gets to say something at least. we have a an agenda and we are going through this agenda agenda every time.
Interview	Interview Code > Positive aspect	Team building since we work remotely, Good to see each other, Feedback on progress, teamwork flowing and discuss issues.
Interview	Interview Code > Positive aspect	Good to hold people in these meetings and highligh issue,
Interview	Interview Code > Negative aspect	It should not be mandatory. Even when you have nothing to talk still one needs to attend it.
Interview	Interview Code > Negative aspect	cannot refrain from getting into a very detailed questions. sometimes the meeting can get hijacked by certain tracks.
Interview	Interview Code > Negative aspect	Longer duration and when heated arguments.
Interview	Interview Code > Negative aspect	Ineffective meetings when there are more issues. When scrum masters can't control .

4.1.5 Opinion

Feedback Received

Figure 15 : Details about Feedback from other people in the DSM
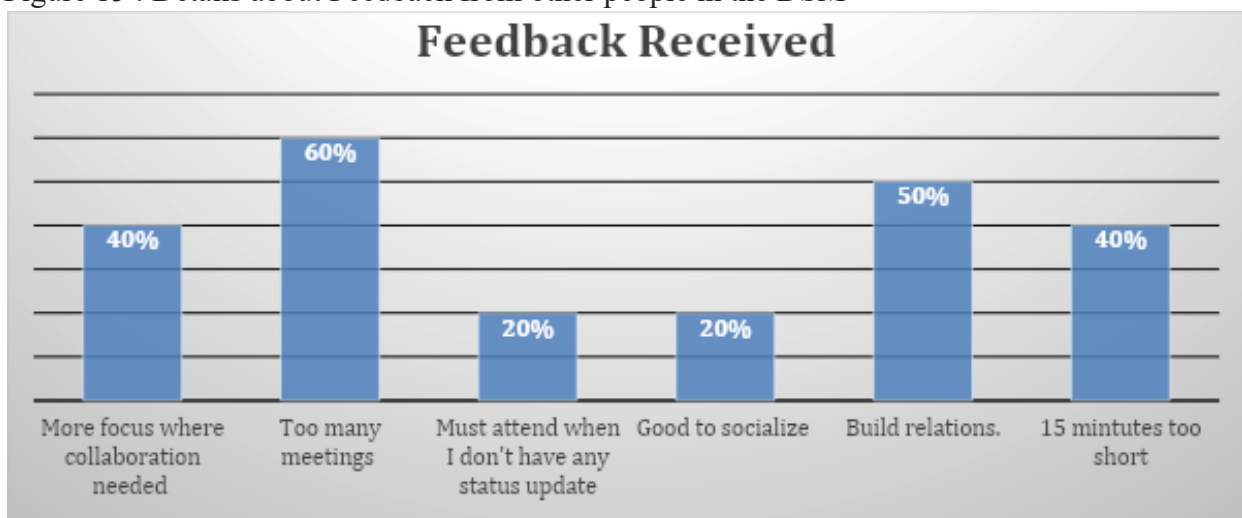

4.1.5.1   Contribution to success

In the interviews conducted with the experts, many believe that these daily standup meetings are essential for success. In these meetings, people find many things together and work towards achieving the common goal. These meetings help people to proceed with the work at a faster pace since the blockers are addressed faster and information is shared with all in a common forum. Working from different locations is much easier when you interact regularly and are held accountable for your work.

Figure 16 : Details of how DSM contributes to the success of a project
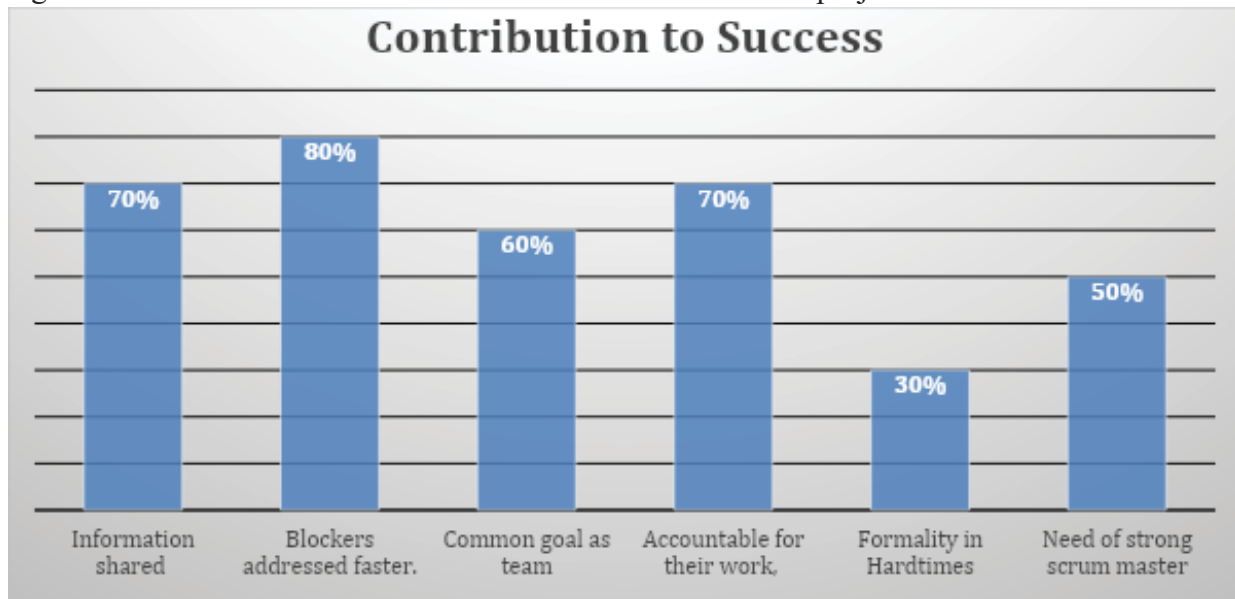
Below is a transcript with a few important points said by the experts.

Figure 17 : Expert comments on DSM towards Project Success

Docume	Code	Transcription
Interview	Interview Code > Contibution to success	**important thing is to make sure that people understand what these meetings are meant for and and and there is a good scrum master that keeps everybody on track.** You know what needs to be done in these meetings and don't deviate from the original agenda. Education of people is key to success.
Interview	Interview Code > Contibution to success	**dailies is essential for a success.** every week there is something that we are finding together.. A digital setting of this meeting. many different locations and I believe that working in an agile environment. It is also very much hands on. So I think that the daily is supposed to be you're meeting everybody meeting in the same room.
Interview	Interview Code > Contibution to success	When the when the days are rosy. This makes a lot of sense and it becomes very efficient. But in practical days, when the things are complex, this just serves as a formality.
Interview	Interview Code > Contibution to success	**Yes, since things are transparent and we are aware of the deviations . Blockers are addresses faster**
Interview	Interview Code > Contibution to success	**it should be mandatory, informative for the whole team, Hindrance to be cleared**
Interview	Interview Code > Contibution to success	**People are accountable for their work, work as team, encourage peole and celebrate**
Interview	Interview Code > Contibution to success	Yes, progress is tracked and blockers are given high importance. But if not conducted in right way it looses it purpose
Interview	Interview Code > Feedback	it has to be as often as the team needs it and the team needs it on the frequency that we talked about as often as change happens. Meeting as early as possible. no longer do around the table and ask each person what's happened, but we focus on the deliveries where we are all collaborating. The common deliveries that are across the tracks.
Interview	Interview Code > Feedback	**There are no updates but still there is a daily meeting where we are wasting 15 minutes or 30 minutes**
Interview	Interview Code > Feedback	I have not received specific feedback. I have not seen that people have. these channels open to provide feedbacks on how these meetings are going on a personally.
Interview	Interview Code > Feedback	**Too many meetings.** Good to socialize.Built relation when we work from different locations.creates accountability and responsibility.
Interview	Interview Code > Feedback	Meeting should be little longer to actually talk about issue then to just highlight
Interview	Interview Code > Feedback	**These meeting don't serve any purpose. You improve when project is at stable state. There are problems as soon as there are impedments.**
Interview	Interview Code > Opinion	You have accountability.consistency, careful balancing act between actually as an individual, Build trust, celebrate together.

4.2   Results of Quantitative Analysis of Feedback received

To Understand and know about the opinion of people daily, we randomly selected different people every day considering their different roles and asked them to give feedback on the DSM they attended on the same day. We asked for feedback both on the small and bigger project.

Figure 18 : Statistics in % about feedback received in the smaller project
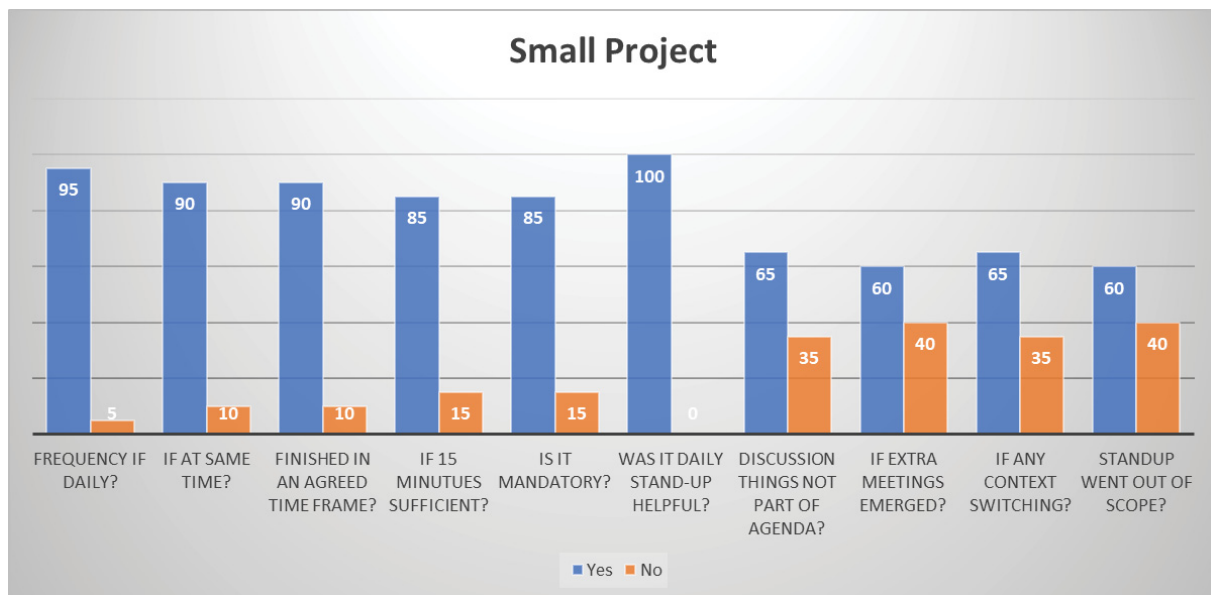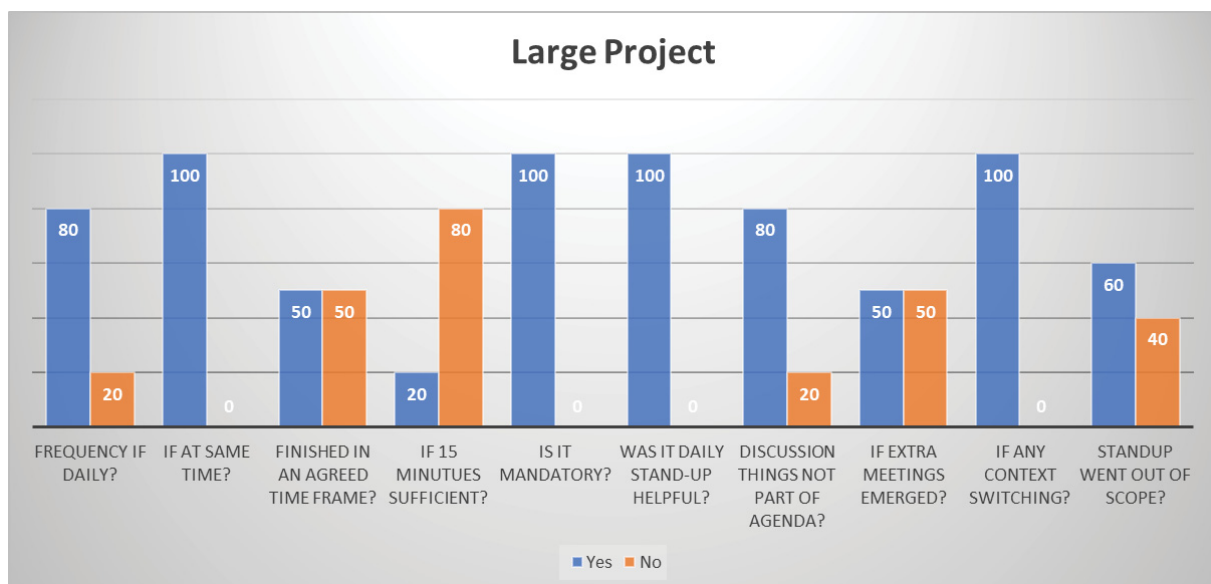

Figure 19 : Statistics in % about feedback received in a large project

In quantitative analysis, it was observed that both in the larger project and smaller projects all members believed that these daily standups are helpful. 100% of people reported that they had these

DSMs at the same time every day in big projects and 90% had them at the same time in small project. We conclude that most people plan these meetings at the same time and daily. It was planned as soon as they started their day. In the smaller project, 90% of the people had meetings at the same time.

4.2.1 Is Daily a Right Frequency

In the feedback of the larger project, 80% of people had their meeting every day and in the smaller project, 95% of people had a daily stand-up call every day. The remaining people who did not have the status meeting every day were either project managers or architects.

4.2.2 Required meeting duration

In the feedback of the large project, only 20% of people said that 15 minutes were sufficient for today's DSM whereas 80% believed it was not. In the smaller project, 85% of people said 15 minutes were sufficient and 15% said it was not.

It was also mandatory for all to participate in these meetings.

It is a bigger project where 50% of people could not finish meetings in time and these meetings were over-run. 80% of people also believed that 15 minutes were not sufficient for these meetings. On the contrary, only 10% of people in the small project reported that their meetings had over-run and 80% believed that 15 minutes were sufficient for that day's Daily standup.

In both projects, there were discussions on other things which were not part of the agenda. It was reported 80% in bigger projects and 65% in smaller projects. Also, people in both projects reported that 60% of the time meetings went out of scope. 65% time in smaller projects and 100% time there was a context switching in the meetings.

In the feedback of the larger project, 80% of people had their meeting every day and in the smaller project, 95% of people had a daily stand-up call every day. The remaining people who did not have the status meeting every day were either project managers or architects.

4.3   Result of Thematic Analysis, Observations and Feedback:

4.3.1 Purpose

In the teams of a larger project, it was observed that very few teams discussed the status of work done, and work planned for that day and highlighted blockers. But most of the teams discussed all the important aspects, interdependent things, they also tried to see if they are meeting the timelines for the deliveries. They also talked about obstacles, tried to propose a solution, and helped their teammates. For very detailed issues that needed longer discussion, extra meetings were planned. In the teams of small projects, it is observed that people prefer to follow the DSM guidelines where more focus is on

the status of yesterday, planning for today, and highlighting the blockers. They also spend a little more time-sharing important information and try to prioritize work items. In addition, the small project seemed to be more in a stable phase already whereas teams of the big project had many issues to report and talk about every day.

4.3.1.1 Purpose of Daily standups

Standard Daily Standup meetings:
- The meeting duration was 15 minutes, so they were quick and fast.
- They were conducted every day.
- They were good for management in tracking the status of overall work but didn't help in the actual progress of work.
- For every issue, it was said to schedule separate calls which resulted in too many meetings. If any issue needed discussion with some particular people, it was difficult to secure time for work and issue handling was delayed.
- People just focused on what they had to say and were not very alert and interested in listening to others.

Customized Standups meetings
- The meeting duration is 30 minutes for most and 60 minutes. Meetings were fast but not quick.
- Lots of additional information was shared which helped people to plan their work better. Also, they talked about dependencies with each work on ongoing issues to plan work better.
- Not every blocker got a solution in the meeting, but a few issues where just quick discussions could help people to proceed with work and not plan so many additional meetings.
- Team members were more Interactive and alert.
- Most of the teams had meetings scheduled for 30 minutes and preferred to have it the same way.

Table 8 : Details of observation on the Purpose of DSM

Standard DSMs	Customized DSMs
- Quick fast - Everyday - Good status monitoring - Many meetings emerged - Less interactive meeting - Preferred by smaller teams and projects - Followed by stable teams with fewer issues	- Longer, mostly 30 minutes - Additional information shared - Discussed Dependencies - Blocker addressed faster - Interactive meetings - Preferred by Larger teams and projects - Followed by teams having many issues.

Based on the observations and feedback received, it was analyzed that people prefer to have a frequency of the DSM based on their needs in a customized way and needs can be daily as well. The above results were concluded from the meetings based on the manner they were being conducted and they can help practitioners for reference to decide how they want to have these meetings.

4.3.2 Planning

4.3.2.1 Meeting Frequency

In the DSM of teams of larger projects, it is observed that most of the teams had DSM every day where sync-up is needed in the team more often. But in teams like project management, this meeting was conducted once a week. In teams like End-to-End architecture and End-to-End testing, DSM is conducted twice a week since they do not have updates discussed on each day. In the smaller project, the teams had DSM daily to follow up. It was more like reporting status and at times sharing important information. But many times, people repeated the status since the work they were doing took more time to get completed.

Table 9 : Details of observations about the frequency of DSM

Daily	Not Daily
15-30 minutes duration - When Sync-up is needed often - Status repetition - More on status and blocker highlight. - Effective when more things	30-60 minutes duration - Teams like Project management, Architects, etc. - Deeper discussions - Lots of important information shared

In the feedback received as well, most people had meetings daily but many like project managers didn't have it every day. So, below is the conclusion of the meetings that were conducted daily and weekly or twice.

4.3.2.2   Time to conduct

In the observations on the teams of a larger project, it is observed that 6 teams had their meeting between 8:30 at 10:30 CET. One team, i.e., scrum of scrum had a meeting at 10:30. In this meeting a few important aspects from daily stands which were conducted in the morning, were highlighted at the program level. 3 teams had meetings during the later hours of the day. In the smaller project, all the teams had DSM meetings between 8:30 at 10:30 CET. While attending these meetings, we observed that if the meeting started at 8:30, this helped teams to start their workday at 8:30 or before 8:30, otherwise people started their day at ease. This also means that there is more time for people to work on the issues highlighted. Also, we observed that since people in these teams were joining from different countries (Sweden, Finland, India, Norway) having these meetings at 8:30 gave them more time to work together and it was easier to book meetings.

In the meeting conducted post lunch, people were better prepared for the meetings, they had a lot to talk about but few of them would be closing for the day soon being in different time zones. So, even when someone was working for a few more hours and needed to coordinate with a teammate from another country if it was not possible. They must wait till the next day.

Though for all the teams in both projects it was mandatory to attend this daily standup, still participation was better at 8:30 than 10:00 CET. People had to miss this meeting to take care of some critical issues or another urgent meeting.

Table 10 : Details of observation about the Time to conduct DSM

8:30-9:30 AM	After 10 AM
● Start day early ● Better participation ● More overlapping time to work when working in a different time zone ● More time to fix the issue	● Less Participation ● Other things prioritized ● Better prepared ● Less overlapping time to work when working in a different time zone

In the feedback and observations done, we found most people have DSM as early as possible. Analysis in the above table helps us to conclude that they are more efficient and productive when conducted as soon as people start their day.

4.3.2.3   Meeting Duration

In the larger projects, it was observed that most of the teams had DSM daily for 30 minutes. These were effective meetings where people not just talked about status but also highlight and discuss issues in little detail. In Addition, important information was also shared. Though they had meetings for 30 minutes, still there were a few times when these meetings were overrun by a few minutes. One of the main reasons was that too many important issues had to be addressed or the project was in urgent need to handle a few issues at the earliest.

In this smaller project, all the meetings were completed in the given duration, but they always had reserved another 30 minutes to further discuss the issues. Even though they had 30 minutes reserved later, many people could not stay back since they had another meeting to join, and the issue discussion was postponed being discussed in separate meetings which one had to arrange. So, this would often contribute to too many meetings. In the Daily standups which were for 15 minutes, both in large and small projects, their main focus was just status updates and highlighting impediments, so these meetings didn't seem very effective.

Table 11 : Details of observation about meeting duration of DSM

15 Minutes	30-60 Minutes
• Quick fast • Everyday • Good status monitoring • Many meetings emerged • Less interactive meeting • Less effective	• Longer, mostly 30 minutes • Additional information shared • Blocker addressed faster • Interactive meetings • More Effective

When analyzing feedback and observations together, we found that most of the teams with development and testers had their meetings daily for 30 minutes and people preferred these over 15 minutes calls. They were more productive which resulted in better planning and delivery work. Only PMO had meetings of 60 minutes once a week which seems justified since they need to talk in detail over status and don't need to micromanage every day.

4.3.3 Participation

4.3.3.1 Team size

It is observed from the meetings attended for the large project teams that most of the teams had the same size around 8 people and all those teams had conducted meetings for 30 minutes daily. Teams sized from 5 to 6 conducted 15-minute meetings which were short and followed the exact guidelines of DSM. From the observation, we realized those team meetings that were of 30 minutes were more effective than the ones which were 15 minutes.

The team in the smaller project also had a team size between 6 and 9 and they conducted meetings for 15 minutes. In these meetings, team members discussed the status, and ongoing work, and highlighted the issues. Issues were discussed after the meeting got over but only with the relevant participants. These meetings were conducted in time when each person was given just 2 minutes to speak. If anyone started to talk more, these meetings would overrun and a few times not everyone got a chance to speak. In addition, Team size didn't make a difference when not everyone was asked to talk but only people who had any issues to report.

Table 12 : Details of observation on Team size in DSM

Between 5-8	More than 8
15 minutes duration ok - Everyone gets to speak more interactive meeting	- Need 30 minutes or more - Only required people talk - Many active listeners - Informative meetings

While analyzing feedback and observation together, we found that most of the team had team size between 7-9 and still 30 minutes calls. People feel happy to talk and do not be encouraged if they just must listen and not speak. Meetings like cross-tracks had 30 people and not everyone spoke but that too seems working well. So, it would not be wrong to say that team size should not be bigger than 9 people if we expect everyone to talk.

4.3.3.2 Participation

In the meetings of small projects and the big project everyone needed to attend the meeting, it was also observed that everyone was present except the people who had taken off or if they had something urgent to take care of. We observed that since it was mandatory to attend for all, it was easy to get hold of people there when it was not possible otherwise. Important information was shared easily with all, and people could ask questions immediately if they had any. At certain times when few people were not there, we observed that often people had few questions for them to answer and needed some information from them. So, these meetings helped to share and receive information. If it is an optional meeting, we felt many would not want to attend and would prioritize other things over this meeting. Also, in case anyone is missing the timeliness or there are deviations from the plan, required steps can be

Table : Details of observation on Participation of DSM

Mandatory	Optional
- Better information flow - All held responsibly - Team goal - Better tracking of work	- Very less participation. - Least prioritized meeting - Deviations missed

Analyzing feedback and observation, we found that most people said that DSM was mandatory, and in observations as well as found most DSM was mandatory for all to attend, people were absent in some cases, but they reported and informed the scrum master about that. And when someone was absent, it was observed that absentees were often needed so we concluded that participants should be mandatory for all.

4.3.4 Aspects

4.3.4.1 Positive Aspects

There were also many positive aspects observed from the DSM's teams of large and small projects. All the teams had members located at different locations in different countries. Since the project is being managed for the Scandinavian client, the headquarters in Sweden, all the meetings were planned according to CET timelines. This DSM was effective in communication and people were friendly and cooperative. Many important things were discussed in these meetings and important information was shared with all members. Since many teams also followed the issues directly from the issue board, it was easier for all to follow and track the progress.

People had very good cooperation with each other. There was effective communication, and they were short and more focused on status and obstacle highlights.

4.3.4.2 Negative Aspects

While attending the DSM meetings, we observed that there were many extra meetings to discuss the blockers further. This contributed to many meetings for people to attend. Also, we noticed that then there were many issues, and everyone did not get an opportunity to speak and cover their part. Teams working on the task board had to skip a few issues to focus on the important ones to complete the meeting in time.

Similar observations were made in the smaller project; do they complete the meetings in 15 minutes by just highlighting the issues but for every issue, there was a separate meeting called to discuss in detail, which contributed to additional many meetings. Issues were highlighted but to proceed further they had to call additional meetings otherwise there was no progress.

Table 14 : Details of observation on different aspects of DSM

Positive Aspects	Negative Aspects
• Multi-location and multi-culture • team activity • Built trust and faith • Good Coordination • Health discussions • Fast issue handling	• Too many additional meetings • Heated arguments • At times no chance to speak • Repetitive status

The above aspects have been concluded from the observation.

4.3.5   Opinion

4.3.5.1   Contribute to Success

Similar observations were made while attending the meetings of teams of smaller and bigger projects. People were very interactive, and friendly, and helped each other to make better progress. People were more open to the change and tried their best to deliver work within the agreed duration. Management was getting updates on the progress at regular intervals that they used for reporting at a higher level. Deviations from -the timelines were visible.

Table 15 : Details of observation impact of DSM on success

- Work towards a common goal
- Good status monitoring
- Many meetings emerged
- Quick help on blockers
- Deviation tracker

After observing the meeting and studying this feedback, we believe that since the project was small it had fewer issues, few members, and more stability. So, these daily standups were run quickly and fast. They were completed fast just with the status. Whereas the bigger project had many issues, and many interdependencies and the project seemed to be in a critical phase of work so these meetings were planned for longer duration and had run overtime many times.

5   ANALYSIS

Data collected as feedback, observations, and interviews from different teams, and agile practitioners depicts that all the roles need DSM. Most of the teams needed DSM daily except PMO and Architects where it is not needed each day but once or twice a week. It is important to have a DSM to align with the team and meet the requirements to achieve the goals. The following are the findings of the data analysis:

5.1   Importance of Sharing status and seeking support

In a study, many of the interviewees stated that they appreciated sharing information in the DSM because if it was not shared, the impediments faced could be unexpected and could mean a lack of planning or the user story was not fully understood [12]. When problems are discussed in a meeting all related team members try to support each other in finding the solutions [12]. So, the purpose of the standup meeting is to share the current updates and if there are any blockers and issues to seek help from the team members. DSM is helpful for all the participants until team members do not go into too much detail. Developers found it helpful by saying "*Team knows what I'm doing at the moment and what I'll do next*" while testers describe it as "*it gives me an idea what I want to accomplish today on an abstract level, it's helpful to hear progress about the development, what issues come up and how will we approach them. It is also good to stay in sync about progress when we are working towards a release for example*". Moreover, while working in a cross-functional team, there could be dependencies among team members, DSM is the ideal time to discuss these dependencies and ask for help if someone is stuck. This contradicts Schwaber's recommendations that there should not be any informal communication or discussion that distracts the DSM [11]. Although he is one of the founders of the agile manifesto [13], the principles of agile methods are based on adapting to fast changes that help the team get more organized.

5.2   Extended DSM

According to a grounded theory study, no matter the team size, the ideal time for the DSM is 15 minutes which covers three principal questions, and the meeting should be held early in the morning every day [12]. Meeting extended from 15-minutes was mentioned as the largest obstacle of DSM while the participants of the DSM stated that 15-minutes are never enough for them, usually it takes more time specifically for the teams that are more in number [5]. In this thesis, we have found that the team-sized 7-12 members told us that they often need more than 15 minutes to complete the standup. When there are more people on the team the discussions take more time than scheduled. They also think that it's even not needed to be scheduled daily, people do not have anything new to share or update hence repetition occurs. Another study also stated that people keep focusing on what they did yesterday and what they will do today, meanwhile forgetting about the problems and problem solving that is also equally valued as the other two questions [7].

90% of participants of a smaller team stated that DSM is conducted at the same time in the morning every day and ends within the dedicated time frame i.e., 15-minutes while 10% said their DSM is not at the same time and takes longer than scheduled. While, for team sizing 5-7, 85% of respondents reported that 15 minutes are enough for DSM and if there is anything that has to be discussed, relevant team members stay longer after the meeting while 15% disagreed and gave feedback that 15 minutes are not enough. They also mentioned that sometimes the meeting got extended but that is also because of the participants who share things in detail that does not need to be shared. One of the respondent teams also shared *they scheduled it for 30 minutes, 15 minutes specifically for standup, and 15 minutes for socializing*. They talk about current topics or anything anyone wants to share or talk about. They also mentioned that is the best time to socialize and it's good to talk at least once a day while most of the team members are working remotely. This thesis gives a clear understanding and highlights that would help agile practitioners to understand why they should consider the needs of their project and then schedule DSM based on their needs. In another study, held recently on digital DSMs, several respondents reported that digital DSMs take more time than usual because there are few opportunities to socialize and discuss non-work-related topics [9]. This thesis will help practitioners to understand that it is important to conduct these meetings at same time and also gives insight on how having these meetings at same time helps with consistency and stability in the team.

In a large team, 80% of respondents have DSM daily and 20% have it bi-weekly or thrice a week but all have it on the same schedule for DSM. This gives us an understanding to agile practitioners why DSM is not relevant each day for some teams. It is the need of the work that decides the frequency of these meetings.

In a large team from feedback and observation, we found that most of the teams had meetings for 30 minutes and still 50% time they reported that they could not complete their DSM within time. It got extended by a few minutes, so it is very evident that the recommended 15 minutes is not the right duration of the meeting. Teams with more than 9 people are not happy with the ideal time of DSM i-e 15-minutes, just 20% think that 15-minutes are enough for them while 80% said 15-minutes are never enough for them to share, update and talk about the blockers.

5.3 Being present in DSM

DMS is mandatory if Scrum is being followed by any team but not mandatory when Kanban is followed [12]. However, it is a common practice for all agile practitioners recorded in this research. Development team members responded as they must attend and participate in the DSM but if there is something that is blocking them from attending, they can skip it but it's best to attend as it helps them to deal with some issues and get suggestions from other team members. While, for management, it is

optional to attend, either they are there to listen or to share information about any ongoing project updates.

All respondents of the big team said that it is mandatory for them while 85% of respondents of the small team said it is mandatory for them to attend and 15% said it is optional however all 15% belong to management. Our studies further support existing studies on how important it must be present in the DSM. One may not be able to help others but the information being shared by others may be useful. So, listening and speaking are equally important in the DSM.

5.4   Meetings emerging from DSM

Keeping the ideal time i.e., 15-minutes, scrum masters try to finish the meeting within the time frame. A developer explained, "*Our updates got a little in detail because sometimes we start describing the technical stuff and start discussions of our roadblocks instead of waiting for the daily update to finish first. Before we start the daily update, the Scrum Master sets the clock timer to 15 min. If we have not finished when the timer goes off, the team can walk away to continue their work without the need to wait for the rest to finish updating*" [12]. Though there could be important discussions that can be helpful, if not for all, at least for many of the team members so if they want to discuss, they should be able to do it after the standup with relevant people.

We got the response from most of the study's respondents that meetings are emerging from the standup, however, very few deny it. 60% of respondents of the small team said yes, we create additional meetings when the topic is too big for standup to discuss while 40% said no. In a big team, 50% of the participants said yes, they had extended meetings and 50% denied it. It is mostly developers who said yes, they had something bigger to discuss so they need to have an extended meeting after standup. According to the management, 25% said no they do not have any extended or emerging meetings for them but 75% agreed and said yes for sure but they are mostly scheduled after stand-up or can be discussed after stand-up when all other participants leave the meeting. They all agreed on a point that it's worth discussing anything that any member wants to discuss, and we can continue after the standup.

5.5   Improvements

The use of time is the most important part to make DSM effective and efficient [5]. People should stick to the agenda and technically describing things should be avoided if not needed. This can help fix the complaint of participants that DSM often occupies too much time relative to the gain from the meeting [12].

The study's respondents also suggested that the DSM can be improved by time-boxing it and not bringing additional topics for discussion. People sometimes over-share, when they don't have to,

sticking to the agenda of the meeting can help improve DSM. Although, we can try more to keep it short, at the same time the team doesn't mind when it runs over since some days it's the only face-to-face interaction they have with the whole team.

5.6   Issues encountered

We also analyzed the issues of DSM that team members face during meetings, and that was all about the content being discussed by the participants of the meeting whether they are too detailed or irrelevant. Participants do go into too much detail that they might want to mention they did a lot of work, rather describing things on a technical level helps nobody [12].

5.6.1   Scope of DSM

For both teams, 40% of respondents said no they do not go out of scope while 60% said yes it happens sometimes. While describing the situation they said, "*DSM goes out of scope when people start to discuss issues in a more detailed and technical way that is not the agenda of the meeting*". While some of the team members also agreed, sometimes something important happens that needs to be discussed in a standup meeting and this helps set the priorities for the day, but it happens very seldom. 100% of the management team said sometimes they go out of scope but it's individual how much they share that is relevant for others to know. It is stated as an obstacle in a study [5] that many of the interviewees complained about the lengthy meetings. They think the DSM went too long because of sharing irrelevant stuff, they express it as *"What doesn't work with the meeting is that it often drifts into a technical discussion, and, consequently, it takes too long"* [5].

Our studies have also focused on the role of the scrum master in conducting these DSM. Scrum masters being a facilitator should help team the meeting is not going off track and should be able to stop them immediately in case people are not on the meeting agenda. This would also help agile practitioners to understand how important it is to educate people about the DSM, and they should clearly understand the purpose of these meetings. If people are not clear, DSM can be very inefficient and would just waste everyone's time without being of much help. Scrum master plays a very vital role, helping and educating people to conduct meetings.

5.6.2   Irrelevant people participate in DSM:

Another issue raised by the mobile team was "Stand-ups should be with the people that work in a team when daily external people join as guests, every time the efficiency of the stand-up drops drastically."

5.7   Positive factors

A most prominent positive factor was that the team members get an overview of what others are working on and they get the opportunity to discuss if they have any hurdles [12]. Participants find it positively influenced by frequent face-to-face interactions while working hybrid [9]. Since face-to-face

interaction helps form a personal bond and makes communication at work more effective [10]. All developers are happy with the format of the meeting and say, "*We get to know what each member is working on, updates, and priorities and it's nice to see teammates at least once a day*". They think it's helpful for them to get a chance to discuss the problems or updates with other team members, especially developers, and get different ideas and solutions. Testers share their positive things as "*It is productive, helpful, things get more transparent, they get more updates, and priority gets defined*". Another tester said, "*I got a clear picture of where I stand and what needs to be done next*". Additionally, they described that they get a clear picture of the work, visibility of tasks, accountability of actions, and clear responsibilities. Management also found it helpful by saying "*it is helpful to get feedback and resolve the issues to attain organizational goals*". Also, we have analyzed and concluded how we can avoid too many meetings and delays if small aspects of the issues are discussed within the team at the same time in the DSM instead of just saying about the obstacle and then booking another meeting for a simple thing. When everyone is already present, quick decisions and help on issues help people to deliver faster.

5.8   Assessment

While collecting the data, it was observed that people like to work and help each other in the team. No one likes to be blocked or keep the information to themselves rather they discuss things and want them to be resolved. Agile practitioners, especially the scrum master should analyze the situation and calculate the outcome of daily standup meetings and adapt to the change needed since according to the principles that agile methods are based on are adapting to fast changes and making choices according to the needs of teams e.g., frequency and duration of the standup meetings can be changed when needed.

Agile manifesto was created 20 years ago and since then the IT industry has changed a lot, mainly after the covid pandemic, conducting daily standup was a challenge but now everyone is getting used to it and it's a usual norm now. We compared small and large teams and concluded that people working in small teams can follow the guidelines of the standup meetings to make it more effective but people working in large teams might need more time to conduct the standup meeting to let everyone take their turn to speak. But it is also possible that smaller teams need to change the duration and frequency of the standup meeting according to their needs to make it more efficient and effective. Standup meetings should be conducted by focusing on fulfilling the purpose rather than keeping it as a formality and following the guidelines.

6 Conclusion and Future Work

6.1 Conclusion

RQ1: Why following standard guidelines are not important and how should one plan and conduct the Daily stand meetings when considering the below points

- Importance
- Purpose
- Participants
- Team size
- Meeting duration
- Time of meeting
- Meeting Frequency

Daily stand-up meetings play a very significant role in the software development process and progress. This meeting brings everyone together at the same time and gives us a platform to discuss important things. It gets easier for the project manager to track the status of the project. All the important information can be shared in this room. People can talk about hindrances and blockers and can seek help from others. So, the purpose of stand-up meetings is much more than just getting the status and highlighting the impediments. In the agile environment when things are changing continuously, these meetings give people an opportunity to be flexible and help them to adapt to the changes quickly. Most of the people also highlighted that when people work from multiple locations and are connected by the digital world it is an opportunity to meet each other. It creates a friendly and cooperative environment within the team.

The purpose of the daily stand-up meetings should not be just to quickly discuss the status and highlight impediments, but it should be to share important information and discuss the important issues in little detail if possible. More than just knowing what someone has done yesterday, more focus should be on handling the issues so that there is better progress in the work. From the interviews with experts and from the observations while attending the meetings we have concluded that meetings are more useful and productive when real issues are discussed and handled. Since everybody is present in the meeting it is much easier to get the required input so that person can resume his work.

It is not important to follow the guidelines of the daily stand-up meetings. But based on the results of the interviews, observations from the meetings, and the feedback received it is not very important to follow the exact guidelines. The most important factor is to conduct these meetings in a way that suits

the project. Since every project is different, so we cannot follow same guidelines for all. We need to understand the needs of the project and plan daily standups accordingly.

From the research done we have found that while planning the daily stand-up meetings, it is very important to consider the aspects of the project. Every project is different so what would be the needs? Team size and duration are the two important aspects to be considered when scheduling daily stand-up meetings. It is concluded that meetings are much more efficient when there are fewer people. If in the team, there are 5-6 members only then it is possible to have a meeting for 15 minutes. Otherwise with many people and too many issues to highlight, meetings are ineffective. Not everyone gets a chance to highlight their issues and report their status.

Talking about the duration of the meeting in the smaller projects and when there are not too many issues to highlight, 15 minutes meetings are enough but it's not always true. While in bigger projects, where there are multiple teams and issues, it is impossible to conclude the meeting in 15 minutes. So, in such cases, meetings need to be for a longer duration, at least 30 minutes. The duration of the meeting also depends on the stage of the project. If the project is stable and there are not many issues, we do not need longer meetings. So based on the need of the project the duration of the meeting can be longer or shorter, but the 15-minute rule does not apply to every case.

We also concluded that most people believe that it is good to have these meetings at the same time every day rather than having them at different times. It is important to be consistent since consistency leads to stability. Also, the frequency of the meeting should not be pre-defined by any rules. The frequency of these regular standard meetings should be based on the need and the requirement of the project. It is good to have regular meetings at a regular frequency. In projects where there is progress each day and people need to connect often should be planned every day but for the Architects, and project managers DSMs are not required every day. These can be planned once a week or twice a week. The deciding factor for these meetings should be work on the project and the needs of the people. Having regular meetings help people to stay connected and be social and build relations. In the beginning, there can be meetings every day when things are not stable and as we move along, the frequency can be reduced based on the need.

RQ2: How do these daily standups help in the success of the project considering positive and negative impacts?

From the research done, we have many positive aspects of this meeting. Below is the list:
- Important information is shared in these meetings
- Everyone gets to know about the overall progress of the project and there is transparency

- There is quick help to get the hindrances cleared and things progress at a faster pace.

- Since all the teammates must attend these meetings, it is easy to get hold of people if required.

- In agile when requirements are changing often and we have these meetings regularly, it is easier to talk about new changes and adapt, people are more open to the changes, and it improves coordination.

- Working in a remote atmosphere and from different locations it is good to connect with people in these meetings and act as a team. Everyone in the team feels encouraged and confident to work towards a common goal.

Along with the positive aspects we also found below negative aspects which people conclude that they should be taken care of otherwise daily status meetings are losing their purpose and are not conducted efficiently.

- It is difficult to control people from getting too detailed about the issues which do not need attention and cannot be fixed quickly. Such issues should not be discussed in the meetings and there should be separate meetings planned for those.

- Many times, people deviate from the agenda, in such cases, the scrum master must be able to control the meeting. Otherwise, the meetings get easily hijacked and result in ineffective meetings.

- Daily standup meetings are often extended from the agreed time frame so the meeting duration must be planned as per the needs of the project. It doesn't have to be 15 minutes always if the project demands more it should be planned for a longer duration.

- The frequency of the meeting does not have to be every day. For example, a developer might need a few days to develop the required functionality, and an architect needs more time to work on one single design so in such cases there is no need for planning the daily stand-up every day. Again, the frequency of the meeting should be based on the need.

- It is important to maintain a healthy decorum in the meeting. There can be certain times when there are heated arguments, and it can result in an unhealthy team atmosphere.

There is no doubt that daily stand-up meetings play an essential role in the success of a project. Our observations and this thesis do conclude that regular meetings are required. But they do not have to follow certain guidelines but the needs of the project. People should be open to conducting the meetings as required considering that they should be quick and informative. Scrum Master should have good control over the meeting otherwise these meetings can be ineffective as well. It is important to educate people if you understand the purpose of these meetings. We should not hesitate to make changes in the ways of conducting these meetings considering the state of the project.

6.2 Future Work

This study emphasizes mainly how practitioners should conduct daily standup meetings while practicing agile ways of working in IT industry only. How daily standup meetings should conducted following guidelines for other industries like automotive, manufacturing should be studied in future

work. The focus of this study was to conduct a case study to find the best ways to conduct a daily stand-up meeting. Relevant aspects related to the planning of the daily stand-up meeting are discussed here. There are a few aspects like how to conduct these meetings considering the facilitation of DSM should be studied deeper, for example, how can Scrum Master make sure that these meetings do not get hijacked by others and are conducted as per the requirement of the project and needs?

There are several available discussions on how to make the daily stand-up meetings effective, but they should be studied deeper considering the new remote ways of working. Since the COVID pandemic, working remotely or hybrid is a common practice now. When working from the office, coordination and communication was never an issue. People used to meet and have good coordination and understanding. But now when most people are working remotely, we should study it further to understand new challenges and ways to mitigate them.

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APPENDIX A – QUESTIONNAIRE FOR INTERVIEW

These interviews were conducted to have a generic opinion for the person about the daily status meeting from his work experience.

Name:
Designation:
Experience:

1.   In your opinion, what is the purpose of these meetings? How would you define a daily standup meeting?
2.   As per defined guidelines, Daily stand up meetings are:
●   What was done yesterday
●   What will be done today
●   What are the impediments that the team is facing
3.   Do you think these daily stand ups are conducted by teams or in projects as per the above guidelines.
4.   Is the time (15 minutes) recommended for daily standup meetings in Scrum enough to discuss what was done yesterday, what will be done today and what are the impediments that the team is facing?
5.   Do you see challenges regarding this time frame for daily stand-up? How often do you see these meetings being run overtime?
6.   Do you have a daily standup call at the same time everyday ? In your opinion, what is the best time of the day to have these meetings?
7.   Is it mandatory for all to attend this, or participants can join when they need any information or give updates?
8.   Do you think every day is the right frequency for these daily standup meetings for all the teams working on different roles like developers, testers, architectures? Do you think it should be reduced?
9.   As recommended, If done right, a standup can be easily done within 15 minutes, assuming you're following the 7 +/- 2 team size guidelines. In your opinion how does team size impact these daily Standup meetings?
10.   Have you received any kind of feedback on the daily standup, positive or negative.
11.   What are the positive and negative aspects that you would like to highlight about Daily standup meetings?
12.   In your opinion and experience, do you think these meetings help in better progress of work? If there are no daily standups, do you think we can achieve the same efficiency in planning and delivering work?

Appendix B – Questionnaire For Survey

Survey questions were simple questions to be answered in Yes or No.

1.   Frequency if daily?
2.   If at the same time?
3.   Finished in an agreed time frame?
4.   Is 15 minutes Sufficient?
5.   Is it mandatory?
6.   Was it Daily stand-up helpful?
7.   Discussion is not part of the agenda?
8.   If extra meetings emerged?
9.   If any Context switching?
10.   If Standup went out of Scope?