



How Software Startup Teams Reflect: Approaches, Triggers and Challenges

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Abstract. Learning from experience is essential for software startup teams. To obtain experiential learning, reflection should be conducted on experience. The existing research on reflection in software startups is much limited. In this study, we focused on reflection in software startup teams and identified formats, triggers and challenges used in such a context. To achieve this, we defined a conceptual framework of reflection. We conducted a multiple case study and analyzed the data obtained from two software startups. The initial finding shows that software startups do perform reflection of different types based on the factors like team size and collocation. We also found two new formats, three triggers and three challenges of reflection in software startups. Reflection sessions conducted by startups could mean tough moments, confrontations and sometimes involve the ego of team members. To conduct the session, it is important to be open, honest, raise key affair and straight to the point.

Keywords: Software startups · Reflection · Experience · Learning · Experiential learning

1 Introduction

Software startups are new ventures that build an innovative software-intensive product and aim at exponential growth. They operate under the conditions of extreme uncertainty [1] and are confronted by various challenges related to business, product, finance and team building [2]. To survive in such demanding environments, the capability of a software startup team to collectively reflect on their entrepreneurial journey and draw validated learning can be a decisive factor for the startup to succeed or fail.

Reflection inside software startups is important as it leads to various positive outcomes. First and foremost, it enhances learning from experience in startup teams. It also creates better understanding and coordination in a team. Finally, it influences directly on the behaviour of a startup team, since performing reflection on experience assists a startup team to refine their skills concerning finance and marketing [3]. However, not many software startup teams have the habit to reflect on their entrepreneurial experience, or they are not aware of the importance and value of performing reflection as a team.

Compared to the general entrepreneurship literature in which entrepreneurial experiential learning and reflection have received some attention, there is a paucity of studies in the literature that investigate the reflection approaches adopted by software startup teams, the challenges of performing reflection in this specific context, and what could be done to improve the capabilities of a software startup team to reflect for the purpose of obtaining validated learning from team's entrepreneurial experience. Currently, the trend of research on software engineering aims at companies which are evolving software development product and services. Nevertheless, research has increased on software startups due to their emphasis on the development of new software-intensive product and services [4].

The objective of our study is to provide a better understanding of the current reflection practices in software startups and issues faced by them. This is a necessary step before any interventions to improve the state of the practice could be meaningfully conducted. To this end, we formulated the following research question to guide our study:

RQ: How do software startup teams perform reflection?

The research question can be further divided into three sub-questions:

- *RQ1: What are the approaches used by software startup teams to perform reflection?*
- *RQ2: What triggers software startup teams to perform reflection?*
- *RQ3: What are the challenges faced by software startup teams to perform reflection?*

To answer the research questions, we have built a conceptual framework of reflection approach using relevant literature and conducted a multiple case study of two software startups. The findings include a set of formats, triggers and challenges related to reflection in software startups.

The remaining part of the paper is organised as follows. In the Sect. 2 background literature, first we describe the concept of reflection and its importance in the team. Later in the section is stated the related reflection frameworks. Section 3 outlines the conceptual framework of reflection approach for a software startup with the reflective element and its gravid sub-elements in details. Next, we state the research approach in Sect. 4. The two software startup case details and interviews conducted is indicated in this section too. Section 5 reveals the two novel formats, three triggers and three challenges of reflection in software startup teams. Finally with discussion and conclusion in Sects. 6 and 7 we conclude the study.

2 Background Literature

As far as the authors are aware of, there is no study examining the reflective practice in the context of software startups. As the theoretical basis of the study, we needed to draw upon the general literature on reflection.

2.1 The Concept of Reflection

Reflection is one of the two crucial elements when conducted with experience results in experiential learning. Figure 1 represents the experiential learning model where reflection and experience are the two elements that lead to learning. The third element presented in the model is a team who perform reflection on an experience.

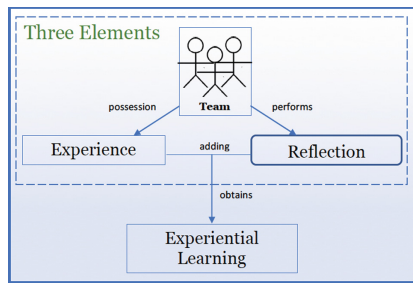


Fig. 1. Three Elements of Experiential learning model

Reflection is the mechanism to process experience to outcome experiential learning [5–10]. According to Dewy, reflection is an inactive “quietness” process [5], whereas for Kolb reflection is an active “transformation” process [6]. For instance, in a startup team, the mechanism of deliberating why or how a task is going on or already finished is a reflection, as the brain gets the time to judge willfully the event. Irrespective whether the task yields positive or negative results, the analysis on decisions, actions, emotions, and beliefs allows the experience to be transferred into learning [3]. To harness the experience to its potential, reflection is needed [5, 7]. Although not all experiences lead to learning [11], the process of reflection enhances experiential learning [3, 10, 12, 13].

When reflection is considered as a means to extract experiential learning at the team level, it is termed as collaborative reflection [14–16], by which a group of people or team reflect together, share the experience with each other and discuss in a team to collaboratively obtain insights for change in future work. In other words, reflection is taking place among several individuals, for example, in meetings when a team discuss on several problematic situations [17].

2.2 Reflection Frameworks/Models

Several reflection frameworks exist in the literature. Fowler describes a generic framework for experiential learning in the field of nursing, analysing the elements required that facilitate learning. Experience, reflection and learning are the three elements specified by Fowler [7]. The framework is of considerable interest but lacks in-depth analysis of each element. The framework explains learning as dependent outcome based on the two elements that are experience and reflection.

If any of the two elements are available in limited quality then learning will be limited. Experiential learning, as a result, is dependent on the significant synergy from both the elements [7]. Degeling and Prilla define a framework for the modes of collaborative reflection and the means of support.

The framework presents three modes of reflection: scheduled, concurrent and spontaneous reflection. To support these three elements, the framework further provides three means to support: articulation, scaffolding and guidance, and synergising [14, 15].

There are also various reflective models; some are actively used in practice. Below is a list of major ones:

- Terry Borton’s reflective model: Describes three questions which should be asked during reflection “What?”, “So What?” and “Now What?” [18, 19]
- David Allen Kolb and Ron Fry reflective model: States the four stages “Concrete Experience”, “Reflective Observation”, “Abstract Conceptualisation” and “Active Experimentation” [6]
- Graham Gibbs reflective model: Defines the six step cycle “Description”, “Feelings”, “Evaluation”, “Analysis”, “Conclusion” and “Action Plan” [20, 21]
- Roger Greenaway: Outlines the four stage sequence “Experience”, “Express”, “Examine” and “Explore” [22]
- Daudelin Marilyn Wood: Specifies the four stages “Articulation of a problem”, “Analysis of that problem”, “Formulation and Testing” and “Action” [10]

2.3 Triggers for Reflection

Some triggers which provoke reflection are:

- Calm surroundings encouraging reflection without being distracted [5, 7, 9, 23].
- Being attentive to and mindful of the present moment [9, 23].
- Interpreting old experience [9] and making the relation with new experience [23].
- Thinking from another persons perspective [23].

2.4 Challenges of Reflection

Following in the list are the three challenges involved during the reflective session.

- Unwillingness to reflect: One of the challenges to reflect on experience is an unwillingness to reflect [7, 24]. If an entrepreneur in a team is fanatic about certain assumptions on a particular point or subject, then he/she would be resistant to reflect upon an experience. Strong opinion for a particular subject makes an individual unwilling to reflect [7]. To overcome this challenge, according to Mezirow, when our belief or assumptions becomes problematic for a particular point or a subject, reflection is often triggered [25]. When the assumption about a particular task becomes blurry or not correct, causes the reflection to occur. Commonly, our mind is willing to obtain a satisfying

feeling about a certain task, to remain in the comfort zone, until the problem occurs. The encounter of a problem triggers to step out the comfort zone and reflect on task [24].

- **Vulnerable in a team:** Another challenge to reflect on the team depends upon the involved members' ethnicity. In some situations, team members belonging to different cultural norms tend to preserve the reflection viewpoints if the situation within the team is uncomfortable for them. They may not reflect because by being open to reflect in a team, they are worried to make the mistakes, which can make them being vulnerable in a team. To overcome the feelings of embarrassment in a team as the reflected and shared viewpoint are not so crucial, the individuals tend to keep with themselves. Sometimes reflection can be too personal and interrogating on experience. Therefore, team members could be reluctant to reflect [26].
- **Time:** The time constraints is another challenge which makes the team not to reflect. The team members are so occupied by various tasks that reflection cannot take place, as the energy of the group members already get void due to the involvement with the daily working tasks. Sometimes this internal energy could also become null due to personal or social problems [7].

3 The Conceptual Framework of Reflection Approach

In this section, we examine the concept of reflection in greater depth and build a conceptual framework of reflection approach that serves as the theoretical basis for the empirical investigation. Figure 2 shows the elements of reflection. Format, type and technique are the elements which help the reflective session. Further, these elements comprise sub-elements which are being taken from the literature available on reflection and then grouped under each element.

3.1 Formats of Reflection

Following in the list are the four formats of reflection [23].

- **Writing:** Written reflection is a format which helps to develop and structure our thoughts in a meaningful experience. It could be a challenging technique but could lead to a written record or diary of experience as notes. The notes jotted down could include script, drawings, maps, etc.
- **Telling:** Telling is a type of format where an individual orally describes an experience. Also, while telling an individual could deepen his or her understanding of an experience. Storytelling is a powerful technique to practice this format of reflection. Presentation and discussions are other telling formats.
- **Multimedia:** Multimedia is a format of reflection where individuals could bind together various media of expression, maybe in an artistic manner too. Films or videos, snapshots or photos, a collage of visual representations are some formats to perform reflection on experience. Also drawing a painting is another way to capture the essence of an experience.

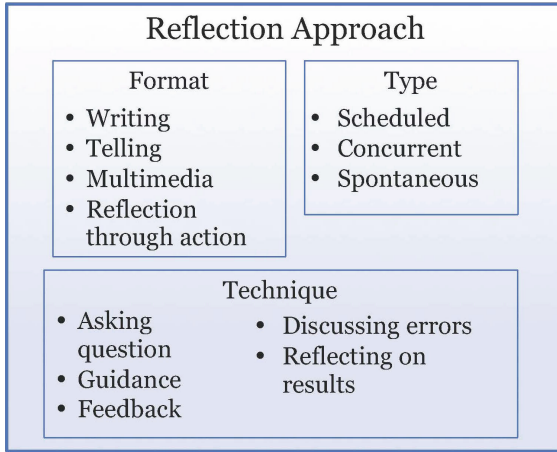


Fig. 2. The conceptual framework of reflection approach

- **Reflection through action:** An experience that can be obtained through action and then reflecting on it. Activity or exercise done is the way to encounter the experience. An individual can experience this format of reflection only by spending time in the environment or the same settings as of another individual. It is equivalent to encounter someone’s experience.

3.2 Types of Reflection

Following in the list are the three types of reflection [14].

- **Scheduled reflection:** It is a type of reflection that happens in particularly dedicated sessions. This type of reflection could occur regularly (monthly) where critical feedback triggers reflection or irregularly (randomly scheduled) where problems or difficult situation could initiate reflection. Both regular or irregular schedule reflections could be accompanied by a group of facilitators where participants could explain the problems.
- **Concurrent reflection:** This type of reflection occurs without a scheduled or dedicated session. During work shifts or workflows when individuals meet, they reflect on the situation. Here a particular subject is not examined so thoroughly. The time invested is less as compared to a scheduled reflection. Feedback triggers this reflection.
- **Spontaneous reflection:** This reflection occurs when individuals carry out spontaneous reflection for shorter intervals than concurrent reflection but several times during their work shifts. A particular subject is discussed several times after various feedback’s. The feedback’s involved are corresponding to the same or different task.

3.3 Techniques for Reflection

Some of the techniques of reflection mentioned by Daudelin are asking questions, feedback discussions, mentoring guidance [10]. Along the same line, Harms illustrates techniques such as asking questions, seeking feedback, reflecting on results, and discussing errors or unexpected outcomes of actions [27]. Both authors emphasize primarily on asking questions, which is one powerful technique to reflect that can be dated back to the time of Socrates and Plato. The power of deliberate questions in a business environment is a healthy technique to advance commitment [10]. Depending on a reflective model and its stages, there are various type of reflective questions [10, 19]. In an intense and demanding business environment, reflective questions can open up risks and make situations more expressive [10].

4 Research Approach

The objective of this study is to explore how software startup teams perform reflection. Since the study is exploratory in nature, a case study is considered by the researchers to be a suitable research approach. For our study, we employed a multiple qualitative case study approach [28]. The selected two cases are software startups. Both are founded in Italy. Case 1 which initiated five years ago with the idea of an online platform of selling and re-selling various things, did four pivots till date. Currently, the startup is the software developer kit provider. Case 2 within the first year did one pivot till date. The startup is the manufacturers for security and commercial devices. Table 1 provides the startup outline. The number of team members for Case 1 varies from three to five, as they outsource some work to other countries. For Case 2 startup, there are seven members including the CEO and a marketing manager.

Table 1. Software startups outline

Case	Startup age (in years)	No. of team members	Business domain	Interviewees
1	5	3 to 5	Software development Kit provider	CEO1 CEO2
2	1	7	Security & commercial Device producer	CEO Marketing manager

We used personal face-to-face interviews as the main data collection method. Semi-structured interviews were conducted with open-ended questions. The interview lasted from 23 min to 60 min. As the interviewees, we mainly involved the founders and co-founders because they are in the whole journeys of their startups. The questions used during the interviews are: what happened recently

in your startup, that you remember and made you learn something? How did it happen? Why did it happen? How did you come to know? What made it reflect? How do you reflect? What did you do? Did you share it with other team members? What trigger this reflection? What are the challenges you encounter?

As suggested by Yin [28], we followed the multiple-case analysis. First, each case was analysed, and later cross-comparison was made. To code, the interview data followed the guidelines of Saldaña [29]. The formats, triggers and challenges involved were identified within each case and were compared and contrasted across cases. The data analysis process was aided by Nvivo 12, a qualitative data analysis software package.

5 Findings

We found out that scheduled reflection is common for both the startups. Case 2 performs scheduled reflection every week. Whereas Case 1 struggles to schedule a dedicated time for a reflective session. But the CEO2 of Case 1 said that in future they are planning to schedule reflection sessions as they realized the importance of it. Currently, they perform scheduled reflection when a tremendous problem exists in the startup and dedicating time to discuss it.

Commonly concurrent and spontaneous reflection is conducted by Case 1 because the team size is small, and they work in the same working space. Irrespective of the type of reflection, discussion as a format is found to be regularly practised by both the startups. From interviews, we found out two new formats, three triggers and three challenges. The two new formats are “speaking loudly” and “mental archive notes”. Table 2 provides the outline of the reflection.

Table 2. Reflection outline (software startups)

Type	Format	Case
Scheduled	Telling - Discussion	Both
	Writing - Notes	Case 1
Concurrent	Telling - Discussion	Case 1
Spontaneous	Telling - Discussion	Case 1
	Other format	
	Telling - Speak Loudly	Case 1
	Mental - Archived notes	Case 2

5.1 Scheduled Reflection

Telling - Discussion. For Case 1 discussion as a format and telling as a type of reflection was performed. Both the CEO of Case 1 scheduled the reflection during the initial startup journey. Both of them examined thoroughly and discussed with

each other about their competencies and skills to know where they can together lead the startup. For example, the CEO2 of Case 1 recalled: *“We divided our services, we sat down at the table and we decided, what is actually your field of interest? Where are your skills placed? And my skill placed.”*

Whereas, Case 2 team perform scheduled reflection every week with the team. The marketing manager mentioned: *“We do every week a call in order to, how did it happen? With our team, good? Bad? What happened? Yeah, we reflect.”*. The feedback helps them trigger the scheduled reflection: *“We reflect about the feedback and also we try as the CEO said before, psychology, so we try to understand why our partner says one thing?”*. The CEO of Case 2 added: *“It is part I will say part to adapt and part to correct.”*. Then both, the marketing manager and the CEO added the importance of discussion as a format of reflection. Also, during the reflection session be direct to the point: *“I think also importantly to discuss with them, we have discussions also between us and also with our partners essential parts, straight to the point, I think it is important.”*.

Writing - Notes. Writing notes as a scheduled reflection is another method to reflect which comes in handy while a team reflects on the problems encountered. The CEO2 of Case 1 mentioned: *“Lets write down what is the problem? We wrote it down. We saw the problems actually.”*. Also, he added writing notes as reflection acted as a reset button to the issues encountered in the startup: *“This problem we will solve it too and this was really good enough, for bringing your problems to paper, you have to bring your problems into paper in order to solve them. Because otherwise you have them in your mind, but really blurry and you are not really precise and to your problems. But if you write them down you will see that actually there is a solution for everything and yeah it was kind of reset button and then we started again”*.

5.2 Concurrent Reflection

Telling - Discussion. The CEO1 of Case 1 recalled when other entrepreneurs gave feedback to him on particular activities: *“We had a chance to meet really important people and you have the possibility to meet people that you will never meet again. For example, the CEO of... And you are talking, you are sharing, they can tell you may be trying this way or this way’ because we just had this problem and we solve it in this way.”*. Also, in Case 1, the CEO1 mentioned that they had a nice network outside their team too. They often meet for conversation where the entrepreneurs discuss information and provide guidance. The CEO1 also mentioned that being connected to a channel made them reflect: *“People sharing the product and asking for feedback, people also sharing the business model. For example, business pitches and then you have to give the feedback first, then explanation was good enough. Do you understand it, what are the questions?”*. Sharing feedback helps to reflect and nourishes the startup.

5.3 Spontaneous Reflection

Telling - Discussion. In Case 1, to collaborate the proper workflow, so for example if one person in a team is responsible for product and another is dealing with market analysis and business models, it is important to perform spontaneous reflection as the CEO2 mentioned: *“But this is a decision which actually has a necessary to be taken by both of us. Because I can’t, I mean like there are decisions to, which will be the market? Which will be your entrance market? The other hand he would tell me for the market side, it would be the best thing to do this. But then I am telling. But in this case we can not do this, because of the product is not able to generate this kind of information. So probably we should switch this one.”*. So without a dedicated session for reflection, to exchange feedback’s during the working shifts is a good way to reflect.

5.4 Novel Formats of Reflection

Telling - Speak Loud. While telling is one of the ways to reflect where discussions and presentations could be a few techniques that could be used to reflect on a team. We found out that speaking loud could be another technique too. The team using the same working space could reflect on there working shift while applying this method. From Case 1 we found evidence to support this method, for example as the CEO2 said: *“Speak out loudly to your partners, what or you are thinking? Don’t be kind, just speak out loudly what you are thinking? But it is a general, live thing, in my opinion. Everybody should do it everybody. But always be straight. Do what you think it is kind of right and explain that to your partners. Why do you think it is right? Yeah to be honest or be open and straight forward and honest like to the others”*. Later in the interview the CEO 2 again emphasized: *“If you then speak out loudly to each other”*. Speaking loudly helps to narrow down the issues encounter by the startup as Case 1, CEO2 mentioned: *“You have to change something. You have to make a step, a cut and then speak out together and think about it. What could we do different? What was the cause? Because we don’t have this or. Was it because a client troubled you up? Then actually only by telling out loudly you will hear it. Be open to each other. Really the willing to speak out loudly”*.

Mental Archived Notes. From Case 2, we found that team members after reflecting stored their learning inside their mind. They use the brains as their hard drive to keep the information. The CEO of Case 2 said: *“I mean notes are stored in the mental archive”*. Also, the CEO commented that he shared the learning with other team member but not so much in detail: *“Perhaps not enough”* and as the other team was matured enough to get the information, where the marketing manager added: *“I think there is also a big difference with this team and the her team”*.

5.5 Triggers for Reflection

From the two cases, we also identified the three major triggers that provoked the two startups to reflect. The three categorized triggers are: “Work”, “Team” and “Inner voice”. For “Work” we found out six causes, “Team” three causes and one cause for “Inner Voice” that evoke reflection.

1. WORK

- **Continuously decrease in revenue for three months** - Another insight what the CEO2 described: *“First thing, which you are looking at the revenues and this would like decreasing in the last 3 months. What? Why? I mean, of course, one month, it could be. Two months could be. Then third months you are, somehow, thinking about what is going wrong? Revenue is first thing.”*.
- **Workflow getting blurry** - The CEO2 from Case 1 highlighted that when the usual workflow is getting fuzzy in the usual tasks it is time to reflect: *“When your workflow is kind of getting blurry. Not strong. Which actually makes you working not that good as before.”*.
- **Dropping down the passion/energy/level of commitment/not enjoying work** - Also the CEO2 stated that when an entrepreneur passion or energy to work in startup environment is decreasing, the team should think about performing reflection: *“I will say you can see it from the passion for the job. The passion is the main thing I would say and if you see this passion likes smaller, smaller, smaller.”*. Where he added: *“I would say in 4 years, it was one time said, also loud. Listen, we can’t work anymore like this. I mean we get back our energy. As I know notice by myself and also the other CEO was noticing it that we both lost our energy.”*. Similarly Case 2 CEO mentioned that the team has different level of commitment to work: *“The team does not, also different level of commitment to work, you are not loving anymore what you are doing.”*.
- **Change in approach to work** - In the Case 1, the CEO mentioned that the entire teams got aware, when the usual working approach changes: *“The other team members noticed it, that there was a big change in the approach. I mean if you don’t say it, people will notice it. Whats going on with you? Then also, they noticed that we were kind of having a another rhythm of work.”*.
- **Deadlines trouble at work** - The CEO1 of Case 1 mentioned: *“Even deadlines and then your getting in troubles with deadlines. In my opinion, you don’t want to do it anymore. Because if you want to do it, you will do it in time and you will do it good. If you don’t want to do it, it is kind of something troubling you off.”*. Where the Case 2 mentioned *“The team doesn’t, respect the deadline”*.
- **Stop working for extra office hours** - The CEO1 of Case1 mentioned: *“Because at the beginning you will, you have tasks. At the beginning always open a new task even if it is 5 pm in the evening. You will, initialise another task and you will sit down in the office till 7–8 clock. You finish*

the another task, after some period you notice. Myself and the other CEO also noticed yeah we have liked. The task is finished at 5 pm, quarter past 5, no. I am not getting another into a task. We do it tomorrow.”

2. TEAM

- **Not discussing small personal issues with team members** - Often individuals tend to keep small personal issues within themselves. They do not bring up or discuss with the team members they encounter the issues with and which can breakdown the workflow momentum with other team members: *“There is kind of just mini things, which then they are accumulated. Then, in the end, you are getting like really angry and you will cry.”*
- **Unpleasant exchange of messages/miscommunication in team** - Also CEO2 mentioned that team was exchanging unpleasant messages: *“I think where we got really, really two or three not so good messages. But if it is three or four messages which are not so good coming to you after continuously fighting for existence”* for the startup *“Then you should ask yourself.”* In Case 2 both the CEO and marketing manager acknowledged that miscommunication can create a sour environment in team: *“Miscommunication with the team.”*
- **Not good previous experience with team** - The Case 2 marketing manager mentioned the need to reflect in there startup was because of the work failure in the team. The team didn’t perform well, he mentioned: *“Why because our previous experience. Because of our team. Did not go good.”* and the CEO agreed to it: *“Yes”*.

3. INNER VOICE

- **Inner voice or feeling, going on wrong track** - The Case 2: *“Now that the reason is certain, an inner feeling. Every entrepreneur has this inner feeling that is the same. I will say, interior compass, which other times while confronting with bad news or I mean obstacles or problems. So, the same inner voice. It was powerful warning, that we were on the wrong track. Therefore, I mean definitely we needed to change something.”* where marketing manager added: *“Stop please. Stop please.”* and then CEO said: *“The other times. Go forward.”* to which the marketing manager agreed: *“Yes”*.

5.6 Challenges of Reflection

We found three challenges of reflection:

1. **Trust between partners and postponing reflective sessions** - Sometimes when the co-founders of the startups are friends, they trust each other blindly so, for example, CEO2 mentioned: *“Working on separated things where he doesn’t even know what I am exactly doing like right now. But he trusts me that I will do the best. The same with me I am not looking at him and asking him. I trust him blindly, I think he trusts me too.”* and they often forget to reflect due to the busy in work schedule: *“Because you will always*

find other work to do. You can say, I can speak to you tomorrow. You could, but you can also speak with me after 2 years. So for this reason you have to sit down this time. To also do this thing too. To prevent the situation”.

2. **Small team with collocated space** - When the team is small and collocated in the same working space they find it difficult to devote time for a reflective session: *“Since you are just two persons, sitting in room. It depends, on and we don’t have fixed meetings for it. Because we are in two. We just actually not that good at all. We already spoke about it, and we will do it in future. Then of course every month. Every two months. Every three months. Like we will fix meetings. So every two months will be two hours of meeting. So we are kind of planning, it is necessary.”.*
3. **Team member with old age and ego, intend to dominate** - From Case 2 we found out that when the team is comprised of the different age group the reflection is little biased and team members are not completely open and clear during the discussion session. Team members who are with elder age tend to emphasise their stories on the younger ones. The Marketing manager added, important is the experience, not the age: *“I think that because there are different egos and I think I am not having high ego. Here people you know, are the 50 years old. They say yes, I am 50 years old. So, I know that this is the story. Now the age is not important. Important is experience. You cannot impose. You have to explain why it is correct? Why it is not correct? May be the other two can accept. But if you say no, then this you need accept. After all, there are no emperor, there are no king.”.*

6 Discussion

Software startups do perform particular types of reflection depending on the team size and working space. Commonly, if the team is comprised of three members and share the same working space, concurrent and spontaneous reflection occurs. The team reflect through speaking or thinking aloud during their working shifts. Mutual decisions, quick feedback, answers and discussions trigger this type of reflection. The dedicated scheduled reflection in a startup team comprised of around three people does take place either to analyse the team members skills or when they encounter big problems related to a workflow. Although the startup team do believe and agree on the importance of scheduled reflection, due to team size, same working space and trust, it is a challenge which postpones the dedicated reflection period.

Mostly, if the team is comprised of more than three members and does not share the same working space, scheduled reflection occurs. The team reflect every week and discuss what happened, how did it happen, why did it happen, and if it went good or bad? To trigger this type of reflection, feedback and inner voice play a key role. Some entrepreneurs do reflect individually, then store experiential learning in mind as a mental archive and later discussed with the team. To reflect often, a team should encourage to keep track of the mentioned triggers that motivate the team to reflect.

We found from both the cases that it is important to be open, honest, to raise key affair and straight to the point in a reflection session. Sensitivity in a team can have problems during reflection as there are tough moments, confrontations during a reflective session and the ego should not be involved.

One cause from the “Team” trigger validates the trigger mentioned by literature that is “interpreting the old experience” [9]. Previous unsatisfactory experience with a team member leads to reflection. We found out from the literature time as a challenge of reflection [7]. The findings from the case study authenticate but time and trust together as a challenge. As the team members trust each other; and are involved in the daily work routines which postpone the reflection session. To overcome the challenge of unwillingness to reflect [7,24] according to Mezirow [25] one should monitor a task if it becomes blurry, problematic or not correct to trigger reflection. One of the CEOs mentioned the similar takeaway that is, the team should reflect if the workflow or task is getting blurry or not as good as before.

Regarding the threats to validity, we conducted just two software startup cases, one with a team size of around three and another with a team size of seven. The external validity of our findings is limited to similar case sizes and startup teams with a comparable level of entrepreneurial experiences. To increase it, we need to conduct more case studies with various levels of sizes and at different stages of maturity. Finally, the insights cannot be generalised at this point due to a few cases.

7 Conclusion

There has been less research done on the importance of reflection on experience inside software startup teams. The reflection is the mechanism which transfers the experience into experiential learning [5–10]. Various frameworks exist in the literature for performing reflection, but they lack an in-depth analysis of the reflection elements. We provided a framework with the elements inside the reflection concept. The framework describes the format, type and technique for reflection. We conducted a multiple case study and analyzed the data obtained from two software startups. We found out two new reflection formats, three triggers and three challenges of reflection. Apart from conducting more case studies with diversified profiles to consolidate the findings, we will also extend our research and investigate the other elements involved in entrepreneurial experiential learning: a better understanding of types and sources of experiences, and documentation and sharing of learning outcomes within team members.

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