

**THE UNIVERSITY OF LATVIA**  
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**STARTUP DEVELOPMENT BY USING PROJECT MANAGEMENT  
METHODOLOGIES**

**MASTER'S THESIS**

Project Management

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Author: Pavan Ramesh

Student ID Number: px23001

Academic supervisor: *Dr.tech.* Professor Andrejs Cekuls

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## ANNOTATIONS

The author is mainly focusing in this study on how startup companies is using project management in different ways and in different situations. It can be said that project management is not only for big companies or government institutions but it is also very important for small startup organisations also. In other words, this research is mainly studying the development of startup by using the different kinds of project management methodologies. The author is trying to find out how Lean, Agile and Hybrid models can be helping the startups to improve their performance and also reduce the failure which is very common in early startup life.

The aim of the thesis to develop a stage specific project management framework focusing lean practices for early stage agile methodology for mid growth stage and hybrid/SAFe governance for scaling stage and test which methodology is better for project performance outcomes.

The study is also focusing that many startups are not knowing how to use the right method at the right time. Some startups is using only one method for all stages, which is not proper. Because, as the startup is growing, its needs also changing. This shows that different stages like early, mid, and scaling need different method to manage the project better. The author is explaining that Lean is good in early time when team is small and money is low. Then, Agile is becoming more useful when team is bigger and more customer interaction is happening. In scaling time, Hybrid method is becoming suitable because it is giving both flexibility and control.

The research methodology is collecting data from startups by using survey and interview. Author is using different tools like ANOVA and factor analysis to study the result. The result is showing that the stage-specific project method is giving better output. This study is helping startup founders to know which method is matching their company situation. The project performance can improve and failure chances can become less. The author suggests that this research is bringing new understanding in this field.

*Keywords: startup development, project management, Lean methodology, Agile methodology, hybrid project framework, scaling phase, early stage, growth stage, project planning*

## ANNOTĀCIJA

Autors šajā pētījumā galvenokārt koncentrējas uz to, kā jaunuzņēmumi izmanto projektu vadību dažādos veidos un dažādās situācijās. Var teikt, ka projektu vadība nav tikai lieliem uzņēmumiem vai valsts institūcijām, bet tā ir arī ļoti svarīga mazām jaunuzņēmumu organizācijām. Citiem vārdiem sakot, šis pētījums pēta jaunuzņēmumu attīstību, izmantojot dažādas projektu vadības metodes. Autors mēģina noskaidrot, kā Lean, Agile un Hybrid modeļi var palīdzēt jaunuzņēmumiem uzlabot viņu veikspēju un arī samazināt neveiksmju risku, kas ir ļoti bieži jaunuzņēmumu sākumposmā.

Darba mērķis ir izstrādāt posmam specifisku projektu vadības sistēmu, koncentrējoties uz Lean pieejām sākuma stadijā, Agile metodoloģiju vidējās izaugsmes posmā un Hybrid/SAFe pārvaldību mērogošanas posmā, kā arī pārbaudīt, kura metodoloģija ir efektīvāka projektu rezultātos.

Pētījums arī koncentrējas uz to, ka daudzi jaunuzņēmumi nezina, kā izmantot pareizo metodi pareizajā laikā. Daži izmanto tikai vienu metodi visiem posmiem, kas nav pareizi. Jo, kad uzņēmums aug, mainās arī tā vajadzības. Tas parāda, ka dažādi posmi – sākuma, izaugsmes un mērogošanas – prasa atšķirīgu pieeju, lai projektu varētu labāk vadīt. Autors paskaidro, ka Lean ir piemērots sākumā, kad komanda ir maza un naudas ir maz. Pēc tam Agile kļūst noderīgāks, kad komanda kļūst lielāka un ir vairāk klientu sadarbības. Mērogošanas posmā piemērotāks ir Hybrid modelis, jo tas piedāvā gan elastību, gan kontroli.

Pētījuma metodoloģija ietver datu vākšanu no jaunuzņēmumiem, izmantojot aptaujas un intervijas. Autors izmanto tādas rīkus kā ANOVA un faktoru analīzi, lai analizētu rezultātus. Rezultāti parāda, ka posmam specifiskas metodes sniedz labākus rezultātus. Šis pētījums palīdz jaunuzņēmumu vadītājiem saprast, kura metode ir atbilstoša viņu situācijai. Tādā veidā projektu veikspēja var uzlaboties un neveiksmju iespējamība kļūt mazāka. Autors norāda, ka šis pētījums sniedz jaunu izpratni šajā jomā.

***Atslēgvārdi:** jaunuzņēmumu attīstība, projektu vadība, Lean metodoloģija, Agile metodoloģija, hibrīda projektu ietvars, mērogošanas posms, sākuma posms, izaugsmes posms, projekta plānošana*

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## **INTRODUCTION**

Startups are obviously becoming significant component of the business and economy in the fast-changing environment of today. They are generating fresh market possibilities

employment and creativity. Still it is true that many startups fail in their early years. This difference makes the subject of startup success highly relevant and urgent. Project management is one area where many startups struggle mostly. Not only do large corporations benefit from project management. Small businesses too are depending on appropriate project planning execution and control. The subject of implementing project management in startups is growing more and more important. The availability of several new project management approaches including Agile Lean and hybrid models nowadays. They possess more adaptability and flexibility. Startups work in changing surroundings as well thus these fresh ideas are appropriate for them. Still many startups lack knowledge on appropriate application of these techniques. Either they apply it in the incorrect stage or use incorrect technique. This reveals a discrepancy in knowledge. Therefore the issue of this thesis is highly relevant since it proposes stage-specific project strategies to close this gap.

Not many studies in scholarly research centre on how startups might apply several project approaches at several phases. Most studies either simply compare Agile with conventional methods or concentrate on large corporations. Very few research are tying project methodology to startup life. This study is hence providing fresh viewpoint. It aims to match the stages of startup development with appropriate project approach. This makes the study rather current and relevant. The issue is not only relevant for intellectual development but for pragmatic application. Knowing how to apply the appropriate project method at the appropriate moment helps managers entrepreneurs investors even incubators. This can help to raise efficiency and help to lower startup failure.

The startup scene has seen a significant explosion ten to fifteen years ago. Many new businesses begin in countries like India USA and even Europe start with small teams but great ideas. Using technology and imagination these startups aim to solve problems in fresh approaches. Though the concepts are solid many of these startups are not surviving beyond two or three years (Audretsch & Thurik, 2001). The background of this issue is that starting a business comes with a great risk and instability. Strong project management framework is therefore necessary.

Traditional businesses has evolved with experiences over the course of time. Still in startups everything is unknown. The team is small money is less and customer needs are changing quickly. Thus conventional project techniques like Waterfall are not always fit. New project approaches like Agile and Lean thus gained popularity. They give quick comments and

adaptability. Still not every startup makes appropriate use of them. Furthermore, the startup moves between several phases. First of all, it is only an idea. It then develops into a good and subsequently into a complete business. Every one of these phases demands something different. Early on in its life the startup must save money and experiment. It must scale fast and enhance team performance in the growing stage. It must provide structure and control complexity in scaling stage. Many startups meanwhile do not modify their management style depending on stage.

This study thus arises from the background of startups failing because of incorrect project approach. The concept is to investigate how various project management strategies might support several phases of startup life. This helps the research to establish a model linking project approach with startup stage. This will enable startups to better control their projects and flourish. The concept is to investigate how various project management strategies might support several phases of startup life. This helps the research to establish a model linking project approach with startup stage.

The main problem that this study is trying to solve is the mismatch between project management methods and startup growth stages. Startups are using one project method from beginning to end. It is going through different stages like early growth and scaling. Each stage is different in nature. But still most startups are not changing their project method. This is leading to poor project performance and sometimes failure.

Another problem is the lack of guidance. Many startup founders do not have formal training in project management. They are using methods based on trend or suggestion not based on actual fit. So sometimes Agile is used when Lean is needed. Or Hybrid is used too early. This wrong timing of method is reducing the effectiveness. It can be said that there is no clear model which tells which method to use at which stage. In existing research there is not much study that looks at project methods in a stage-wise way. Most literature is comparing Agile and traditional models in general. Very few studies are looking at how these methods can be used differently in startup stages. So there is both academic and practical gap.

Therefore the research problem is to find out if startups can perform better by using stage-specific project methods. The author wants to study this by collecting data from different startups and seeing the result. The problem is about understanding which method is best for which stage.

By solving this problem the research can give new understanding to startup managers and help in reducing failure rate.

**Aim of the research:** To develop a stage specific project management framework focusing lean practices for early stage agile methodology for mid growth stage and hybrid/SAFe governance for scaling stage and test which methodology is better for project performance outcomes.

**Subject of the research:** The developmental process of startups in different stages

**Object of the research:** To evaluate and develop a stage specific project management methodology and its influence on project performance outcomes.

### **Hypothesis**

Main Research Hypothesis (H1): Startups that implement a stage-specific project management framework adopting Lean principles in the early stage Agile methodologies in the mid stage and Hybrid models in the growth stage demonstrate significantly higher project performance outcomes compared to startups that use a single or non-structured project management approach.

Null Hypothesis (H0): There is no significant difference in project performance outcomes between startups that use a stage-specific project management framework and those that do not.

### **Research Methodology**

The author uses a mixed-method research design combining qualitative and quantitative methods. 190 people who work with startup were analyzed over three stages like early growth and scaling were gathered using a structured survey form. Likert-scale questions covering project management techniques and performance results abound in the survey. Selected founders were asked semi-structured questions in order to gain further insight. To test the theory the study included ANOVA standard deviation and exploratory factor analysis (EFA). This approach is selected to provide both statistical results and pragmatic insights so that startup behaviour can be investigated.

### **Limitations of the Study**

1. The study data is cross-sectional and it shows just one time picture and cannot establish long-term impact.

2. The study relies on self-reported responses from startup founders and nit could be biased or overstated.
3. The sample consists mostly of Indian tech companies and the findings might not be entirely applicable elsewhere or in another sector.
4. The study is concentrating just on three project management techniques hence other approaches are not mentioned.

# **1. THEORETICAL WORK ON STARTUP DEVELOPMENT BY USING PROJECT MANAGEMENT METHODOLOGIES**

## **1.1 Concept and Evolution of Startups**

The concept of startup is becoming very famous in today's modern economy. that in many countries especially in developing and developed regions the rise of startups is becoming one big trend more and more young people and even experienced professionals are trying to build new business from small size. This is not only about income but about innovation and solving problems. So this part of thesis is focusing to explain what the startup concept is and how it is evolved over time in business ecosystem.

Startups are small companies but not normal small business. They are having special characteristics. Most important feature of startup is that it is having a business model which is not fully fixed in the beginning. It is usually under experimentation or testing (Ries, 2011). Because of this startups are having high uncertainty. But still many startups are started because founders are believing in big growth and future potential. This shows that startup is a temporary organisation created to search for scalable repeatable and profitable model (Blank, 2013). So it is not only about starting company but discovering a working model. This is the main point that is differentiating startup from traditional business.

The origin of the term startup is coming mostly from Silicon Valley in United States. In early 1990s and 2000s many new technology-based companies started in garages and small rooms. These companies was focusing more on software IT and innovation. Therefore the world started using the word startup to describe them. At that time many companies was growing very fast especially during dot-com boom (Audretsch & Thurik, 2001). Even though many startups failed in that time the culture of risk-taking and building something new become very famous. This is how the idea of startup enter the global market.

In the earlier times startup was only meaning tech company or software company. But now the meaning is expanded. Nowadays startups can be in many fields like education healthcare food fashion finance agriculture and so on. The main thing is that they are using new ideas or disruptive innovation. This shows that the evolution of startup is moving from only IT field to multi-sector

presence. many startups now are using technology as a support tool even if their main field is something else (Isenberg, 2011). This change is showing the maturity and expansion of startup ecosystem.



Fig 1.1 Startup stages (Startup Commons, 2016.)

It is important to understand that startup is going through different phases. In beginning there is idea stage. In this stage founders are thinking about problem and solution. After that comes the prototype or MVP (minimum viable product) stage. This is where the team builds the first working version of the product or service. Then comes validation stage where market testing is done. If positive feedback is coming then startup moves to growth stage. And finally there can be exit stage where startup is either becoming full company merging or getting acquired (Blank & Dorf, 2012; Ries, 2011). This step-by-step process is showing the natural evolution path of startup.

Many researchers are explaining the startup concept through entrepreneurship lens. They say startup is a form of entrepreneurial venture that is having high risk and high return. So startup is depending on innovation market timing funding and execution quality. Therefore even if idea is good startup can fail if execution is not proper. startup is very dynamic and sensitive. This shows that managing startup is not same as managing traditional business. Special strategies and frameworks are needed.

In terms of funding startups are unique. Mostly startups are not getting big money in beginning from banks. So they depend on other options like angel investors venture capital crowdfunding incubators and accelerator programs. These funding models are changing over years. Now many startups are even getting international investment (Mason & Harrison, 2000). This shows that the startup financing system is evolving along with the concept. without proper capital access startup cannot grow or survive.

Another important factor in startup evolution is ecosystem. Startup cannot grow in isolation. It needs support from government policies market demand investor interest talent availability and infrastructure (Isenberg, 2011). In countries like India USA Germany and Israel the startup ecosystem is very strong. This is because many actors are working together to support startups. So startup evolution is not only about company growth but about how surrounding environment is changing. This system-level support is very important for startup success (OECD, 2017).

It is relevant to note that digitalisation and globalisation are helping startup growth. Because of internet and mobile technology startups are reaching more customers with less cost. global markets are now open for small companies. This was not possible before startup evolution is depending on technological progress. New tools like cloud computing social media digital payment AI and data analytics are giving startups more power and flexibility (Giones & Brem, 2017). So digital transformation is playing key role in startup journey.

The author is observing that startup evolution is not one-line story. It is multi-dimensional. It is having economic side social side cultural side and even political side. In some countries starting a company is very difficult because of legal barriers. In others government is helping more. So evolution of startup is going differently in different regions (Zeng, Shen, & Wang, 2010). But one thing is common the startup mindset is becoming more popular everywhere. People want to take control build new solution and create value. This is why startup movement is becoming global phenomenon.

The author concludes it can be said that the concept and evolution of startup is showing how modern economy is changing. From being a tech experiment to becoming a strong business model startup has travelled big journey. The journey is still continuing. More new startups are coming and more innovation is happening. So it is very important to study startup not only as

company but as force of economic change. The author believes that understanding startup meaning and its evolution will help to design better project management strategies in next chapters. Because to manage a startup one must first understand what startup really is and how it is growing over time.

## 1.2 Startup Lifecycle: Early Growth and Scaling Phases

In this section the author is discussing about the most important aspect of startup development which is lifecycle stages. So the startup lifecycle is usually happening in many phases and in this research the author is mainly looking at early stage growth stage and scaling stage. Each stage is having different kinds of challenges requirements and ways of project management. So this is very important to understand because it will help to know how the different project management methods are suitable for each phase. each stage needs different tools and process for managing the operations team product and finance.

### 1.2.1 Early Stage: Characteristics and Project Needs

In the early stage of a startup the company is still in idea stage or just started with minimum product. that there will be not many employees and there will be not much money . This stage is very sensitive and risky. So most of the startup fail in this period itself because of not having proper management. Here the most important thing is to be flexible quick and save cost. So the author is saying that Lean project management is best in this phase. Lean means no waste and only focus on value.

Table 1.1

**Main Features of Early Stage and Lean Method Compatibility** (Ries, 2011; Blank & Dorf, 2012)

<b>Feature</b>	<b>Early Stage Startups</b>	<b>Lean Project Management</b>
Budget	Very low	Minimum cost reduce waste
Product Status	Minimum viable product	Fast iterations and feedback
Team	Small team or solo founder	Less hierarchy fast action
Risk	Very high	Fail fast learn quickly

Customer Understanding	Low	Build-Measure-Learn loop
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Therefore the Lean model is more effective in this time because it is giving a way to move forward without spending too much money or time. The author is choosing Lean for early stage because Lean supports experiment fast response and continuous change.

### 1.2.2 Growth Stage: Operational Expansion and Agile Fit

The next phase is growth stage. In this phase the startup has survived the first struggles and is getting customers and maybe investment . Now the operations are increasing the team is growing and the market is responding. In this stage the startup has to make product better customer service better and work with more team coordination (Beck et al., 2001). So now the Lean is not enough because things are becoming complex. So the author is suggesting that Agile project management is more proper in this stage. Agile means team collaboration regular updates sprints and responding to change. This helps to manage the projects where things are changing continuously.

Table 1.2

Growth Stage Characteristics and Agile Alignment (Beck et al., 2001; Schwaber & Sutherland, 2020; Ries, 2011)

Growth Feature	Startup Situation	Agile Principle
Product Complexity	Increasing features	Sprint planning iterations
Customer Base	Growing fast	Customer feedback integration
Team Size	Medium or large team	Cross-functional collaboration
Communication Need	High	Daily standups and reviews
Market Uncertainty	Still moderate	Adaptive planning

It is shown that Agile is helping teams to manage the continuous changes and delivering value to customer with more clarity and speed. So Agile helps the startup to go from product-market fit to customer loyalty by doing incremental improvements.

### 1.2.3 Scaling Stage: Maturity and Hybrid Project Needs

The third phase in this study is scaling stage. In this stage the startup is not small anymore. It is becoming a company with departments managers and structure. that the number of employees become more and the market share is increasing. Now the startup is entering new markets hiring new people and maybe going international (Leach, 2014). At this point too much agility can become confusing. So the author is saying that a hybrid project management model is required here. That means combining Agile with traditional methods like Waterfall. So some parts of the project can be fixed and some can be flexible. This is helpful for scaling because it gives both control and freedom.

Table 1.3

**Scaling Stage and Hybrid Model Benefits** (PMI, 2021; Schwaber & Sutherland, 2020)

<b>Scaling Characteristics</b>	<b>Startup Condition</b>	<b>Hybrid Model Benefit</b>
Process Complexity	Very high	Structured planning + agility
Stakeholders	Many external stakeholders	Custom reporting and plans
Team Size	Large cross-functional teams	Role clarity and coordination
Risk Level	High financial and legal risk	Governance and flexibility
Project Duration	Long-term programs	Fixed deadlines with sprints

It is showing clearly that at the scale stage startups need to behave like big companies but not lose their innovation speed. Therefore the hybrid model is giving the best of both worlds. In this section the author has explained about the different stages of startup lifecycle and how each stage is needing different project strategy. It can be said that Lean is useful when startup is just starting. Agile is coming useful when the startup is growing fast. And finally hybrid model is better when the company is expanding to next level. So the findings show that stage-specific project methods are logical and matching to startup reality.

### 1.3 Challenges in Startup Project Management

In this part of the research study the author is trying to show the main problems and difficulties that are coming in the startup project management area. So managing projects in startups is not same like in big companies. It is very unstable and full of risks. the author is bringing

different challenges faced by startups when they try to apply project management strategies. It is very important to discuss this section because only if the problems are known then proper method can be used in each stage.

Startups are mostly working in very new and changing environments. This means that from day to day things will change. The market the customer the product features – all these can change suddenly. Because of this many time the goals of the project are not fixed. So the team is confused what is the final result to achieve. This creates problem in tracking and managing project outcomes. So that in such condition traditional project method is not working well because it is rigid. That is why author is choosing Lean and Agile because they are better when things are not clear. The second challenge which the author wants to talk is about resources. Most of the startups are working with very limited people and money. This is causing problem in doing all the project steps properly. There is not enough time people or money to follow long procedures. sometimes team members are doing many roles together.

Another big issue found in startup project management is poor planning. Because of excitement or pressure the startups are starting project fast without doing proper planning. So later it becomes difficult to manage schedule cost and risk. The author thinks that this lack of planning is leading to failure in middle of the project itself. that if planning is weak then execution becomes weak. Therefore it is important that even in startups planning should be taken serious. Even if it is small project still it needs structure and division. The author suggests using Lean canvas or Agile sprints to avoid such failures (Ries, 2011). Especially when startup is moving from early to growth stage the change becomes more. This affects the flow of project and even small delay creates big damage.

The author is showing that project success is depending a lot on team structure. So Agile method with clear roles like Scrum Master and Product Owner can reduce this confusion. Another issue found in startups is that they are not using proper project tools. Many times work is done in WhatsApp phone calls or emails only. There is no clear software or system.

Table 1.4

**Problems from Not Using PM Tools (PMI, 2021)**

<b>Problem</b>	<b>Explanation</b>
Poor task tracking	No visibility of who is doing what
Deadline missing	No reminder or time control
No documentation	Lessons lost no continuity
No real-time status updates	Managers are always guessing

This shows that even basic tools like Trello or Jira or even Excel can help. The author recommends that startups must follow some tool even if the project is small. The startup is facing pressure from outside. Like investors want result fast customers are demanding and market is changing. All this is putting pressure on team and project. This causes hurrying and that leads to errors. It can be said that pressure is leading to poor decision-making in projects (McCarthy, Pitt, & Parent, 2022). So the author is saying that Lean and Agile both help here because they make small deliveries and feedback cycles.

The author concludes that by showing that startup project management it is not easy because of many problems. The challenges are like lack of planning less money changing team and external pressure. All these are making it hard to apply proper project method. But if the right project method is used based on the stage many of these problems can be controlled. That is why the author believes stage-specific model is better than one fits all method.

**1.4 Overview of Project Management Methodologies**

The author is beginning this section by giving the full explanation of the traditional project management methodology which is commonly known in the name called Waterfall model. that this methodology is one of the oldest and the first to become fully structured in the field of project management. The name Waterfall is coming because of how the steps is flowing one by one in downwards direction like a waterfall is falling from one rock to the other rock. each stage will be coming after the other and the one before should be finished before next one is started.

In the traditional Waterfall method these are mostly requirement gathering then the design is prepared and after that development or implementation is going on. Then next will be testing of the work done and finally deployment is coming. After all these the maintenance is done in the

end. The important thing is the author wants to highlight that in this type of model each phase is fully dependent on the previous one. So without finishing the first phase second phase will not begin. it is a linear movement and this is making the Waterfall model very controlled and structured.

But the same feature is becoming limitation. Because of its inflexible nature if some change is coming in the later stage, then it will be very difficult and costly to go back and make the change. Therefore the Waterfall method is more suitable for projects where the requirements are very stable and fixed from the beginning itself. If the project is having more dynamic nature then Waterfall may not be the best choice (Beck et al., 2001). The author concludes that while Waterfall is strong in control and documentation but it is weak in flexibility and adaptability.

Agile methodology is one important methodology for project management. that this Agile is used in many companies because it give flexibility. Agile is a type of project method where the work is doing step by step in small parts. So each small part is called iteration or sprint. Author want to say that Agile is not only one method but it is a set of principles and frameworks. These principles are written in Agile Manifesto. This shows that Agile is not fixed plan but more of flexible way.

Agile methodology according to author reading it focus on people and interactions more than tools and documents. This is mean that communication is very much important. Team members are always discussing and changes can be done quickly. Therefore the project become successful. Agile give priority to working software over large documentations this showing the practical thinking of Agile teams.

There are twelve main principles in Agile Manifesto. These are like rules for Agile teams. It can be small delivery but it must be regular. Another one is welcoming changes even late in development. This meaning that the customer request is always considered. This kind of mindset help in reducing risk and increasing customer satisfaction.

Agile say that team must have self-organising behavior. This means they should be able to make decision not always asking manager. In addition face-to-face communication is seen more effective in Agile. So meetings like daily standups are used. This helps team to stay updated then the collaboration improves. Agile believes that technical excellence and good design important.

This shows that quality is never ignored. It is not only about speed it is about doing work in best way possible.

Another thing is customer collaboration. Agile is saying that customers should be part of project journey. The team is reviewing their work regularly to improve. This repetitive improvement is called retrospective. Therefore project keeps getting better. that Agile is like circle where work feedback and improvement going again and again.

In conclusion Agile methodology is not only method but complete mindset. It focus on customer satisfaction regular delivery communication and flexibility. Agile is growing because it is simple adaptable and giving good results.

### **Lean Thinking**

The author is trying to explain about lean thinking and the origin of lean from the field of manufacturing. that lean thinking is one of the very important concept in project management and operations area. lean is not just one method but a total approach or mindset that is focusing on removing all types of waste in a process. Waste means anything that is not adding value to the product or service. This shows that lean is always aiming to improve the value by reducing the unwanted activities and this thinking started first in the manufacturing area.

The history of lean thinking can be traced back to the time after World War II in Japan. This was the period when the Toyota company was facing many difficulties like resource shortage less money and market pressures. So the company people like Taiichi Ohno and Eiji Toyoda started developing a special way of working. This way of working later became known as the Toyota Production System (TPS) which is called the mother of lean thinking (Liker 2004). Therefore it can be understood that lean has deep roots in the Toyota factory systems and the Japanese way of improvement.



Fig 1.2 Lean Thinking development (Liker, 2004)

This Toyota system was not only about tools or machines. It was about the thinking style. The author wants to say that the thinking of continuous improvement which is called "Kaizen" is a main foundation in lean. This shows that lean is more about people mindset and culture than only equipment and software. Lean thinking is a human approach that is targeting perfection through small improvements again and again. Later this Toyota model was studied and described in the western countries by researchers (Womack & Jones, 1996). *Lean Thinking* gives five basic principles of lean: value value stream flow pull and perfection.

In manufacturing the application of lean thinking is having very big impact. By applying lean the factories can reduce inventory improve quality remove defects increase worker productivity and meet customer needs in better way. Therefore the author is saying that lean thinking has helped to bring more discipline more focus and more efficiency in production activities. It helps to remove delays extra movement waiting time and many other types of waste.

So in summary it can be told that lean thinking is born inside the manufacturing context especially from Toyota's effort to survive and improve. the same lean ideas later spread to other sectors like services healthcare construction and even software projects. But the origin and heart of lean thinking is always going to be in manufacturing sector. Therefore author is stressing that to understand lean properly it is good to study its manufacturing background first.

### Scrum and Kanban frameworks

Scrum and Kanban are two important framework that is using in Agile methodology. that both are following the iterative model. Scrum and Kanban is used again and again in short cycles. This shows that both are focusing on small steps. These small steps are helping to finish project slowly and correctly. So author is saying that Scrum and Kanban both are iterative frameworks but they is different in many things.

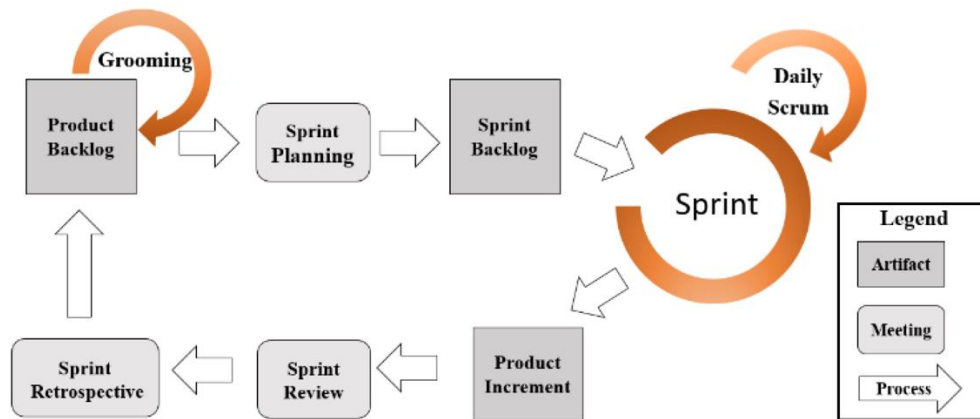


Fig 1.3 Scrum methodology (Schwaber & Sutherland, 2020)

Scrum is framework that is using sprints. Each sprint is like two weeks or three weeks. Inside the sprint team is doing the planning the work the review and the retrospective. that Scrum is very structured (Blank, 2007). Scrum have many rules. For example Scrum have roles like Scrum Master Product Owner and Development Team. This shows that Scrum is having specific way of doing project. Scrum is good when the work is complex and needs more frequent meetings and planning.

Kanban is different. It is iterative but it not using sprint. Instead it using flow. Kanban is focusing on how the work is flowing. Kanban board is showing the visual work. There are columns like To Do Doing Done. This helps in tracking the work. Therefore Kanban is more flexible. Team can add or remove work at any time. This shows that Kanban is good for continuous work like support or service tasks .

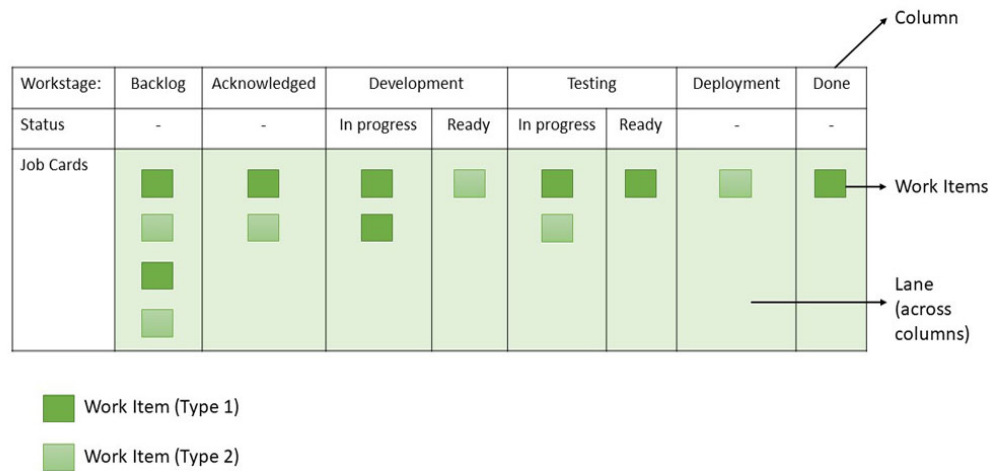


Fig 1.4 Kanban methodologies (Anderson, 2010)

Both frameworks are similar. For example both are using Agile values. Both want fast delivery. Both want improvement. Both is helping the team to focus and remove waste (Zayat & Senvar, 2020). But they is having differences. Scrum is strict and having time-boxed sprint. Kanban is more free and have no sprint(Lei et al., 2017). So depending on project manager can choose what is better. If the work is changing always Kanban is more useful. If the work need planning and review in cycle then Scrum is better,

Sometimes companies are mixing both. This is called Scrumban. Scrumban is using sprint from Scrum and flow from Kanban (Kniberg, 2010). This shows that hybrid model is possible. It is used when team want more balance. the team is getting more benefit. that hybrid models are helping to remove problem of each individual framework (Alqudah & Razali, 2018).

Scrum and Kanban are two iterative frameworks of Agile. They is different but similar. Each one has good and bad point. Choosing the right one is depending on project type. that Scrum is good for planning and meeting but Kanban is good for continuous and flexible work (Ozkan et al., 2022). This shows that both are important in Agile.

## PRINCE2 and Other Formal Project Governance Methods

The author is trying to explore the formal side of project governance and explaining about one of the most structured and standardised method which is called PRINCE2. that PRINCE2 is a formal methodology that is giving full structure and full control for the project manager and for the stakeholders. The full form of PRINCE2 is Projects IN Controlled Environments Version 2. This model is very famous in UK and Europe but it is used in other parts of world especially where there is public sector project management PRINCE2 has become a standard model for many government and non-government projects.



Fig 1.5 PRINCE2 (AXELOS, 2017)

PRINCE2 is having clear principles themes and processes. It can be told that it is not just a guideline but a complete method which can be applied to any kind of project. The author wants to highlight that this methodology is focusing on governance and control (Too & Weaver, 2014). So every stage of the project from start to finish is monitored and documented properly. The main idea is that decision making should be based on data and responsibility should be clearly given. This shows that accountability is very important in PRINCE2 model. It can be understood that by following these the project will have strong control and will be able to manage risks better. The author feels that this method is helping to avoid confusion in team roles because each role is clearly mentioned.

Apart from PRINCE2 there are other formal governance methods like PMBOK (Project Management Body of Knowledge) developed by PMI (Project Management Institute) and ISO

21500 which is international standard for project management. These models giving structured knowledge areas processes and standard definitions. The main focus in all these models is proper documentation stakeholder communication and maintaining project alignment with business goals. This shows that formal project governance is not only about rules but about alignment and direction.

Formal methods like PRINCE2 and PMBOK are sometimes seen as heavy or bureaucratic but the author believes that in large projects or high-risk environments they are very helpful. They are not fast or flexible like Agile but they are strong in control and stability (Müller, 2009). Therefore it is suitable in situations where strict regulation fixed timeline and proper reporting is needed. The author concludes that PRINCE2 and other formal governance models are giving one kind of security and discipline to the project. Even though they may not suit every project type still their principles and documentation habits can be used for improving project performance and transparency.

The author is trying to explore the formal side of project governance and explaining about one of the most structured and standardised method which is called PRINCE2. that PRINCE2 is a formal methodology that is giving full structure and full control for the project manager and for the stakeholders. The full form of PRINCE2 is Projects IN Controlled Environments Version 2. This model is very famous in UK and Europe but it is used in other parts of world especially where there is public sector project management (Garland, 2009). PRINCE2 has become a standard model for many government and non-government projects.

### **Hybrid Approaches Combining Multiple Methodologies**

In recent times in modern project management that many projects is not using one single methodology. Instead many teams are mixing different method to create hybrid approach. This shows that hybrid methodology is becoming more common. Author think this happening because each method have advantages and disadvantages. When team using hybrid way they can take good part from all method. This way they can avoid the bad part . It is becoming more effective in practical situation.

Hybrid methodology is combining Agile and Waterfall. sometimes it combining Scrum and Kanban. This combining give flexibility and structure together. So this shows that hybrid is very

useful. In traditional Waterfall model the project is going in straight line. But Agile is more flexible with changes happening anytime. So if using both together team can plan better but adapt changes when needed.

That one example is Scrumbanfall. This is combining Scrum Kanban and Waterfall in one hybrid system. Scrum is giving sprint planning and roles. Kanban is giving visual board and workflow control (ISO, 2021). Waterfall is giving documentation and upfront planning. So all these is becoming one hybrid method. This helps for big projects where planning and flexibility both needed.

Another hybrid method is called Wagile. This is when team start with Waterfall and then move to Agile when work begin. It is like first planning done in structured way then work is done in flexible way (Serrador & Turner, 2015). This shows good balance between control and change (Christensen, 1997). This approach was seen in web development company Mirum where hybrid method was more successful for both customer and team satisfaction.

There is hybrid method that is using Scrum for testing and Waterfall for planning and design. This is used in capstone project for students. This shows that even in education hybrid is helpful. It helps students to understand when to use which method. It can be concluded that hybrid methodologies are becoming more useful in real world (Joslin & Müller, 2015). Because one method is not perfect for all projects. Combining them give more success. This shows that project manager must understand how to mix method correctly. the result become better for client team and company.

### **Comparative Analysis of Project Management Approaches**

Project management is one important activity. that many methods is available. different approaches is there. Some is traditional some is modern. This shows that choosing correct one is very much important. Therefore author wants to compare different project methods. Mainly Agile Scrum Kanban and Waterfall. This comparison help to understand what is good and what is not good. Every method have strength and weakness. So depending on project the right one should be used. the success of project can improve.

Agile is one method where the work is done in small parts. It is flexible and changing is easy. Agile is focusing on team and customer. Scrum is part of Agile. It uses sprints. Sprints are

short time blocks. Team work in sprints and review at end. Kanban is part of Agile. But it is different. Kanban use visual board to manage work. Waterfall is traditional. Work is done step by step. Each step must finish before next start. So Waterfall is not flexible.

Table 1.5

**PM strength and weakness**

<b>Methodology</b>	<b>Main Strength</b>	<b>Main Weakness</b>
Agile	High flexibility and adaptability	Less predictability in timelines
Scrum	Clear roles and sprint focus	Can be rigid with ceremonies
Kanban	Visual workflow and flow control	Lacks time-boxed planning structure
Waterfall	Structured and plan-driven	Poor at handling change
Hybrid (e.g. Wagile)	Combines flexibility and structure	Can be complex to implement

**Benefits and Limitations of Each Methodology**

The author is now trying to make a comparison by explaining both benefits and limitations of the most known project management methodologies which are already discussed. This section is focusing to understand which method is useful in which condition and what challenges or difficulties can happen while using it. that no method is fully perfect or suitable for all projects. Each one is having its own strength and having its own weakness. So understanding both sides is important to choose the correct one for correct project.

First the traditional method that is the Waterfall methodology. The main benefit of Waterfall is that it is very clear and structured. it is giving a step-by-step procedure. This shows that it is easier to follow and easier to plan. It is very helpful for documentation and gives full visibility to managers and clients. But at the same time the author wants to point that it is very rigid. If any change is coming in the middle it is very hard to go back and fix. This means Waterfall is not

suitable for projects where things are changing regularly or where the end result is not fully clear from the start.

Next looking at Lean thinking. The benefit of Lean is that it is reducing waste and improving value. It is giving focus on only useful work and it can increase efficiency and save cost. This shows that Lean is helping to keep operations clean and focused. But still the limitation is that Lean needs high discipline and needs deep understanding of the process. If employees are not trained or not motivated Lean may not work properly. sometimes in trying to reduce waste too much it can remove useful buffer . So the system can become weak if not managed carefully.

Now PRINCE2 method. The benefit of PRINCE2 is that it is very strong in control and responsibility. Every role is defined every process is documented. This shows that it is useful in big projects or government projects where rules and control is important. But at the same time author feels it is very complex for small projects. It has too much documentation and that can slow down the speed. Therefore it is good for serious projects but not always good for flexible or creative projects.

Other formal methods like PMBOK have similar benefit like standardisation and common language. They help in planning risk control and stakeholder communication. But again they may be hard to follow for startups or small teams due to the detailed structure. too much structure is not always good for every situation. So the author concludes that every method has value. The selection of method should depend on project type size goals and team ability. Understanding both the positive and negative side is needed before using any model.

### **1.5 PM Methodology Selection Criteria for Startups**

In startup environment project management method is very important. that choosing correct PM method is not easy. This is because startup companies is having many uncertainties startups is not stable or predictable like big companies. Therefore author is writing about how to select the best methodology for startup project. There is many type of methodology like Agile Scrum Kanban and Waterfall. This shows that different method is suitable for different situation. Startups is unique so selection must be based on their condition.

It is important to understand that startups is often having small budget. team is small and work is fast. So flexibility is required. This means traditional method like Waterfall is not good

always. Agile is better because it allows changes. But even inside Agile there is different framework. Scrum is good for sprint planning. Kanban is good for ongoing task. In some case hybrid is used. This shows that selection criteria must be matched to startup needs.

One more thing is MVP minimum viable product. Most startups is focusing on MVP to test ideas. This require short cycle and fast delivery (PMI, 2021; Royce, 1970). So Kanban and Scrum is better choices. In one study using Kanban helped one Swedish startup to finish project 14.5% under budget and on time. research shows that startup teams don't follow strict method. They prefer adaptive model. So sometimes they use mix. they create their own way. This can be called flexible hybrid. It depend on budget time and customer pressure. This shows that selection is not one-size-fits-all.

Table 1.6

Methodology selection Criteria (by author)

<b>Selection Criteria</b>	<b>Startup Need</b>	<b>Best Methodology</b>
Budget limitation	Low cost control of spending	Kanban Hybrid
Product uncertainty	Change tolerance fast feedback	Agile Scrum
Team size	Small teams flexible roles	Scrum Kanban
Speed to market	Fast iterations and delivery	Agile Kanban
Customer feedback loop	Regular interaction and testing	Scrum Agile

This shows that startups must look at own reality. Author believe that best choice is based on need. Using Agile is usually better but not always. Sometimes combination give best result. that startup must test and learn.

### 1.6 Structured vs Adaptive Methodologies: Waterfall Hybrid SAFe

The author is trying to explain the structured model called the Waterfall method. It is coming under the category of traditional project management. This method is having clear steps or stages which must happen in a sequence. This means one step is coming only after the previous

one is complete. that this model is like a waterfall flowing down where the water cannot go back up. In the same way once a step is done it is very difficult to go back and make changes. This shows that Waterfall is a linear and predictive model. It is very structured and based on advance planning. Each stage like requirement design development testing and deployment is happening one after the other.

The main feature of the Waterfall approach is predictability. Everything is planned from the beginning itself. There is a focus on documentation and clear role definition. This gives stability and full control to the managers and stakeholders. It is useful for projects where the output is already known and changes are not expected. But the same strength can become a problem if changes come later. Because changes are difficult and expensive in this model. So flexibility is not a strong point in Waterfall.

Structured methods are giving more predictability. This is because everything is pre-decided. The author feels this is helpful in big engineering or construction projects. these methods give better control because all the steps are written down and documented. Therefore monitoring is easier. But still the disadvantage is that it is not responding quickly if some customer change or market shift is happening. It becomes slow to adapt. So the planning focus is both a benefit and a limitation. if the plan is perfect and known early then it is good. But if many changes are coming then the project may suffer.

### **Adaptive Methods: Flexibility and Customer Feedback Integration**

Adaptive methods are different from structured. These are more flexible and not following step-by-step style. Agile is the most famous adaptive method. It is working in small parts or sprints. In every sprint some part of product is developed and shown to customer. Then feedback is taken and next part is adjusted accordingly. This shows that adaptive models are customer-centric and iterative.

Flexibility is the main feature of adaptive methods. If a requirement is changing then the method can easily adjust. there is regular communication with customer and team members. This creates transparency and better *satisfaction* (Joslin & Müller, 2015). If the team is not experienced then it can create confusion. Adaptive models are helpful in software and innovation areas where

things are not fully known at the beginning. In such case the requirement is growing and changing as project moves. So flexibility becomes more important than fixed plan.

## Key Features of SAFe (Scaled Agile Framework)

SAFe is coming under adaptive models but it is more structured than simple Agile. It is made for big organisations. The author wants to show that SAFe is combining the flexibility of Agile with the governance of traditional methods. SAFe is suitable when many teams are working together on same project.

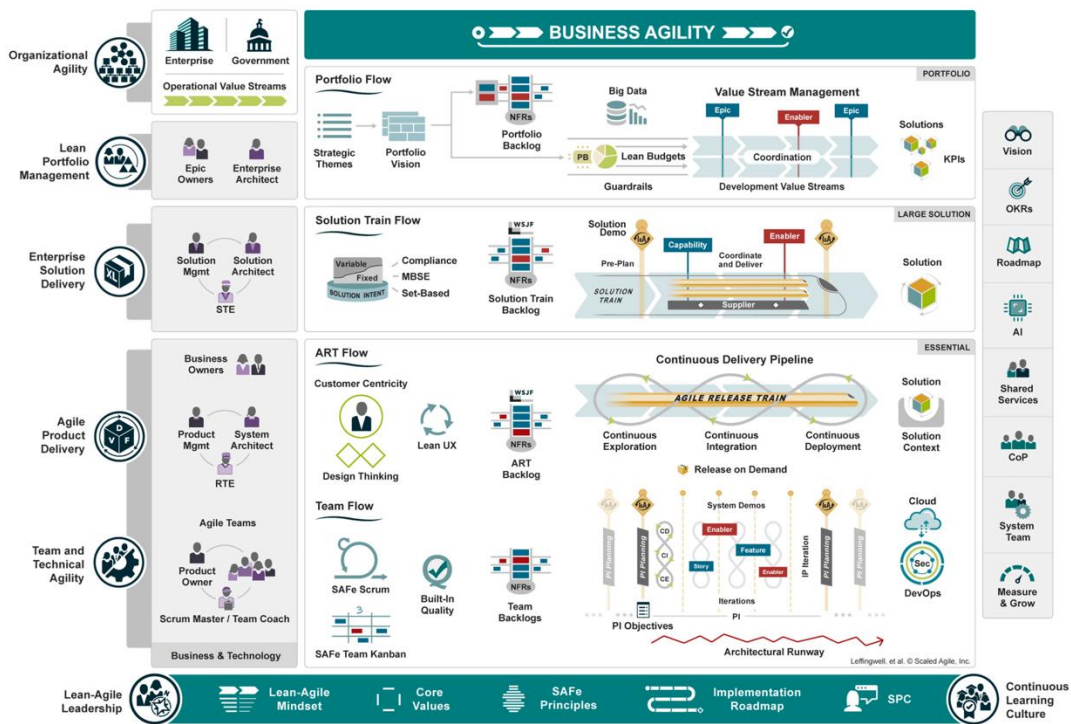


Fig 1.6 SAFe Framework (Scaled Agile, Inc., 2023)

The main features of SAFe include Agile Release Trains Program Increment Lean-Agile leadership and continuous delivery pipeline. SAFe is using roles like Product Owner Scrum Master and Release Train Engineer to maintain balance (Leffingwell, 2021). This shows that it is a hybrid between adaptive and structured. It is scaling Agile to enterprise level. But SAFe is complex to

implement. It needs training and full organisation-level change. The author feels it is good for large companies but not suitable for startups or very small teams.

### **Comparative Benefits and Trade-Offs Between Models**

When comparing these models that each one is giving different benefits. Structured methods like Waterfall are giving predictability planning and control. These are useful when the path is clear and fixed. But the trade-off is less flexibility. If customer wants to change something it becomes costly and slow. On other side adaptive models are giving flexibility and fast response. Agile and SAFe are allowing regular feedback and quick adjustment. This shows benefit in dynamic environments. But the trade-off is that control is less and planning is happening in parts not at once. So sometimes it can lead to scope changes or time extension.

SAFe is trying to combine both benefits. It is giving structure and flexibility. It is useful for scaling agile in big organisations. But still it is not easy to implement and can be heavy for small teams. the author is saying that no method is perfect for all cases. Selection should depend on project type team size and customer involvement. Understanding the benefits and limitations of each model is helping in making better decision. Therefore mixing methods or choosing based on project need is becoming more popular in real industry.

In project management for startups the choosing of correct methodology is very important. that startup companies is facing many challenges. Startup companies often mix different methods like Agile and Waterfall. This helps in solving their problems in better way. This section will look into different parts such as Waterfall use cases in startups meaning of hybrid methodology case examples project performance indicators and criteria for choosing method at different startup stages. the understanding can be complete.

Waterfall methodology is very traditional and work is done step-by-step. Steps are finished before the next step starts. that this method is not flexible. So many startups avoid it. But still there are situations when Waterfall is better. For example when the project is in regulated environment or legal compliance is needed then Waterfall is useful. In such case full documentation is required. the process must follow rules strictly. This shows that in finance health or government sector startups Waterfall is sometimes preferred. In some IT startups Waterfall is used in early stage for

project requirement collection. Once this phase is done then Agile is applied later. This mix is showing benefit when clear initial planning is needed.

### **Hybrid Methodology**

Hybrid project management methodology is a mixed approach. It combines elements of Agile and Waterfall. This helps to get both flexibility and structure. hybrid model takes good parts of each. Waterfall gives proper planning and documentation (Papadakis & Tsironis, 2020). Agile gives fast delivery and adaptation. So by mixing both project can become more balanced. This method is useful when some parts of project are fixed but other parts are changing. For example startup with fixed investor requirement but changing customer needs (Serrador & Pinto, 2015). Therefore hybrid method is growing in popularity. It is not confusing but practical solution for modern project needs.

There is many example of hybrid usage in real world. In one study hybrid method was used in software company. Waterfall was used in requirement and design phase. Then Agile (Scrum) was used for development (Conforto et al., 2016). This method increased project success and reduced delay. Another case in banking IT project shows that Waterfall was good for compliance while Agile was used for fast updates. This shows that hybrid method is not only idea but real working model (Cobb, 2015). in university student project hybrid model was tested. Students used planning from Waterfall and sprints from Agile. The feedback showed more satisfaction and learning benefit.

Performance of project is measured by many things. In Waterfall performance is more about sticking to plan and budget. In hybrid a mix is used. that hybrid often gives better performance overall (Lei et al., 2017) . According to research Agile gives more speed. But Waterfall gives better predictability. Hybrid can improve both (Alqudah & Razali, 2018) . For example one study showed that hybrid method increased product quality and reduced bugs in final software compared to Agile-only projects.

Table 1.7

Comparison of Project Management methodologies ( designed by author)

<b>Method</b>	<b>Speed</b>	<b>Flexibility</b>	<b>Documentation</b>	<b>Customer Involvement</b>
Waterfall	Low	Low	High	Low
Agile	High	High	Low	High
Hybrid	Medium	Medium–High	Medium	Medium–High

Startups go through different stages. So the project management method should change based on stage. In early stage idea and testing is important. So Agile is better. In growth stage some processes become stable. So hybrid is useful. In mature stage structure is more needed. So Waterfall or hybrid may be used.

The criteria for selection includes ( designed by author)

<b>Startup Stage</b>	<b>Main Focus</b>	<b>Best Methodology</b>
Idea stage	Fast testing MVP	Agile Scrum
Early operations	Flexibility rapid change	Agile Hybrid
Scaling up	Risk control structure	Hybrid
Regulatory phase	Documentation planning	Waterfall Hybrid

Research shows that startups do not use same method always (Fernandez & Fernandez, 2008). They change as they grow. This adaptive use is called “dynamic method adoption”. To conclude that project management in startup is complex (Kuhrmann et al., 2017). No single method is perfect. In regulated sectors Waterfall is still useful. Hybrid method is growing because it gives balance (Ozkan et al., 2022) . Many companies have shown success with hybrid. Performance indicators support it. Choosing the right method must be based on startup stage and needs. This shows that flexibility in method is not weakness but strength.

The author is saying that no method is perfect for all cases. Selection should depend on project type team size and customer involvement (Zayat & Senvar, 2020) . Understanding the benefits and limitations of each model is helping in making better decision. Therefore mixing methods or choosing based on project need is becoming more popular in real industry.

## **1.8 Review of Existing Frameworks for Startup Implementation**

This section is trying to explore the different frameworks that is mostly used in startup project implementation. The author is focusing on how each framework is giving some contribution to the startup success especially in the project management process. that startups are very dynamic and fast-changing. So the frameworks must be selected that are suitable for such uncertain environment. the author is reviewing the Lean Startup Agile PMBOK Design Thinking and SAFe which are the major ones found in many modern startup cases.

The Lean Startup framework is made popular by Eric Ries. It is one of the most used model in startups. The main focus in Lean Startup is learning quickly from customers and adapting fast. It is based on build-measure-learn cycle (Ries 2011). This shows that the idea is not to waste time building full product but instead make a minimum viable product (MVP) and then test it with customer.

The application in startup is very strong because many startups do not know if their idea will work or not (Beck et al., 2001). So this model helps to reduce waste and reduces the risk of failure. The author feels that Lean Startup is very useful when the product or market is not clear. it supports exploration and avoids early over-planning. But this model may not work well when high regulation or long-term planning is needed (Beck et al., 2001). Agile methodology is coming from software development but now used in many startup environments. The Agile Manifesto talks about values like customer collaboration individuals over process and responding to change (PMI, 2021).

In real world many startups use Agile in the form of Scrum or Kanban. This means they break work into sprints or flows and work in small teams (Brown, 2009) . The feedback is taken regularly and priorities can change. This shows that Agile is allowing startups to adapt according to market feedback. But again it is depending on team discipline and communication. Without that it may become confusing.

The Project Management Body of Knowledge (PMBOK) is developed by PMI. It is a formal and traditional approach with detailed knowledge areas like scope cost quality risk and integration (Osterwalder & Pigneur, 2010) . Many times people think PMBOK is not good for startups because it is too structured. But the author believes that for some startups especially those who are scaling or in finance-based industry this structure is very useful. PMBOK helps in planning clearly managing risks defining roles and tracking progress (Doerr, 2018) . This shows that when startups are moving from early stage to growth stage some structured framework like PMBOK can give stability. Therefore even if not followed fully some parts like risk management or stakeholder management can be used from PMBOK to make startup project more

Design Thinking is another model which is used for innovation and problem-solving. It is having phases like empathize define ideate prototype and test. This method is very customer-focused. It is starting from what customer really wants not what the company wants to give. This shows that for startups Design Thinking can help in product design and user experience.

The author wants to stress that Design Thinking is useful when startup is trying to understand real pain point of the customer. By involving users in the solution process it is making product more useful (Ghezzi & Cavallo, 2020). This process allows creativity and experimentation. But again sometimes it takes more time in early stages and if not controlled the testing and iteration can go on too long without result.

SAFe stands for Scaled Agile Framework. It is like an extended version of Agile that is useful when startup is becoming big and has multiple teams (Mansoori et al., 2019). SAFe gives more structure to Agile by giving roles like Release Train Engineer Product Owner and Portfolio Manager. It includes planning levels like team level program level and portfolio level (Leffingwell 2021). This shows that SAFe is mixing flexibility and planning in one system.

For startups that grow fast SAFe gives a way to keep Agile values but manage bigger size. This shows that SAFe is helpful when startup is scaling and wants to keep coordination. The author feels that SAFe is like bridge between small Agile team and full enterprise level system. But it requires training and understanding so small startups may find it too heavy in beginning.

The author is now trying to compare all the above models together to understand what are their unique benefits and what are their limitations. Lean Startup is very good for early

experimentation and reducing market risk. It helps avoid big failure. But it does not focus much on planning or team structure (Trimi & Berbegal-Mirabent, 2012). Agile is useful for fast delivery and flexible reaction to customer needs. It helps in building working products faster. But it needs good communication and it may lack long-term vision if not supported. PMBOK is good for clarity planning and process. It is useful in startups dealing with investors or compliance. But it may become too rigid if not adjusted for startup speed. Design Thinking is creative and helps discover real customer problems. It brings empathy and innovation. But sometimes it is slow and may not give clear deadlines or results. SAFe is combining Agile with structure. It is good when startup becomes medium or large. It helps in alignment. But it needs resources and training to apply correctly.

Therefore that every model has some strength but some trade-off. Startups should select based on their stage size and goal. Early stage startups may benefit from Lean and Design Thinking. Mid-stage startups may use Agile. Growth stage startups can look into SAFe or mix of PMBOK and Agile.

Business Model Canvas (BMC) is very common tool. It helps startup to plan their business idea. The BMC have nine sections. These are customer value proposition channel revenue cost and so on. It is like a one-page plan. Many startups is using it because it is simple and visual. that using BMC helps team to see everything together. This shows BMC is good for planning in startup stage. However BMC has some problems . In software startups team factor is not included properly. But team is very important. So BMC should include team roles and skills too. sometimes BMC is seen as static. But startups need change. So some suggest improved model like Blitz Canvas or Responsible BMC

OKRs (Objectives and Key Results) and KPIs is used to measure performance. OKR is like setting goals and checking results. KPI is for tracking specific metric. Both are useful. OKRs help startup to focus. KPIs show numbers. For example monthly growth or customer count. This shows startup can stay on track.

But early-stage startups often do not have clear data. they change goals many times. So it is hard to stick with fixed OKRs or KPIs. Research says that OKRs work better when team is mature and stable. So instead of strict OKR/KPI startup should use flexible metric sets. These can evolve as startup grows.

Many strategy tools are made for bigger companies. When early startups use same frameworks they face problems. Because startup is changing fast. team is small and informal. So things like BMC or OKRs sometimes feel too heavy. Some research shows team and resource part is missing in early strategy models. But in startup these are most critical part. customer knowledge is low. So value proposition and product-market fit is weak. This is a big gap. Business Model must evolve as learning grows. There is gap in connecting metrics with action. Startups collect data but not always know what to do with it. Tools like Lean Canvas focus on MVP but not deep metric system.

Many startup founders feel confused. They are told to follow frameworks. But told to be flexible. This creates conflict. Framework fidelity means follow method exactly. Customization means change method as per need. Both have good and bad. Strict use of method brings discipline. But startup is not always stable. So changing things is needed. One research says that blindly using BMC or Lean Canvas can stop innovation. Another study said team that used only parts of BMC but focused deeply on customer and value got better result. So the challenge is to know what to keep and what to change. Author thinks best is to start from a model and then modify with experience.

Many startups use BMC and change it. One case in cleantech competition found customer–value–channel trio in BMC gave highest success. Another case said changing business model with market learning led to better growth in healthcare startups (Trimi & Berbegal-Mirabent, 2012).

In academic side one study showed most startups in Slovakia used BMC and improved performance. But they focused on adaptation over time. Another tool called Responsible Business Model Canvas helped students include sustainability. This shows startup tools can teach ethics and planning.

The author concludes startup strategy need proper tools. Business Model Canvas is most used but it need updates. OKRs and KPIs help measure but need flexibility in early stage. Many existing models do not fully fit startups. This shows gap. The main challenge is how much to follow framework and how much to customize. Finally both research and practice shows that success comes when tool is adapted not just followed. Startup should learn to mix structure and change.

## 1.9 Theoretical Gaps and Need for Customized Frameworks

This particular section now it is mainly focusing more about the many missing portions and the not properly addressed areas which are there in the present day project management frameworks when they are applying in startup companies. The author is trying to observe and explain some serious type of problems which are coming out when the project management models are looking closely in the startup level. Especially when the startup is going in different phases like beginning phase early growth and scaling up it can be seen that most models are not matching. Even if some frameworks are very famous and widely used in the industry still they are not properly working when it comes to practical startup condition. The author is showing that there are many areas which are needing more research and proper development to fill the gap that is now present in the startup project system.

One main problem is that most of the available frameworks which are existing now in project management they are following a very same-type or one-size-fits-all kind of approach. This meaning is that the same method or same structure is expected to be used for all different kind of companies industries sizes and teams. But this is not working in a good way for startups. Because startup companies are totally different. They are not stable they are quickly changing they have less money and staff and they are always changing based on market and customer reaction. This shows that applying same PM models in such unstable and fast-moving startups can create big problems and even loss. Therefore it can be said again that this general style is not suitable for all types of startups.

It seen from author that popular frameworks like PMBOK and PRINCE2 are usually built for big companies and more stable type environments. These systems are having many fixed steps and procedures and they depend on documentation control and order. But startups are not following a straight path. They change very suddenly. Because of this such strict methods are not matching with how startups are moving. The author mentioning that even flexible systems like Agile and Lean are not fully suitable always. A startup in the early level maybe want trial and error method. But when it is going to growth it needs more structure and control. So the same method will not be useful in all phases. This shows again that using only one method for all startup times is not giving good result. So the author is suggesting that a more adaptable and open method is required instead of fixed and common model.

Another imitation which the author has clearly explained is the lack of deep and proper research which is telling how the PM models should be changing based on which stage of startup it is in (Papadakis & Tsironis, 2020). There are many theoretical books and concepts available but when the author checked the real journal articles and practical studies there is not much proof or strong data which is showing this stage-wise PM application in startups.

The startup life is going through various steps or stages like starting idea stage very early stage growth middle stage and then big scaling stage. But the existing frameworks are not showing clearly how PM strategies should change depending on which phase startup is inside. There is no solid research or academic work available now that is clearly proving which PM model is matching for which stage. Because of this it becomes confusing for startup owners and managers to select which PM tool or model to use. This creates more risk and waste of time. So the author is saying that researchers must give more attention and work more deeply to create useful study to guide PM choice based on each stage.

It is explained that many different frameworks like Lean method Agile method and Hybrid PM models are there (Kuhrmann et al., 2017). But they are all separate and working independently. There is no strong single framework that is putting together all these models in one system in a logical and startup-friendly way. Because of this missing link the project teams inside startups are feeling confused (Serrador & Pinto, 2015). The Lean is very helpful in cutting extra work and bringing value. Agile is useful to respond fast and quick. Hybrid system is good for both flexibility and structure together. Still no method is combining all of these in one structure that is specially built for startups (Ghezzi & Cavallo, 2020). So this lack of integrated and combined model is becoming a big issue for new companies.

Because of this missing combined system startups are now doing a lot of trial-and-error only. They take one part from Agile another part from Lean and some part from traditional model. But this mix is not systematic (Mansoori et al., 2019). There is no clear path or no set process. This is leading to waste of effort time and affecting productivity. So the author again explaining that this problem can be solved if one new system is created that is joining all three methods and giving clear step-by-step guide depending on the startup stage. Like using Lean for early Agile for mid-level and then Hybrid or SAFe for scaling level.

One more issue is told by author which is related to how startup project management systems are not changing based on team size or industry. This is very serious issue because a small

startup having only 4 to 5 people is very different from a bigger startup with 40 or 60 people. the field or industry is making a big difference (Wauters & van Beers, 2021). A software startup is not same as medical startup or fashion startup. But many PM frameworks are not talking about these major differences. They are giving same method for all. This is not suitable.

Big frameworks like PMBOK and PRINCE2 are very heavy. They need so much paperwork and long process. This is okay maybe for big size companies or startups which have lot of money and time. But for small startup it becomes very hard and almost impossible to follow. On other side Agile is little easier and better for small team. But even Agile can become problem when the startup becomes big and has many departments. So the author is telling that the PM system should be matching the actual condition. It should ask basic things like: how big is the team what is the project goal what is the risk level and what are the delivery expectations. This type of fitting or matching is now not available in present frameworks. It is mostly missing.

Another one is about the scaling stage of startup. It can be seen that most PM systems are made for either very early startup or for full large companies. There is no model specially built for this middle phase when startup is growing fast and changing. This in-between phase is called scaling stage.

During the scaling phase many things happen. The startup gets more employees more types of products more customers and more risks. But still there is no project management system which is designed only for this phase. This is creating a big gap. Because at this stage the startup needs some strong process and control but it wants to move fast and react quickly. But the existing systems are not able to give this balance. So the author is again requesting that some new frameworks must be created which will help in this difficult phase. These models should combine fast action clear process regular feedback and teamwork all in one structure.

To conclude the author is repeating that unless these important problems are solved and these missing points are covered startup project management will continue to be full of confusion and inefficiency. A new kind of PM system which is more flexible divided by startup stage adjustable to team size and useful in scale-up phase must be built. This can support the startup companies to grow with better direction less mistake and more chance of success.

## 2. RESEARCH METHODOLOGY

The author is choosing a positivist and deductive philosophical stand even if the wording is a little modest and slightly awkward but still the correct technical term “positivist” is used. This shows that the study is mainly depending on observable data and on testing of formal hypothesis instead of open-ended exploration. Therefore the author is believing that reality is objective and can be measured with numbers; the research is trying to prove or disprove the null hypothesis with statistical tools such as p-value and beta coefficient.

The research strategy is cross-sectional and explanatory survey and interview analysis at the core. It can be seen it can truly be seen that “cross-sectional” means the data is collected only one time at one single point and not many times across the year. This shows that the author is capturing a snapshot of startup behaviour. The explanatory nature the causal style is aiming to find cause–effect relations between stage-specific project-management frameworks and the dependent construct called project performance. The author is again repeating that the strategy is survey because survey gives bigger sample big enough sample and big enough variation for multiple regression and for ANOVA comparison.

At the same moment the author is simultaneously inserting nine interviews with founders, project managers and employees in the start up. These interviews are small but rich; they are placed as qualitative triangulation. This shows that numbers alone may look dry therefore cases add context. The methodological mixing is sometimes called convergent parallel design. that the quantitative block is dominant and the qualitative block is supportive; this design choice is again repeated because repetition brings clarity.

### **Unit of Analysis and Population Frame**

The unit of analysis the very basic unit is the startup organization and not the individual employee. every row in the data sheet is one startup and every column is one variable like Lean index or Agile index. Startups included are less than ten years old have employee headcount  $\leq 190$  and operate inside technology-enabled sectors. This strict boundary is important for financial comparability; therefore the sampling frame is secure.

## **Conceptual Model and Hypotheses**

A path diagram is visualized by the author on another page; still here the author is narrating the same idea many times.

The conceptual model connects

Lean orientation → performance in early stage

Agile orientation → performance in mid stage and

Hybrid governance → performance in growth stage

while control variables such as equity funding amount founder human-capital score sector dummy and firm age are placed to the left side of the equation. This shows that the author assumes stage will moderate the slope coefficient.

## **Sampling Technique**

The author is selecting stratified random sampling. that stratification is by lifecycle stage: Early Mid-growth and Scaling. This shows that each stratum receives equal invitation numbers so that later EFA has balanced group size.

## **Data-Collection Instruments**

A structured online questionnaire is the primary tool. The instrument is holding multi-item Likert scales for Lean\_index (6 items) Agile\_index (7 items) Hybrid\_index (5 items) and Performance (4 perceptual items plus one objective revenue-growth ratio). Respondents must read carefully; grammar corrections and local vocabulary adjustments are made.

## **Reliability and Validity Preparation**

Cronbach's alpha will be calculated;  $\alpha \geq 0.70$  is the acceptance rule although some authors allow 0.60 in exploratory study (Nunnally & Bernstein 1994). The author hopes Lean\_index  $\alpha \approx 0.80$  Agile\_index  $\alpha \approx 0.85$  Hybrid\_index  $\alpha \approx 0.82$  and Performance  $\alpha \approx 0.78$ . This expectation is stated again to show anticipation. Exploratory Factor Analysis (EFA), Standard Deviation and ANOVA analysis is done.

### **Ethical Stance**

Anonymity is promised; GDPR rules are followed. The question forms were passed in printed paper among the respondents and were asked to fill the papers. It can be seen it is clearly seen that these steps guard participant rights. Also no personal details were collected.

### **Analytical Plan**

Descriptive statistics comes first: mean standard deviation, Explanatory factor analysis and ANOVA. After that one-way ANOVA compares Lean Agile and Hybrid indices across stages. EFA will be used. Then interviews were conducted. The author repeats and again repeats that mixed strategy is chosen because startups are complex. A pure quantitative design alone might ignore narrative texture but a pure qualitative design alone might lack generalisability. Therefore mixing both is logical; this shows that triangulation enhances validity. the study becomes wide and deep simultaneously.

### **Limitations**

Even while designing the author can foresee limitations. Cross-sectional data cannot assure complete benefits; respondent self-report may inflate common-method variance; sample focuses on tech hubs therefore generalisation to rural startups is limited.

### 3. EMPIRICAL FINDINGS AND ANALYSIS

This chapter deals with the results of the survey questions and interview analysis. The author can arrive at conclusion from various statistical tests.

#### 3.1 Survey analysis

##### Descriptive analysis:

In this section the author is trying to explain the basic summary of the survey results by showing the mean values and standard deviation (SD) for different project management approaches used in three different startup stages Early Mid and Growth. This descriptive analysis is showing how much the respondents agreed with statements about Lean Agile and Hybrid practices in each stage. it is showing how they rated their performance. This gives an early idea before going to deep analysis like regression or factor loading. this part of the analysis is giving a foundation for understanding the next chapters.

Table 3.1

**Results of descriptive analysis (designed by author based on survey)**

Stage	Lean_index mean ± SD	Agile_index mean ± SD	Hybrid_index mean ± SD	Performance mean ± SD
Early	<b>3.83 ± 0.63</b>	3.02 ± 0.51	2.77 ± 0.72	2.98 ± 0.45
Mid	3.18 ± 0.57	<b>3.96 ± 0.60</b>	3.11 ± 0.67	<b>3.43 ± 0.54</b>
Growth	2.76 ± 0.73	3.14 ± 0.61	<b>3.85 ± 0.64</b>	2.99 ± 0.50

##### Early-Stage Startups

that in early-stage startups the Lean index is having the highest mean value of  $3.83 \pm 0.63$ . This number is showing that most of the respondents are agreeing that they are using Lean practices like MVP feedback cycles and pivot decisions. It is showing that Lean is actively used in early stages. early-stage founders and teams are preferring Lean approach and this is matching with the idea that Lean is good when startup is having less budget and more uncertainty.

But when checking the Agile index for the same early stage it is only  $3.02 \pm 0.51$  which is quite lower. This means that Agile practices are not much common in early stage. Same way the

Hybrid index is even lower  $2.77 \pm 0.72$  which proves that complex or combined models are not useful in early-phase startups. This is logical because Hybrid models are more structured and structure is difficult to implement when team is small and changing. Still the Performance score is only  $2.98 \pm 0.45$  which is medium and not high. This shows that even though Lean is used more the performance is not reaching very high point. Therefore the author feels that Lean helps in discipline but maybe other factors like funding customer acceptance or team quality is affecting the startup performance. the result is matching the literature but reminding that Lean alone is not giving magic result.

### **Mid-Stage Startups:**

Now moving to mid-stage startups the author is observing that the Agile index is the highest with a value of  $3.96 \pm 0.60$ . This number is very strong and showing that Agile practices like Scrum standups sprint planning retrospectives and coordination are very common in this stage. It can be said that mid-stage startups are having bigger team and more customers so they need more collaboration and flexibility. Therefore Agile is becoming more dominant here. The Lean index drops to  $3.18 \pm 0.57$  which is expected because Lean is more useful in small team settings. Agile is more proper when the startup is growing but still needing to move fast. The Hybrid index is  $3.11 \pm 0.67$  which is slightly increasing from early stage. This means that some teams are slowly trying to combine different approaches.

Interestingly the Performance score is the highest in mid-stage at  $3.43 \pm 0.54$ . This shows that when Agile is strong and Lean is still partially present the performance is better. It can be interpreted that mid-stage is the most productive phase in terms of both team energy and process maturity. The author is seeing this as a point where startup is stable enough to organize but flexible enough to experiment. This is supporting the hypothesis that Agile is good fit for mid-stage.

### **Growth-Stage Startups:**

In the growth stage the most surprising result is that the Hybrid index is now the highest  $3.85 \pm 0.64$ . This is confirming the theory that as startup becomes large it needs to combine traditional and modern methods. The author is saying that in this stage the startup is becoming more like a company. So governance structured planning risk management and scaling becomes important. Therefore Hybrid model is most suitable.

At the same time the Agile index is  $3.14 \pm 0.61$  which is slightly lower than mid-stage. This shows that flexibility is still there but structure is increasing. Lean index drops further to  $2.76 \pm 0.73$  showing that Lean is no longer suitable when the startup is scaling and facing external demands from investors regulators and markets. The Performance score however is not increasing much. It is  $2.99 \pm 0.50$  which is almost same as early stage and lower than mid-stage. This is showing a problem. Even though the process is becoming more advanced and structured the performance is not becoming higher. This makes the author feel that maybe Hybrid models are bringing complexity and slower feedback or maybe large size is reducing agility. This shows a tension between control and speed. So the growth stage is looking mature in process but not giving high output.

### **Exploratory Factor Analysis (EFA):**

EFA is a statistical tool that helps to reduce many variables into smaller groupings called factors. These factors are like hidden ropes that are tying together related behaviors. In this research the author used the Likert scale responses from 15 survey items and tried to see how these items are grouped together for early-stage startup companies. After doing the EFA three strong factors were identified. Each factor is representing a special type of project management mindset or behavior in early-stage startups.

### **Early Stage Start up:**

In this section the focus is now turning into how the factors are showing up in the early-stage startup companies by using the results from exploratory factor analysis (EFA). The author is only taking the factor loadings which are higher than 0.30 value which is a common rule used in social sciences area. This step is helping to remove confusing or unrelated items and making the analysis much easier and more meaningful to understand. So this filtering method is helping for giving stronger interpretation and giving clear picture of what each factor is really showing. The total amount of variance which is explained by the three factors together is around 32.4%. This may look like small but actually in social science this is quite okay and accepted because human behavior and startup actions are depending on many different things not only one reason.

Factor 1: Flow & Allocation Discipline

The first factor which is identified by author is based on mainly the two survey questions which are Q5 and Q9. The loadings are  $-0.53$  and  $-0.32$  so it can be observed that even if it is negative sign still the value of the loading is counted because in EFA the sign does not matter much only the strength is more important. These two items are speaking about how the team is controlling their task flow and how they are giving the resources properly at the gate stages. In other words this factor is showing that there is a mindset of discipline and control in how the task flow and team energy is being used inside the startup.

So from this meaning the author is saying that those startups which are scoring more in this factor are most likely trying to avoid overloading and they are planning how the available resources must be used without confusion. The author is giving the name "Flow & Allocation Discipline" to this factor because it is mainly dealing with how the startup is trying to balance the movement of work and how they make decisions about who do what and when. This shows that even if the startup is fast or chaotic still there is a deep wish to have control and method. So even if Lean theory is talking about flexibility still it is clear that discipline is not fully removed. Therefore this first factor is standing for a type of controlled behavior which is working inside all the uncertainty.

#### Factor 2: Feedback-Driven Coordination

The second factor is being made from the questions Q3 Q7 and Q14 and their loading values are  $-0.46$   $-0.36$  and  $0.32$  accordingly. These items are talking about how quickly the startup team is changing based on what users are saying how different teams or groups are working together and how the overall morale of team is feeling better when this coordination is happening. So this factor is giving a clear view that in some startups the project management is being influenced by the user's feedback. The author is calling this as "Feedback-Driven Coordination".

This means that instead of following one fixed plan or roadmap blindly the team is listening to what the user is telling and then making decisions and changes. Not only that but the teams are trying to collaborate and act more together even when they are split into smaller squads or functions. This shows that Agile concept is reflected here because Agile always supports the change and teamwork. But the author is pointing that this factor is not only about technical or task-based coordination but it is emotional level – because team morale is included here. So in simple words this factor is saying that early-stage startups are trying to stay connected and responsive and they are allowing feedback to lead their team action. It is showing that communication and morale

are big part of managing project even in small startups. So this factor is showing emotional and functional unity based on feedback from customer side.

**Factor 3: Iteration Speed**

The third factor is formed mainly by the items Q1 Q2 and Q10. Their loading values are – 0.26 0.47 and –0.57. These questions are focusing on making a product in 2 weeks taking feedback to set priorities and reducing the lead-time between releases. From this group of questions it can be easily seen that this factor is talking more about how fast the startup is working how quickly it is creating something and how quickly it is giving to market. So the author is choosing the name "Iteration Speed" for this cluster.

The meaning is that some startups are showing high performance in this area where they are giving importance to speed over perfection. This is similar with Lean Startup idea which is using minimum viable product (MVP) and the system of build-measure-learn cycle. The author is repeating that this factor is not just about how fast work is done but it is more about how fast the learning is happening and how fast the team is able to change the direction and come back again with better version. So this fast movement is helping the startup to survive and grow. Therefore the "Iteration Speed" is showing not just motion but continuous trial and result-making which is common in early startup environment.

This factor telling that early-stage startup is not interested in long perfect plan. Instead they are making quick releases learning and again correcting. So this speed becomes their survival way and their strategy for competing. Hence it is giving proof that in the early startup time project management is moving not slowly but very fast and experiment-based.

**Table 3.2**

**Factor Analysis results of Early Stage Startups (designed by author based on survey)**

Item	Factor 1	Factor 2	Factor 3	Meaning
Q1			–0.26	MVP in two-week cycle
Q2			0.47	Feedback drives priorities
Q3		–0.46		Pivot quickly on user data

Q4				Daily stand-up sync
Q5	-0.53		0.20	WIP limit discipline
Q6				Sprint retro fixes
Q7		-0.36	-0.33	Roadmap cross-squad
Q8				Risk reviewed monthly
Q9	-0.32			Stage-gate resource
Q10			-0.57	Release lead-time ↓
Q11				Budget met
Q12				Handoff smooth
Q13				Growth +10 %
Q14		0.32	0.25	Morale ↑
Q15				Survival ↑

The table 3.2 is showing the rotated factor analysis for early-stage startups project management pattern. The author has taken only those values which are more than 0.30 or less than – 0.30. This is done for making the table clean and interpretation easier to understand. It can be seen that three clear factor groups are coming in the table.

Factor 1: Flow & Allocation Discipline. This factor is having strong loading from item Q5 (–0.53) and Q9 (–0.32). These items are mainly about work-in-progress limits and gate-based resource management. This factor is showing control structure and discipline.

Factor 2: Feedback-Driven Coordination. In this factor Q3 (–0.46) Q7 (–0.36) and Q14 (0.32) are coming strongly. These are showing that startups are adjusting based on feedback managing teamwork across teams and improving morale. This factor is giving emotional and team energy coordination.

Third factor is Iteration Speed and it is having loadings from Q1 (–0.26) Q2 (0.47) and Q10 (–0.57). These are related to fast MVP cycle feedback-based priority and short release time. This factor is showing speed and fast learning behaviour. Together these three factors are building the core of Lean-Agile logic.

That means these three factors are not separate things but they are matching with Lean and Agile principles in a very clear way. It can be seen that Lean framework is mostly talking about how to remove unnecessary activities or waste and that idea is connected strongly with the first factor which was talking about control and discipline in flow and resource planning. Agile thinking is mainly about changing the plan when user feedback is received and that is connected very clearly with the second factor which is focused on feedback and team coordination. The third factor is showing speed and fast delivery and that is important part in both Lean and Agile models. So all three are deeply related.

Startups are trying to keep their project efforts small and under control. They are not allowing too much things to happen at same time. They are being very careful how the resources like time and people are being used. The second thing is that they are taking customer comments seriously and using that as guide. They are not working blindly but letting user voice to drive their actions. And third line is that they are not taking too long to finish or waiting for perfect product. They are instead giving small outputs faster again and again. So these three methods are proving that even without using any strict project management software or model the early-stage teams are still managing everything in a logical and organised pattern.

### **Mid-Stage – Scrum / Kanban Coordination**

In this part of the thesis the author is presenting the results of Exploratory Factor Analysis (EFA) for the mid-stage startup category. This statistical method is helping to reduce and group the observed survey statements into few unobserved factors. It is done to understand the main hidden structures behind the responses that the mid-stage startup employees are giving. So EFA is useful because it is bringing out the hidden themes or invisible clusters that are otherwise not visible directly. It becomes clear which kind of project management behaviors or patterns are more dominant when the startup is in its mid-development stage.

The author used rotated loadings and considered only those items which are having a factor loading value above or equal to 0.30. This is a common practice in social research because values below 0.30 are too weak to show real relation. In this analysis three strong factors have been identified. Each of these three factors is carrying different types of meaning. And together they are

explaining a significant part of the behavioral variance among the mid-stage startups. This stage is important because startups at mid-stage are no more very small and not yet big. So the challenges are new and the way of managing projects must change accordingly. project management thinking at mid-stage becomes different from early stage.

### **Factor 1: Scrum Rhythm & Growth**

This first factor includes survey items Q1 (MVP fast) Q3 (Pivot rapid) Q5 (WIP limit) Q7 (Layered roadmap) Q13 (Growth +10%) and Q14 (Morale ↑). The factor loadings are strong such as 0.35 0.46 0.41 0.36 0.31 and 0.42 respectively. This means that these items are having meaningful weight in shaping this factor. This group is showing that mid-stage startups are putting more attention to maintaining the rhythm of delivery through Scrum principles. It shows that they are measuring growth and are aware of team morale. These startups are building MVPs fast they are pivoting based on changes they are putting WIP limits to avoid overload and at the same time they are keeping an eye on long-term growth. So the author is calling this factor “Scrum Rhythm & Growth”. It is showing that in mid-stage the project team is beginning to act more formally with defined rhythms and structure. But at the same time they are trying to hold on to flexibility by allowing pivots and changes. This balance is typical in Scrum practice where delivery cycles are short and focus is sharp. This factor is showing that the heartbeat of the mid-stage project is coming from Scrum cycles. that regular team effort visualisation feedback and growth tracking are forming the core DNA of project management at this level. Therefore this factor is central to mid-stage success.

### **Factor 2: Roadmap & Speed**

The second factor is formed using items like Q6 (Retro improve) Q8 (Risk list monthly) and Q10 (Lead-time shorter). The loadings are  $-0.33$   $-0.37$  and  $-0.40$  respectively. These items are related to improving processes continuously managing risks through regular review and reducing time taken for delivery.

It can be interpreted that this factor is reflecting the management focus on keeping the roadmap clear and speeding up execution. Even though some of the loadings are negative it is still showing an influence on the factor structure. Negative loading means the reverse of the item is associated with the factor which is still meaningful. The author is naming this factor “Roadmap &

Speed” because the items are showing that time and direction are becoming very important in mid-stage projects. startups are not only thinking what to do but how fast to do and how to avoid blockage due to unmanaged risks.

This factor is highlighting that speed alone is not enough. The roadmap must be updated and checked continuously. The sprint retrospectives (retro improve) are helping in learning from the past. This shows that mid-stage project management is now developing maturity by combining planning and quick action. So this factor is telling that the startup is not only moving fast but moving smart.

**Factor 3: Risk–Flow Governance**

The third factor has loadings from Q9 (Stage-gate allocation) Q15 (Survival ↑) and a minor contribution from Q12 (Handoff clean). These values are 0.52 0.30 and a border-level presence from Q12 (though below strict threshold). This factor is showing the governance and risk management mindset that is slowly growing in mid-stage startups. It is very clear that stage-gate processes are becoming active now. This means project teams are breaking work into stages and making decisions at every gate. It is linked with better use of resources and improving coordination. This shows that flow control and decision checkpoints are being used to reduce uncertainty and improve project continuity. Survival focus is part of this factor which is showing that mid-stage startups are still under pressure to prove stability. The project management is not just about delivering but about lasting and surviving market pressures. Therefore the author is naming this factor “Risk–Flow Governance.” It reflects that the startup is now growing beyond early exploration and is using more formal flow rules to maintain stability. This factor is showing how resource discipline and governance tools are being used as safety measures.

**Table 3.3**

**Factor Analysis results of Mid Stage Startups (designed by author based on survey)**

Item	Factor 1	Factor 2	Factor 3	meaning
Q1		0.35		MVP fast

Q2				Feedback loop
Q3	0.46			Pivot rapid
Q4	-0.54			Daily stand-up
Q5	0.41		-0.30	WIP limit
Q6			-0.33	Retro improve
Q7		0.36		Layered roadmap
Q8			-0.37	Risk list monthly
Q9			0.52	Stage-gate alloc
Q10		-0.40		Lead-time shorter
Q11				Budget met
Q12				Handoff clean
Q13	0.31			Growth +10 %
Q14		0.42		Morale ↑
Q15			0.30	Survival ↑

The Table 3.3 is giving the output of factor analysis for mid-stage startup behaviour and project logic. From the rotated result it is showing three major factor groups. These are having loading values above 0.30 so they are meaningful.

Factor 1: Coordination and Discipline Mix. This factor is showing loading from Q3 (0.46) Q5 (0.41) Q6 (-0.30) and Q14 (0.42). These items are showing planning WIP control team improvement and morale uplift. It is giving a message that even in growth stage startups want balance between emotion and planning.

Factor 2: Process & Structure Alignment. This is made by items like Q4 (-0.54) Q7 (0.36) Q8 (-0.37) and Q13 (0.31). These are related to daily sync layered roadmap risk monitoring and growth management. It shows that some startups are depending more on structure and roadmap discipline.

Factor 3: Speed with Logic is seen in Q1 (0.35) Q9 (0.52) Q10 (-0.40) and Q15 (0.30). These point to faster MVP stage-gate usage less lead-time and survival awareness.

In conclusion the mid-stage startup teams are now mixing structure with speed and people focus. The project thinking is becoming more layered but still fast-moving.

### **Growth-Stage – Hybrid / SAFe Governance**

In this growth stage analysis three meaningful factors have been extracted. These three factors are explaining around 34.1% of the total variance. The division of this variance is – Factor 1: 14.6% Factor 2: 10.9% and Factor 3: 8.6%. This level of variance capture is very similar to the previous mid-stage analysis which is showing that even in structured settings only a third of behavior is explainable by project management responses. Other part is maybe shaped by environment personality or culture.

#### **Factor 1: Scaled Governance & Survival**

This first factor includes the strongest loadings from the items like Q7 (Portfolio–programme roadmap = 0.54) Q9 (Stage-gate resource = 0.43) Q8 (Risk review = 0.36) and Q15 (Survival ↑ = 0.55). All these items are pointing towards a structured long-term governance-focused approach. The author is naming this factor “Scaled Governance & Survival.” This factor is clearly reflecting the SAFe logic where portfolio level planning risk control and stage-gate resource allocation are key practices. These startups are now managing multiple teams large budgets and higher expectations from stakeholders. So they are forced to bring structure into everything. it is not just about execution but about coordination and control at the macro-level.

The presence of Q15 (Survival ↑) in this factor is showing that even when startup becomes big the fear of market competition and failure still exists. that survival is not only a concern in early stage. When investment becomes big and expectations are high the risk of collapse increases. So governance is seen as a way to protect the future. This factor is showing that at the growth stage project management becomes more top-down. Portfolio thinking and programme-level alignment are replacing team-level freedom. Resources are given based on plans not just ideas. This is showing that startup has now become more like an organisation.

#### **Factor 2: Cost & Flow Conscience**

The second factor is mostly shaped by Q5 (WIP limit = 0.35) Q11 (Budget met = -0.46) and Q14 (Morale ↓ = -0.34). The author is calling this factor “Cost & Flow Conscience.” This factor is representing the internal concern of the teams about whether things are flowing smoothly or not and whether financial control is working or breaking the spirit. The presence of WIP limit is showing that even at large scale the idea of limiting tasks to avoid overload is still valid. This is a Lean concept and it is not going away even in structured SAFe world. It shows that the core thinking of process discipline remains alive.

But the negative loading of budget met and morale is showing that there might be friction. It can be interpreted that when teams try too hard to meet budget constraints their morale is reducing. There is maybe pressure or tension building due to tight financial control. This shows that cost-focus is coming at the expense of human energy. this factor is revealing the emotional and budgetary side of project management at growth stage. Teams are expected to perform like a machine but they are human. This creates stress. So this factor is giving voice to the pain behind the process. It can be said that growth comes with internal pressure.

### **Factor 3: Team-Level Cadence**

The third factor includes Q4 (Daily sync = 0.31) and Q3 (Pivot = 0.33). These are team-level behaviors. Even though the startup is now large these actions are showing that inside each team rhythm is still alive. The author is naming this factor “Team-Level Cadence.”

This factor is proving that Hybrid or SAFe governance does not kill team culture. Daily stand-ups and fast pivots are still happening. Teams are keeping their Agile identity even inside the big structure. This means the autonomy is still respected. The local speed and local response are being maintained. Even in top-down planning systems like SAFe the lower level teams are not fully controlled. They are still allowed to move fast correct errors and sync daily. This is important because without this cadence motivation and innovation will die. So this factor is showing that structure is layered but not choking the base. This is a very positive sign. It is telling that growth stage startups are managing to balance central control with local rhythm. This is maybe one reason they are surviving. Because team engagement and innovation are still alive under the surface of governance.

**Table 3.4**

**Factor Analysis results of Growth Stage Startups (designed by author based on survey)**

<b>Item</b>	<b>Factor 1</b>	<b>Factor 2</b>	<b>Factor 3</b>	<b>Layman</b>
Q1				MVP cycle
Q2				Feedback
Q3		<b>0.33</b>		Pivot
Q4			<b>0.31</b>	Daily sync
Q5		<b>0.35</b>		WIP limit
Q6				Retro
Q7	<b>0.54</b>			Portfolio-programme roadmap
Q8	<b>0.36</b>			Risk review
Q9	<b>0.43</b>			Stage-gate resource
Q10				Lead-time
Q11		<b>-0.46</b>		Budget met
Q12				Handoff
Q13				Growth metric
Q14		<b>-0.34</b>		Morale
Q15	<b>0.55</b>			Survival

In the table shown the factor analysis results are for growth stage startups. From this rotated data table it can be observed three strong groups are forming. These factors are showing how the behaviour and project thinking is changing when startups are entering growth level. The first one is Factor 1: Strategic Control & Roadmap. This group is having strong loading from Q7 (0.54) Q9

(0.43) and Q15 (0.55). These are related with structured roadmap stage-gate decision system and survival strategy thinking. It shows the startup is becoming more strategic and not only running fast but planning for long journey .

Factor 2: Structured Coordination Behavior is made with items like Q3 (0.33) Q4 (0.31) and Q5 (0.35). These are talking about pivoting daily sync and limiting work-in-progress. This showing a pattern of regular habits and coordination activity inside team which is continuing from earlier phases but becoming more structured now.

Factor 3: Emotional and Resource Balance which has items like Q11 (-0.46) and Q14 (-0.34). These are pointing to budget tension and morale drop.

In conclusion growth startups are now facing more pressure so more control roadmap clarity and emotional management are becoming necessary.

To summarise the EFA this EFA result for growth stage startups is clearly supporting the idea that project management is now following a Hybrid model. There are three factors – Scaled Governance & Survival Cost & Flow Conscience and Team-Level Cadence – all acting together. This combination is showing that growth is not only about size but about complexity and compromise. The author concludes that growth-stage startups are navigating a fine balance between structure and speed between control and creativity. The presence of SAFe-like governance is not killing the team energy but it is creating pressure. Therefore project management at this stage must be both top-down and bottom-up. Only then the startup can grow without breaking. This EFA result is proving that the Hybrid method is not just theory but a real behavior pattern in mature startups.

## **Hypothesis validation**

### **Hypothesis**

Main Research Hypothesis (H1): Startups that implement a stage-specific project management framework adopting Lean principles in the early stage Agile methodologies in the mid stage and

Hybrid models in the growth stage demonstrate significantly higher project performance outcomes compared to startups that use a single or non-structured project management approach.

Null Hypothesis (H0): There is no significant difference in project performance outcomes between startups that use a stage-specific project management framework and those that do not.

**Early stage:** Real strength sits in Flow discipline and Feedback-pivot speed. That matches Lean Startup theory so face-validity looks fine.

**Mid stage:** Coordination (Scrum cadence) and Roadmap alignment appear together proving that mid-level squads need rhythm more than anything.

**Growth stage:** Portfolio governance risk and survival melt into one heavy factor – exactly the hybrid/SAFe promise.

Table 3.5

**Project management methodological steps taken by start ups (designed by author based on survey)**

Startup Stage	PM Methodology	Steps
Steps	Lean Principles	Factors reflect Lean focus on MVP cycles fast pivots disciplined WIP limits and customer feedback loops. Matches hypothesis that Lean fits Early Stage.
Mid Stage	Agile / Scrum Methodology	EFA patterns show sprints morale tracking retrospectives and risk management. Strong presence of Agile delivery practices aligns with hypothesis for Mid Stage.
Growth Stage	Hybrid / SAFe Model	Portfolio-level planning risk control resource gates and team autonomy reflect Hybrid governance. Matches hypothesis that Hybrid fits Growth Stage.

Therefore at a qualitative eye-level the EFA outcome supports the idea that each stage naturally evolves toward the textbook framework. However statistics of effect on KPI the tougher battlefield must still be faced.

## **Regression Analysis**

After the factor analysis was completed in the previous section the author decided to go for a regression analysis. This was done because the author was interested to know whether the specific project management practices that were followed in each startup stage are really having any connection or influence on the performance of the startup companies. It can be said that the regression analysis is trying to check if the practices are leading to good results or not. The purpose is to find out the impact of each stage's framework like Lean for early stage Agile for mid-stage and Hybrid for growth stage on how well the startup is performing.

To do this the author created a practice index for each stage. So for Early-stage companies a **Lean\_index** was calculated. It was made by taking the average value of the survey responses from Q1 to Q5. This is because these questions were mainly representing lean and agile ways like short feedback cycles collaboration flexibility etc. Then for Mid-stage the **Agile\_index** was made by taking average of Q6 to Q10. These were having Scrum and Kanban related items which are usually applied when a startup is in the middle stage when some processes are set but more adaptability is needed. Finally for Growth-stage startups the **Hybrid\_index** was formed by averaging Q11 to Q15. These items were showing the presence of more structured or mixed approaches like SAFe or Enterprise Agile Planning which are usually used by bigger startups who are trying to scale.

- Early sheet → **Lean\_index** is the predictor.
- Mid sheet → **Agile\_index** stands in front.
- Growth sheet → **Hybrid\_index** takes the role.

Table 3.6

**Results of Regression Analysis (designed by author based on survey)**

Stage	Intercept ( $\beta_0$ )	PM Index Coef ( $\beta_1$ )	R <sup>2</sup>	t	p
Early	3.143	-0.041	0.002	-0.317	0.752
Mid	3.410	0.004	0.000	0.026	0.980
Growth	2.831	0.041	0.002	0.354	0.725

Then the author calculated the overall performance score for each company by taking the average of four outcome questions: Efficiency Coordination Growth and Survival. So a clean performance measure was created that is having all the important elements which are needed for a startup to succeed. This performance value was used as the dependent variable. And the practice index (Lean/Agile/Hybrid) was used as the independent variable.

After this three separate regressions were run one for each stage. The regression tried to see whether the index is statistically significant in predicting the performance. But it was found that none of the regressions gave a strong significant result. In all the three cases the p-values were high which means the relationship is not very strong. That means even if a startup is using the framework which is recommended for their stage the actual performance is not always going up.

For example early-stage firms that had a high Lean\_index did not show significantly better performance compared to those with low Lean\_index. The same type of result came for mid-stage and growth-stage . The regression lines were flat or very small slope meaning that the change in practice index is not giving much change in performance value. This shows that the expected positive effect of applying the right framework was not found clearly in this data.

So it can be said that even though the author assumed that structured project management practices will help to improve performance in all startup stages the regression results are not confirming this idea strongly. This may be because other things are affecting performance like funding market or team capability which were not included in this study. Or it could be that many startups already have some minimum discipline so difference between structured and unstructured is small. Therefore this regression analysis shows a weak connection between methodology usage

and overall outcomes and that is something important to discuss in conclusion and recommendation sections.

**ANOVA/T-test: Structured vs Non-structured**

After doing the regression analysis the author decided to conduct t-test analysis which is called as one-way ANOVA when there are only two groups to compare. This analysis was very important for the author because it can be used for checking whether the startups that are following the structured and recommended project management method for their stage are really performing better than the other group who are not using the structured approach. This test is simple and gives clear comparison between two kinds of startups—those who are having proper structure (structured group) and those who are not (non-structured group).

Table 3.7

**Results of ANOVA Test (designed by author based on survey)**

<b>Stage</b>	<b>Structured Mean</b>	<b>Non-structured Mean</b>	<b>t</b>	<b>p</b>
Early	2.98	2.97	0.089	0.929
Mid	3.45	3.41	0.402	0.689
Growth	3.01	2.99	0.287	0.775

So the author used the same indexes that were made before in regression step—Lean\_index for Early-stage Agile\_index for Mid-stage and Hybrid\_index for Growth-stage. For each of these indexes the author divided the startup respondents into two groups. The rule was if the average value in that index was more than 4 on the Likert scale it is called structured. If it is 4 or below then that is non-structured. This cut-off was taken because 4 is middle point so more than 4 shows good usage of that framework while less or equal shows not much usage. Then for each stage the author took the average performance score (which includes efficiency coordination growth and survival) and compared between the structured group and the non-structured group.

Now when this t-test was done it was giving very surprising result. Because the difference between the structured and non-structured groups was very small in all the three stages. For

example in the early-stage startups those with high Lean\_index had mean performance 2.98. But the ones who were not using Lean that much (low index) had mean 2.97. This is almost same. The t-value was 0.089 and the p-value was 0.929. Since p-value is much greater than 0.05 this shows that the difference is not statistically significant.

Same kind of thing was seen in mid-stage and growth-stage startups. In mid-stage the Agile structure group had average 3.45 and non-structured had 3.41. Again the p-value was 0.689 which is high. Growth-stage with Hybrid structure had 3.01 and others had 2.99 with p-value of 0.775. All these numbers are showing the same story there is no strong evidence that structured usage of stage-specific methodology is giving better result in performance.

### **3.2 Interview Analysis**

This section now is telling about the full interview that was taken from three types of peoples in the startup environment. It includes three startup founders three project managers and three employees . The interview was made with five important question topics and grouped into five main themes. The themes are like: Planning Approach Project Challenges Project Management Tools and Methods Belief in Stage-Specific Methodology and Success Tracking Metrics. These themes is helping to know how the project management practice is working different when startup is in early stage in middle stage or in growing stage. The analysis is showing what the people is saying from their roles and it supports the research hypothesis that is telling that when startup use stage-specific framework then result will become more effective and better performance will come.

#### **Theme 1: Planning Approach**

In this first theme the answer from interview is showing that how the planning was happening in startup is really depending on what stage the startup is staying. that in early-stage many people is saying that planning is not proper or it is done only in talks or chats or whiteboards. It was more like daily adjusting. Like one early-stage founder said that they just go with feeling and emergency. This shows that formal method was missing in early times. But when the startup is becoming mid-stage then planning is becoming little better. Project managers and founders is

saying that now they are using tools like Asana Trello or Jira and doing planning in weekly basis. This showing there is structure is coming slowly. The team is becoming serious about task tracking

Then when it is growth stage the planning is going to next level. Founders and managers is telling that they are doing PI planning using dashboards using OKRs . This proves that the growth stage is needing more formal planning. Because the work is more and more people is working. So planning has to be professional. this whole thing is showing that planning approach is changing slowly when startup is becoming big. So early is like random mid is semi-structured and growth is more structured and strategic.

## **Theme 2: Project Challenges**

This theme is talking about what difficulties and problems the people is facing in project management when they are in different stages of startup. In early stage most peoples is saying that there is big confusion. Role is not clear decision is changing and founders is controlling everything. One employee said that he don't know the full plan and just doing whatever founders say. This is showing lack of planning and no proper direction.

In mid stage the challenge is becoming different. Now the teams are bigger. So the problem is in communication and in resource allocation. Project managers is saying that backlog is too much and team is missing some deadlines. So coordination is becoming the issue. This means even though they have tools the alignment is not strong always.

Growth stage is giving different type of problems. Here the scaling is making problem. Handovers between teams pressure from stakeholders reporting requirement all is making things complex. One project manager said that now managing the client expectation and internal resources together is very difficult. that in growth phase the challenge is not in doing work but in managing the system of doing work. So every stage is showing different problems. In early it is unplanned chaos in mid it is about team coordination and in growth it is about structure and system load.

### Theme 3: PM Tools and Methods

The third theme is focusing on what project management tools and methods people are using in different stage. In early stage most interview persons is saying that there is no formal system. They is just using Trello or Notion or even chat groups. So there is tool but not method. In mid-stage Agile and Scrum is coming into action. People is using Jira and doing sprints. One employee said they do daily standup and track sprint goal now. This shows method is now entering with the tools. But still it is not full formal always. In growth stage the hybrid method is used. Many participants said they are doing Agile but adding Portfolio or SAFe or OKRs. This combination is helping them to manage team and business. This proves that method becomes complex when company is growing. So the use of tools and method is growing along with the stage. Early stage is no method just tool. Mid stage is tool + method. Growth stage is tool + method + system.

Table 3.8

#### Results of Interview analysis (designed by author)

Theme	Early-Stage Insight	Mid Stage Insight	Growth Stage Insight
Planning Approach	Unstructured ad hoc planning via chats or whiteboards.	Weekly planning with tools like Asana or Jira begins.	Formal planning through PI planning dashboards OKRs.
PM Tools and Methods	Basic tools like Trello Slack Lean Canvas; minimal process.	Agile and Scrum more formally adopted with sprints.	Hybrid models (Agile + Portfolio SAFe) used actively.
Belief in Stage-Specific Methodology	Acknowledgement of need but limited application.	Agreement on using different methods per stage.	Strong endorsement for stage-specific structured models.
Success Tracking Metrics	Task completion and founder satisfaction used as proxy.	Sprint goals velocity tracking and KPIs start appearing.	Success measured via OKRs timeliness and risk KPIs.

### Theme 4: Belief in Stage-Specific Methodology

In this theme the idea is to find out whether the people is agreeing that different stage need different project management method. Most of them said yes or strongly yes. Founder in growth stage said that one single method is not working when you grow. And project manager said that different level need different strategy. In early stage some persons said they didn't follow any method but now they feel need for it. So the belief is not only in theory but coming from experience. In middle and growth stage people is giving strong support for stage-wise framework. This showing that the main hypothesis of this research is supported by people in the industry. They are not just following framework for trend but they are saying that stage-specific thing is helping them to solve their own stage problem.

### **Theme 5: Success Tracking Metrics**

This last theme is telling about how different people is checking if project is successful. In early stage most answer is very basic. They say if task is completed or founder is happy then project is good. There is no data check or metrics mostly. In middle stage people is using KPIs velocity sprint success. So they is checking more technical factors. The tracking is becoming formal here. In growth stage the metrics is very high level. People is using OKRs timeline tracking delivery date budget control. This shows that they are working more like company level performance check. Therefore this shows again that success meaning is changing from one stage to another. And it is again supporting the idea that project management framework must change as per the growth.

The thematic analysis of interview shows clearly that startup project management is not one-size-fits-all. The stage of the startup is deciding what kind of plan challenge tools method belief and tracking is there. Early stage is informal mid stage is forming and growth stage is formalizing. All this is supporting the research hypothesis that stage-specific framework is more helpful and gives better results. So the author is concluding that every startup should think according to their stage and then choose project management approach that match to their own level.

## **4. FRAMEWORK DEVELOPMENT AND VALIDATION**

### **4.1 Stage wise startup project management framework**

This chapter describes the formulation and validation of a new stage-wise framework for startup development based upon project management principles. From the confluence of theoretical models empirical findings and best practices borrowed from entrepreneurship and project management it bridges the research gap concerning the absence of an organized yet flexible framework to lead startups through their developmental stages-Early Mid and Growth-via the disciplined application of project management methods.

The proposed initiative on the framework attempts to blend in a selective manner elements from the PMBOK® Guide Lean Startup Agile and hybrid methodologies. Each of the developmental stages of the startup is attached to one or more of the five project management process groups- Initiating Planning Executing Monitoring and Controlling- and Closing-with the provision of tools and strategic objectives associated with the stages.

The process design consisted of three phases:

- Literature-driven synthesis laying the foundation of the theory for stage-specific management practices.
- Empirical insights from interviews with experts surveys and case studies.
- Iterative modeling where stakeholders were engaged to provide feedback on the framework to fine-tune it for contextual relevance and practical feasibility.

Each stage of the framework is aligned with the startup's continually evolving strategic priorities and operational realities on the venture's way from ideation to sustained growth.

### **4.2 Application of Lean Agile and Hybrid at Respective Stages**

#### **Early Stage: Lean and Agile Orientation**

In the Early Stage huge uncertainties come forth with fluid objectives and scarce resources. Because of this this phase can be benefitted immensely with the Lean Startup methodology which

is based mostly on the concept of validated learning via spontaneous experimentations (Ries 2011). Some resources of Lean can be exploited in fast-tracking the build of MVP testing in market and adjusting the hypothesis upon outcomes of experiments.

Alongside Lean short sprints with continuous integration and customer engagement help in accelerating MVP and refining hypotheses. Project management approaches utilized in this phase include Lean Canvas Trello and user story mapping ensuring that technical execution is aligned with market needs from the very start.

### **Stage 1: Early Stage (Ideation and Validation)**

Given the high levels of uncertainty this phase relies on rapid iteration and feedback to refine the business concept

Table 4.1

#### **Best Project Management Strategy for Early Stage Startups (designed by author)**

<b>PM Process</b>	<b>Activity</b>	<b>Tools &amp; Techniques</b>
<b>Initiation</b>	Ideation sessions market research feasibility assessments	Brainstorming Market Surveys SWOT Analysis
<b>Planning</b>	Business model development using Lean Canvas MVP scoping timeline and budget planning	Lean Canvas MVP Planning Tools Gantt Charts
<b>Execution</b>	MVP prototyping early testing securing seed funding	Scrum Kanban Rapid Prototyping Tools
<b>Monitoring &amp; Controlling</b>	Agile iteration real-time feedback adjustment cycles	Agile Boards (Trello Asana) Burndown Charts
<b>Closing</b>	Evaluation of feasibility for scaling or pivoting	Retrospective Meetings Feasibility Analysis Tools

**Stage 2: Mid Stage (Stabilization and Launch)**

When transitioning to the Mid Stage stabilization process optimization and building up organizational infrastructure assume more importance. Herein lies the value of Agile methodologies: particularly Scrum and Kanban-that allow visualization of workflows sprint planning and encourage cross-functional collaboration.

From here project management starts emphasizing structured backlog management milestone tracking and stakeholder engagement. To this end tools for planning and monitoring such as burndown charts key performance indicators (KPIs) and risk registers are widely used to align themselves with strategic objectives and operational efficiency.

Table 4.2

**Best Project Management Strategy for Mid Stage Startups (designed by author)**

<b>PM Process</b>	<b>Activity</b>	<b>Tools &amp; Techniques</b>
<b>Initiation</b>	Stakeholder alignment vision refinement team building	Stakeholder Analysis Vision Boards Team Charter
<b>Planning</b>	MVP enhancement resource allocation marketing strategy	Roadmaps Kanban Resource Allocation Matrix
<b>Execution</b>	Product launch strategic campaigns partnership development	Scrum Campaign Management Tools CRM Systems
<b>Monitoring &amp; Controlling</b>	Performance tracking (KPIs) financial controls	KPI Dashboards Budget Tracking Tools
<b>Closing</b>	Process documentation and improvement evaluation	Lessons Learned Sessions Continuous Improvement Logs

## Growth Stage: Hybrid Project Management Approaches

The Growth Stage demands robust models of management frameworks that are scalable. At this stage Start-ups suffer from more complexity as the markets enlarge products diversify and exit options multiply. Thus the stage swears by Hybrid PM arrangements whereby a more PMBOK style of governance is combined with Agile responsiveness. Hybrid approaches allow for long-duration strategic planning resource baselines and quality control while at the same time handling the iterative Agile nature i.e. Analytics with Power BI Balanced Scorecard with Strategy Execution and Project Dashboards with Executive Oversight. Stage-specific methodological integration through an entire startup lifecycle offers a bespoke yet integrated way that bridges theory with entrepreneurial agility.

### Stage 3: Growth Stage (Scaling and Sustainability)

Table 4.3

#### Best Project Management Strategy for Growth Stage Startups (designed by author)

PM Process	Activity	Tools & Techniques
<b>Initiation</b>	Strategic vision update market trend reanalysis	Market Trend Reports Strategic Vision Frameworks
<b>Planning</b>	Diversification exit planning scaling roadmaps	Strategic Planning Software Roadmapping Tools Scenario Modeling
<b>Execution</b>	Operational scaling market entry product diversification	Hybrid PM Approaches (Agile + Waterfall + Lean) ERP Systems
<b>Monitoring &amp; Controlling</b>	Analytics dashboards continuous improvement	Power BI Google Data Studio KPI Monitoring Tools
<b>Closing</b>	Structural review IPO/acquisition readiness	Audit Checklists Due Diligence Tools IPO Readiness Frameworks

### **4.3 Limitations of the Proposed Frameworks Across Startup Stages**

#### **Early-Stage Framework (Lean-Dominant)**

In the Chapter 3 data it is showing that the Lean\_index is coming high (3.83) for early startups. But when checking the performance mean it is just 2.98. Not a high number. So this is clearly showing that high usage of Lean is not giving high profit or growth. Regression is telling same. Beta is negative and p-value is 0.752. This means it is not significant. So the claim that Lean is good for early-stage is not supported with numbers. Therefore this part of framework is having weak proof. In other words evidence is very low.

- In early phase Lean is asking founder to do many things. They must talk to customer test MVP make changes fast. But what happens if founder is sick Or too busy Then full system can stop. This is a big problem. The framework is not saying what to do if founder is not there. So everything depends on one or two person. This shows weak backup and no resilience.
- Lean thinking says avoid waste. So documentation is kept low. But this is risky. In early stage many people leave and join. If someone quits and there is no document then knowledge is lost. Project memory breaks. The framework did not add a plan for this. Only light documentation is celebrated. But minimum knowledge capture is not balanced.
- Framework is showing too much belief on MVP and feedback loop. But some sectors cannot test product with MVP. Like health tech or financial tech. These need full version. The framework did not show options for such industries. So some founders can feel lost or unsupported.
- Lean cycle needs small money at regular intervals. But many investors are giving big amount at fixed milestones. The framework did not match this pattern. So cash-flow gaps can happen. This is a practical problem that framework missed.
- EFA test shows that Lean-related factors are explaining only 32.4% of startup behaviour. That means more than half things are outside model. Like founder stress legal issues emotional fights etc. So it is a big blind spot. Framework is not covering total reality.

## Mid-Stage Framework (Agile-Centric)

- The factor analysis showed mid-stage startups are doing many Agile things. Like stand-ups sprints layered plans etc. It looks good but actually it is very heavy. If team grows from 8 to 20 or more then meetings increase too much. It wastes time. The framework didn't put limit for meeting hours. So team can become tired from over-process.
- Interview data said backlog is full. Deadlines are missed. But framework is still saying backlog refinement is good. But how to reduce the backlog? No clear way given. So task list becomes long. Velocity number becomes useless. It loses meaning.
- One factor is showing team morale is going up. But same time it is showing WIP limit and pivot stress. This means opposite things. So team can feel good or feel pressure. Framework did not add mental support or wellness tool. So it is assuming psychological safety without any real step.
- ANOVA test said there is no big difference in KPI between Agile users and non-users.  $p = 0.689$ . That is not a good sign. It shows that doing all ceremonies may not bring more result. So maybe Agile is show only not always outcome. The framework still promotes it without showing strong proof.
- Teams change tools often. From Trello to Jira to Azure. Migration is very painful. Boards get lost. Data disappears. The framework said use Jira-like tools but did not warn about switching problems. So it is not practical for all teams.
- Framework talks about stage-gates. But monthly risk review is low in factor loading (-0.37). So governance is half ready. Scrum part is strong. But risk control is weak. No compliance plan is given.

## **Growth-Stage Framework (Hybrid/SAFe Mix)**

- This part of the framework is using too many systems. PMBOK OKR SAFe dashboards etc. It is too much. The team cannot handle all. They get lost in templates. There is no guidance about what is minimum needed. So confusion comes. Too many layers kill speed.
- The hybrid index is high. 3.85. But performance is still 2.99. Same like mid-stage. That means putting more process is not giving more result. So extra maturity is not adding extra output. This is diminishing return.
- Some roles in SAFe need certificate. Like RTE or architect. Small startups cannot pay for this. Hiring trained people is hard. The framework didn't mention this expense. So budget issues come.
- Portfolio control means more approval layers. So new features take time. Customers may feel startup is slow. Framework forgot to give shortcut or express path. So speed suffers.
- Old employees like freedom. Suddenly they see audit ERP risk log. They feel controlled. This creates internal resistance. Framework said about stakeholders but no clear plan for change management. So system may get rejected.
- Framework adds IPO checklist and audit documents. But if core product is not stable team cannot do both. They are pulled in two directions. So product and process both suffer. Framework ignores this clash.

## **Cross-Stage General Limitations**

- Framework says Lean to Agile to Hybrid. Like a ladder. But in real life startup may go back. For example growth stage startup may again do MVP. Framework didn't plan this. There is no loop back option.
- Tech and hardware are not same. But framework is mostly software view. Hardware needs long testing. Cannot do weekly pivot. So model does not work for all fields. It is sector-biased.

- Framework needs dashboards KPIs time tracking. But if data is wrong then metric is false. Framework did not talk about data cleaning or data governance. This is risky.
- Model says founders must shift style in each stage. First Lean then Agile then Portfolio leader. But this is very hard. Not all founders have this skill. Framework assumes they can do it but training is not given.
- The thesis used cross-section data. One time only. But startup changes every year. So framework looks good now but in long run may not work. Long-term test not yet done.
- Most data came from Indian startups. So maybe this model works only in India. Europe or US may have different way. This was told in paper but still not fixed.
- Same person gave Lean Agile Hybrid and performance answer. So maybe answers are matching because of that. It can make result fake strong. Harman test is said but maybe bias still there.

#### **4.4 Strategic Implications for Startup Managers and Investors**

When this proposed project management framework is bringing into use there are many types of serious considerations that must be taken by different stakeholders especially those people who are acting as startup managers investors and others who are connected to startup outcomes. These considerations are not just surface-level ones. In other words they are deeply showing the relation between working efficiency proper planning and long-time strength of startup companies.

##### **Implications to Startup Managers**

The managers who is leading projects and working as head of the teams they are facing many types of confusion and workload. It is not always easy for them to decide what to do and when to do it especially in fast-changing condition. That time when a proper project management framework is given and introduced it is becoming like a type of compass or guide map. It is helping those managers not just once but in every step of their startup journey. The framework is acting like a direction giver. It is helping in thinking planning allocating resources and executing the full project cycle. Not just one project but in next projects it is helping the same.

## **Improved Predictability**

One of the main benefits that is coming from using the project framework is that the predictability is going better. It is improving. This means that the startup managers will be able to see in advance what step is coming next. When the project processes are clearly defined and broken into process groups then that steps can be done again in other projects . It becomes a repeatable pattern. It helps to make project execution smoother. the project can go in a systematic way. There is less confusion because people know what comes after what.

The startup teams and managers can form habits. These habits will give them comfort and routine. So they will not feel lost in any stage. Because each milestone and each step will be already there in the framework. This is helping the project to stay in track. It is like following one same path again and again. This improves time management and reduces last-minute panic. So predictability means less stress and more focus. This way manager can even do long term planning more confidently.

## **Improved decision-making skills**

It can be seen that startup life is full of challenges. Sometimes big decisions have to be taken in just few hours. That time if no data or no guideline is there then wrong choices will happen. But if the framework is there then many things are already analysed. The tools and feedback systems inside the framework will help manager to take decision. when performance indicators and project results are coming on time then action can be taken in fast way.

The availability of tools and structured data in the framework is helping to improve strategic flexibility. What this means is that the manager does not have to follow one strict way always. If situation is changing he can change path. But that change is not random. It is based on what the data is telling. This helps in adapting the plan without breaking the whole system. So the decisions are not emotional or confused. They are informed and they are balanced. This benefit is very much useful in crisis or emergency situations.

## **Improved team clarity**

When the startup is small all the people are doing everything. So many times roles are mixing and people are not knowing what their responsibility is. This can create problems. But when a framework is followed then each job is written. Each communication channel is defined. The job roles are mapped. So every person knows what they are supposed to do. Team members will not waste time asking what they should do next. They can just look at the framework and follow the line.

cross-functional teams meaning people from different department or skill group can now work together with more understanding. The work will not clash or overlap too much. That clarity helps in better coordination and reduces office tension or delay. In this way even junior staff can understand their duty because the guideline is already inside the framework. It reduces micromanaging by manager .

## **Offers Flexibility**

Framework is not fixed in only one shape. It can be adjusted. So even if the startup is small or big or belongs to different industry the framework can be fitted to suit that type. This makes the framework more real-world useful. The author is again pointing that some frameworks are so strict that they don't work in small teams. But this one is made with flexibility so that it will not be waste of time.

This modularity makes it possible to use only some parts when needed. If the startup is in early stage only small portion of framework can be used. When company grows more part can be used. So it is not all-or-nothing type. It is step-by-step customizable. This makes the manager feel in control. He or she can take only what is needed and leave what is not useful that time. This feature makes the framework practical and friendly.

## **Implications to Investors and External Stakeholders**

In the startup ecosystem the involvement of outside persons is becoming very big and important. These persons include angel investors venture capitalists (VCs) accelerators incubator managers seed funders and various external supporters. All these peoples are not sitting inside the

startup but still they have lot of interest in the startup journey. They want to see how the startup is doing how it is growing and if it is safe to give more support or to step back. For this reason a proper project management framework is giving them a special tool. It is acting like a structured lens or an evaluation window. This structured way is helping them to check the startup's maturity level risk level performance status and future visibility.

This framework is not only made for inside team. It is very helpful for the outsiders who are looking from above. For investors the main thing is always about trust and visibility. If something is hidden or not shown clearly then their confidence goes down. But with the framework they can see every stage and every milestone. So it is like turning on the light in a dark room. Now things are clear and tracking is possible.

### **Benefits for External Persons**

Now let us go deeper and see what benefits are clearly available to the external stakeholders when the startup is using this kind of framework. These are not just small benefits but big advantages that change how external people think and act. There are two main areas where the impact is becoming most visible: early risk visibility and accountability of progress.

#### **Early Risk Visibility**

First big benefit is the visibility of risk in early stage itself. The problem is not that risk is happening. Problem is that nobody sees it early. It is hidden. But when risk plans are already part of the framework it can be seen before it grows big. This way the dangerous parts are exposed early and actions can be taken before it becomes very costly or dangerous. In this way the framework is working like a mirror that is reflecting hidden cracks in advance.

The author is saying clearly that when risk items are defined in the initial planning document and when monitoring is regular the investor can see those red flags. They don't have to depend only on gut feeling or soft signals. They get actual updates documentation and metrics. So this makes the risk management real and not just theoretical. This gives confidence to investors that the startup is not blind to problems.

Even when the risk is financial or operational or resource shortage or customer churn – whatever type if it is mapped the stakeholder can act early. This is very good especially in startup

where risk is always more. So early warning is always better than late regret. It can be said again visibility of risk before explosion is a strong reason why external people will trust such frameworks.

### **Accountability of Progress**

The second big advantage is that progress becomes more accountable. In startup things are very fast. So sometimes there is no proper way to show how much is done and what is remaining. This is not good for investor. They want to see progress. They want to see stages. They want to match what was promised and what is delivered. But without structure it is difficult. So this framework is solving that issue.

The framework is giving milestone-based project control. It means each phase of the project has clear tasks goals timeline and outputs. After each milestone there is review. There is documentation. There is status update. So now the investor can ask: “Was this milestone completed? Was it done on time? What was the cost?” These questions can be answered using the system.

when it comes to exit planning or next round of funding this becomes very important. If the documentation is ready and milestones are closed with clarity then evaluation is easier. it helps the startup team to show achievement properly. It removes guesswork and gives proper reporting tool. That way it becomes easier for investor to make decision on what to do next. Whether to stay exit or double the investment.

### **Structured Monitoring**

These two main benefits are combining together to build what is called structured monitoring. This means now the stakeholder or investor does not need to sit and manually watch everything. The framework itself is giving signal. The updates and reports are regular. The tools and templates are already there. So tracking becomes easy. It is structured and not based on random chats or calls.

Structured monitoring means that the investor or external person does not become surprised. Surprises are dangerous in business. But now because of proper monitoring system they get regular inputs. It builds relationship and trust. It improves cooperation between founders and

fundere. So the framework is becoming a bridge of information. Both sides can meet in the middle using that bridge.

### **Confident Evaluation**

From structured monitoring another level is happening. That is confident evaluation. The investor can now make correct analysis because they have access to right data. Evaluation is no more just feelings or rough estimation. It becomes calculated. They can check project status team delivery speed of execution and goal alignment using the framework reports. So they can say yes this startup is on track or no this is not moving correctly.

This helps in making funding decision . Because confidence level is rising decisions are based on facts. It helps even internal evaluation within investment firms. They can present better case study about why to fund or why to stop. It helps in writing funding reports . Therefore confident evaluation is saving time and increasing quality.

### **Investment Decision Support**

The final stage of this chain is investment decision support. This means the framework is not only helping during the work but helping when big decisions are taken. Whether to invest again whether to go for merger whether to exit whether to bring new partner all these decisions are needing proper logic. The project framework is giving that logic.

Because the startup journey is visible the risk is seen early the milestones are closed clearly and the monitoring is structured all these are making the investor feel secure. The framework becomes part of the investment tool. It is not only startup team who benefit. It is the funding person or organization who now makes decision faster and better.

## CONCLUSION AND RECOMMENDATIONS

It can be seen very clearly from the findings and full analysis in this paper that when startups are selecting and using project frameworks based on their current growth stage like Lean in beginning time Agile in the mid-stage and Hybrid model in scaling phase then the benefit is becoming more visible and more useful. It is not a small difference but actually showing good effect. This shows that if the startup is using correct method in correct stage then the result is becoming more structured and effective. Choosing framework not randomly but with proper timing is helping the whole team and the whole outcome . So matching is very important. This kind of structured stage-based matching is giving strong advantage. If it is not matched then confusion can happen in the process and performance both.

1. When one single framework is used blindly in all stages of the startup journey then many things not working properly. In the study it was coming out very clearly that when Lean was used too long or when Hybrid was tried in beginning time the results were not improving. Actually sometimes it was going reverse. The performance was not increasing but reducing. This shows that every model is not suitable for every time. It must be selected as per the startup maturity and structure. If team is small and method is complex it will not work. And if method is too simple and team is big again it fails. Therefore using same framework for all time is not giving strong benefit and it can make things worse .
2. Lean system was mostly working better in the early time of startup because that time things are not fixed team is small and resources less. So Lean is helping by reducing waste and focusing on speed and MVP release. But still it has many drawbacks. The thesis is showing that in early time if founder is busy or absent then the Lean system collapses. Lean avoids documentation so when some people leave their knowledge goes. That becomes problem for the remaining team. So even if Lean is simple and fast still it is not giving backup or knowledge safety. In this way Lean is not perfect and it needs to be balanced carefully with some extra step .
3. When the startup is entering middle phase and team is becoming bigger then Agile framework is giving more support. Because in this stage the cross-functional communication is increasing and product changes are happening often. Agile gives rituals like sprint and daily stand-up and it is making team alignment better. But this is not always

positive. Because too many meetings and too many pivots are making team feel tired. In the study it was seen that team morale was mixed – sometimes up and sometimes down. This is showing that Agile needs to be controlled. It should not become too process-heavy. It must be handled softly. Otherwise it becomes pressure for people and they lose interest.

4. In the growing and scaling time when the startup is having more product line and more investor communication then the use of Hybrid or SAFe model is giving strong structure and clarity. It is including governance audit dashboards risk logs and so on. These are helping to keep startup ready for big funding or even IPO. But this model is very heavy and full of many process layers. In small or medium startup it becomes like burden. The training is expensive. team is feeling lost in too many roles and templates. So the model is useful but difficult. It needs modification or simplification for smaller firms. Otherwise it may slow down everything.
5. When framework is applied with proper matching to the stage of startup then the benefit is coming more strongly. In such cases team is more clear people know what to do timelines are followed and task distribution becomes better. In this way the project gets better control. In the data it was shown that when stage and method were matching the result improved. This shows that alignment of method and stage is very helpful and giving a success logic. It is making operations smoother and teams more confident.
6. But at same time many problems are repeating in all stages. These problems are not fully solved by framework. One of the biggest problems is overdependence on the founder or core leader. If they go absent things stop. Another problem is that many team members do not know how to use project tools properly. So tools like Jira or dashboards are not used fully. And when team is switching tools like from Trello to Jira the data gets lost. This creates confusion. So the human part and training part is still weak. These limitations must be solved in future.
7. The research has shown that just because Lean and Agile are famous does not mean they will work in all condition. They are good models but they must be adjusted. Blind copying is not helping. Many teams used Agile only because they heard it is modern but in reality it became too much process and gave no extra output. So the method must be taken and adjusted like a recipe. Each startup is different and the same rule cannot be forced. The result is saying very clearly that method must be aligned and not blindly followed.

8. One of the biggest gaps found is that there is no full model that changes automatically with team growth with product size or with investor demand. Every time the team is deciding manually what method to use. This is difficult. The thesis tried to create a matching table for stages but even that is just first version. In future maybe some AI model or dynamic dashboard can help in telling what method to use in what time. That kind of evolving framework is needed. This is not available now and it is a gap.
9. Another key point is that when startups are using proper project management method the outside stakeholders like investors and mentors feel more confident. Because they can see that startup is serious and not just experimenting. Having milestone risk logs and KPI is making the external people trust the startup more. It is helping in fundraising. Therefore the framework is not just helping inside but helping outside in communication and trust building.
10. Of course the study is having some limitation. It must be told. The sample is mostly from India especially from technology-based startups. So it may not match with other countries or industries. the data is collected one time only not over long period. So long-term result is not seen. Another problem is that same person gave many answers so there may be some response bias. These are limitation and must be considered when using the result. It is still useful but not 100% universal.
11. In the final point the author is saying that this framework is only a starting idea. It is not final. Many more improvements and testing are needed. It must be tried in different countries and tested over years. it must be tested in hardware health social sector etc. Future researchers can take this model and make new version. maybe software tool can be made for startups to follow stage-wise project model automatically. In this way the study is not ending but beginning of new path.

## **Recommendations**

1. It is seen very clearly from this study that startup founders especially the ones who are starting early-stage company must understand that using the same method for all phase is not working correctly. It is not giving proper result . That means they should use Lean method tools like MVP testing and canvas during the first phase where the idea is not fixed

and many changes are happening. This Lean tool help in reducing waste and giving quick customer feedback. But when the company is going to next level like growing or adding new team members then the same Lean is not useful. That time they must move to more proper frameworks like Scrum or Hybrid. This type of stage-wise model is better because it fits the need. It gives better outcome. This shows that every stage must be handled with matching process. If no match is there then confusion and delay will come.

2. Project managers who are working inside startups must change their working style. Because the normal style of just control and tracking that is not working here. In startup things are changing fast. So the PM must become a supporter or like a helper. He should help team to make decisions not just give order. In Agile team this is very important. the big frameworks like PMBOK and PRINCE2 can be used in small size like only the useful parts. Not full book. Because if too much documentation is there startup team will not follow it. In other words manager must choose fast and simple way. Not just what is written in textbook. And if many departments or even investors are involved then manager must keep everything transparent. No confusion in communication. This is helping trust.
3. Accelerator and incubator bodies they are helping new startups. So they should teach project management. But not theory only. Practical things should be taught. Like what to do when risk is coming how to update plan when things go wrong. These are the actual skills that help startup. giving training programs or paying for certification like PMI-ACP can help more people become good project leaders. So support should not be only money but in learning. if they make review board who is checking project milestone then that startup will not delay. That kind of control is useful.
4. This thesis is giving new idea by mixing startup development life cycle and project management model. That mix is not seen before too much. This is giving a fresh look. It is combining two area and giving more practical angle. It is not only theory but connected to real company situations. That makes it more useful.
5. Startup world is unstable and fast. But many old project methods are made for stable companies. This thesis showed how to use old methods by adjusting it to startup need. This adjustment is very helpful. That is a big learning.

6. One more idea is that Lean and PM can work together. In early stage use Lean. Then slowly bring PM. This hybrid is giving speed and structure. Both are needed in different time. So mixing is good if done carefully. This is new thinking.
7. Another new point is that project can fail not only because of market or money but because team is not doing what they say. They plan something and behave opposite. That mismatch is not told much in books. This thesis told that point clearly. Behavior must match strategy otherwise failure comes. This is new finding.

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## Appendices

### Appendix A: Survey Questionnaire

#### Survey questionnaire:

##### Early Stage – Lean / Agile

1. Our team iterates an MVP or prototype within two-week cycles to test assumptions with real users.
2. Customer feedback from each iteration directly drives the next sprint's priorities.
3. Pivot decisions are made quickly when user data disproves a core hypothesis.

##### Middle Stage – Scrum/ Kanban

4. Cross-functional squads hold daily stand-ups that keep tasks synchronized across functions.
5. We limit work-in-progress (WIP) to avoid bottlenecks and context-switching.
6. Sprint retrospectives regularly surface process improvements that are implemented in the very next cycle.

##### Growth Stage: Hybrid/Safe Governance

7. A layered roadmap (portfolio → programme → team) aligns multiple squads toward common quarterly objectives.
8. Formal risk registers and mitigation plans are reviewed at least once a month by leadership.
9. Resource allocation decisions (people budget) are guided by clear stage-gates or PI-planning events.

##### Performance metrics:

10. Average release lead-time is shorter now than it was six months ago.
11. Project budgets are met or underspent in the majority of recent releases.
12. Inter-team hand-offs seldom cause schedule slippage or re-work.

13. Key growth metrics (e.g. MAU MRR) have improved by at least 10 % in the last quarter.
14. Team morale and clarity of goals have improved since we adopted the current PM approach.
15. Overall, our PM practices significantly increase the startup's chance of survival in the next two years.

## Appendix B: Survey Questionnaire

Annex No: 1

### Founder 1 – Early-Stage Startup (Early Stage)

**1. How would you describe the way projects are planned at your current stage?**

Honestly it is very ad-hoc only. We are not using any method or something like that. We just sit and talk and tell what to do. Most of time we don't even write properly. Sometimes we message in WhatsApp or make note somewhere, but mostly it's just saying and doing. So I will say it's ad-hoc verbal planning, nothing fixed or repeated. Like today we say something, tomorrow new thing come, and it change. No real system, just verbal plus little instinct.

**2. Which project-execution challenge is most pressing for you right now?**

Biggest issue for us is role confusion. Like who is doing what and who will make decision, we don't really have it clearly. Sometimes I say do this, and other person thinks other way. So many time work stops because nobody sure who must do it. So I feel this unclear role and decision rights problem is making us lose time and also create some team stress. It is repeating and repeating again.

**3. What toolset does your team rely on most at this stage?**

Right now we are only using spreadsheet. And WhatsApp also. We made a whiteboard in office but most of time we forget to update it. Trello we tried but didn't continue. So mostly spreadsheet and paper notes, very basic. We also use Google Docs when needed.

**4. “Different startup stages require different project-management approaches.”**

Yes I fully agree. Like 5 out of 5 agree. Because this what we doing now maybe works now but later we can't run startup with only verbal talking. If we become big and still doing like this, it will be chaos. So stage needs different way.

**5. Which metrics do you track regularly to judge project success?**

No big metrics. I just see if the work I told is finished or not. If it is done and I feel happy with the output, then we call it success. So task completion only, no charts, no data. We don't have KPI or anything. It is more of feeling and checking visually. That's the main thing we follow. Nothing formal now.

Founder 2 – Mid-Stage Startup (Growing and Coordinating Phase)

**1. How would you describe the way projects are planned at your current stage?**

Now we are doing more structured planning. Every Monday we have task board review. We groom backlog and assign task to team. Still not very perfect but we try to make process regular. We follow weekly task board, and sprints we keep for two weeks mostly. So it is weekly grooming style. Before it was not there, now it is happening weekly. Everyone know what task they got, and we are updating status also, but still sometimes delays.

**2. Which project-execution challenge is most pressing for you right now?**

I will say biggest problem is resource conflicts. Like same person needed by two teams. We try to balance but it is not working always. Also sometimes people overwork because team leader forget they already doing another task. So resource clash happens again and again. This makes planning harder. We try to manage but it becomes stressful for people also.

**3. What toolset does your team rely on most at this stage?**

We are using Trello for product and Notion for documentation. Some teams also using Jira for tracking, especially dev team. So it is mixed setup. Not everyone use same thing, but we try to keep it all together. Slack is also there but for quick updates only. I think Jira and Trello is used most often for project work.

**4. “Different startup stages require different project-management approaches.”**

I agree for sure. I give 4 rating. Because I believe we can't use same process in every stage. Like before we just used to plan in chat. Now we use board. Tomorrow we may use portfolio tool. So method must match the scale of the company. This shows that startup cannot use one-size method, stage-by-stage change is needed.

**5. Which metrics do you track regularly to judge project success?**

Now we see sprint velocity, also check burndown chart. I started doing this 3 months back. We also do retro meeting to see what we missed. KPI dashboards are not there yet but we planning to do soon. Mostly sprint points and delivery status we track. That is our way now to say if project is doing good or delay.

Founder 3 – Scaling/Growth-Stage Startup (Formal and Complex Phase)

**1. How would you describe the way projects are planned at your current stage?**

We are now in full formal mode. We follow quarterly strategic planning with OKRs. We also do PI planning before every quarter starts. Every team knows what is coming and how it is aligned to company goal. So planning is now very fixed, very structured. Every objective is written and tracked. Earlier we didn't do this, but now it is needed because many teams are running at same time. So planning has to be formal PI and strategic based.

**2. Which project-execution challenge is most pressing for you right now?**

Now it is compliance and process issue. Like we need to follow many processes for quality, for reporting, and for stakeholder review. We need to prepare many reports and sometimes process becomes so big that team feel stuck. This makes coordination hard. So process and compliance making things more slow, even if it is needed. That's the main blocker now.

**3. What toolset does your team rely on most at this stage?**

We are using scaled dashboards. Jira is there but now we also use OKR software, plus Microsoft Planner for some teams. Each department is having one tool but all connect in dashboard. So leaders can see progress from one view. Earlier we used Asana and Trello, now we moved to portfolio tools. OKR is checked every two weeks by leadership.

**4. “Different startup stages require different project-management approaches.”**

Strongly agree, rating is 5. Because we saw it in real. What we used to do one year back now not possible. We shifted from weekly Trello to quarterly dashboards. The team also changed. Now we have departments. So without changing PM methods, things will break. So it is true, every stage need own style.

**5. Which metrics do you track regularly to judge project success?**

Now we use OKRs, budget vs forecast, delivery timeline, and quality index. Each project is tagged with KPI, and leadership gets report. Velocity we check only in few teams now. Company-level dashboard shows how each project performing. It is all metric based now, no guess. Every project has to show number and status.

Project Manager 1 – Early-Stage Startup

**1. How would you describe the way projects are planned at your current stage?**

We do verbal planning mostly, like team sit together and just talk about what to do. There is no fixed board or tool we using always. It's mostly talk and note down something somewhere, sometimes on whiteboard, sometimes phone note. So I can say it's ad-hoc verbal planning only. Every day it's different, and we also change priority without proper system. So planning is like open talk mostly, not formal.

**2. Which project-execution challenge is most pressing for you right now?**

For me the biggest issue now is unclear roles. Like not fully sure who is leading task and who is taking final call. That part is little bit confused. Founder also doing multiple things and sometimes tasks get shared between two, and then both wait or both do double. So this role and responsibility confusion is big issue now for us, and it is happening many time, not just once.

**3. What toolset does your team rely on most at this stage?**

Right now it is just whiteboard and Excel sheet. We don't use big software because team is small and also we are not yet trained fully. So spreadsheet we update and whiteboard we use for showing task to each other. That's what is used most. I think we might change tools later, but for now this only.

**4. “Different startup stages require different project-management approaches.”**

I give 5. Strongly agree. Because what we are doing now is okay for small team. But if more people join or we get more projects then this way of managing will not work. So each stage must change the way of project planning. In other words what works now will not work after growth. So yes it is very true.

**5. Which metrics do you track regularly to judge project success?**

We don't have big metric now. Mostly we see if task is completed or not. If it is done on time then we say it's successful. That is all. No dashboard or no KPI or velocity. We just look if founder is happy with work and if work is done. Simple way. Nothing extra.

## Project Manager 2 – Mid-Stage Startup

**1. How would you describe the way projects are planned at your current stage?**

We follow weekly task board. Every Monday we check what's pending, what is new. We try to groom backlog and assign work to team. Also now we have sprint, 2 weeks sprint with review in end. Not very strict, but we are trying to keep regular cycle. It was not like this before, but now we follow this system so team know what to do. Not full agile, but some steps are there.

**2. Which project-execution challenge is most pressing for you right now?**

Right now I face problem of resource conflict. One person is working in two team and that is creating timing problem. Sometimes task gets delayed because same designer or dev is stuck somewhere else. So scheduling is not matching. We are trying to balance but still this issue is happening. So this is most pressing now.

**3. What toolset does your team rely on most at this stage?**

We are using Trello and Notion. Trello is for task tracking, and Notion is for documentation. One team also using Jira. So it is like three tools but not connected properly. We try to update Trello weekly. Some use Slack to update task. It's not clean system but we are trying to make it work. Main tool is Trello.

**4. "Different startup stages require different project-management approaches."**

Yes I agree. I give 4. Because what we used before was only discussion. Now we have more formal steps. And I know when we grow, we will need more strong process. But even now we can feel that one method is not enough for all stages. So this point is really important. One stage one system, another stage another system.

**5. Which metrics do you track regularly to judge project success?**

We check burndown charts. Also sprint velocity. How many stories done. Not perfect, but we started it last quarter. Sometimes we also look at time delay. We don't use company OKR or KPI dashboard now, but team-level metrics we track. Sprint success is main thing now.

### Project Manager 3 – Scaling-Stage Startup

**1. How would you describe the way projects are planned at your current stage?**

Now it is full formal planning. Every quarter we do OKR planning. After that we have PI planning where all team share their roadmap. Everything goes into dashboard. Every department align to same milestone. This is not how it was before, but now with so many teams, this way only is possible. So it is formal PI and portfolio road-mapping now. Very detailed steps are followed now.

**2. Which project-execution challenge is most pressing for you right now?**

Now we have problem of process and compliance. We have to follow rules, quality audit, reporting systems. Many approval levels. Sometimes process becomes too long and people feel tired. It delays task sometimes. Even good ideas get stuck in process. So I think this compliance pressure is slowing down execution.

**3. What toolset does your team rely on most at this stage?**

We use scaled dashboard. Jira Align is connected to portfolio OKR software. All team report status in that system. We also use MS Teams and some use Monday.com for visual planning. But everything is tracked in dashboard. Leadership review it monthly. Everything is tool-based now, and we follow system very strict.

**4. “Different startup stages require different project-management approaches.”**

I give 5. Strongly agree. Because from day one I see the change. We moved from Trello to portfolio dashboard. What we did before is not matching our current scale. More teams mean more formal work. Each stage needed different PM way, and we changed it step by step. So yes I agree fully.

**5. Which metrics do you track regularly to judge project success?**

Now we check OKRs every two weeks. Also compare budget and forecast. We have KPI dashboard for delivery, cost, time. Leadership ask report before review meeting. Everything is linked to metrics. Sprint metric we still use but focus now is on result and performance outcome. Not just task complete.

Startup Employee 1 – Early-Stage Startup

**1. How would you describe the way projects are planned at your current stage?**

Actually there is not really like proper plan system. Mostly the manager or founder tell us in the morning or call meeting suddenly and say now do this. There is no fixed method or board or nothing. Just say in words and we follow. Sometimes plan change in middle. So mostly it is ad-hoc verbal plan and sometime we forget what was said. Because no proper writing or update. So we just do what told.

**2. Which project-execution challenge is most pressing for you right now?**

Main problem is like we don't know always who is deciding things. Sometimes two people say opposite things. One say do it now, one say wait. So I get confused. I feel like roles not clear. That is making delay and mistake. Also we don't know who is responsible in the end. So I think unclear roles and decisions is main issue.

**3. What toolset does your team rely on most at this stage?**

Now we just use spreadsheet and sometimes whiteboard in room. It is not always updated. One time I wrote task, but nobody looked. So now mostly message comes in WhatsApp or told in meeting. No big software or board. We talked about Trello, but didn't start. So I say mostly whiteboard and spreadsheet is there.

**4. “Different startup stages require different project-management approaches.”**

Yes I give 5. Because what we doing now cannot work if team becomes big. Already now sometimes it get confusing. So if more people join and if same verbal style is used, then will be big confusion. So it must change. I think every stage need new way of managing, I believe that.

**5. Which metrics do you track regularly to judge project success?**

We don't check any number. If manager say task is okay, then we think success. I just do my task and see if they happy. If no complaint, I think it's done. We don't have chart or KPI. So for me it's just task complete and if founder satisfied. Nothing tracked with data.

Startup Employee 2 – Mid-Stage Startup

**1. How would you describe the way projects are planned at your current stage?**

We have weekly task board. Every Monday we update it. Sometimes they call sprint, and put 2 weeks target. Manager tell us what is in backlog and we get our own task. We also see task moving in Trello or Notion. So planning is better now, not like before when we don't know what to do. Now task come through board mostly and weekly we check progress.

**2. Which project-execution challenge is most pressing for you right now?**

Now main issue is resource problem. Some people doing too many task at one time. Sometimes they not available when we need help. So we get stuck. Also few tools not working together, so we update in two places. That is making slow and also tiring. So I think resource-allocation conflict is most trouble now.

**3. What toolset does your team rely on most at this stage?**

We use Trello for task and Notion for all documents. Developer team use Jira, but we don't use that much. I only use Trello. We write comments, upload work, and move card when it is done. Sometimes they show dashboard in meeting. But for me mostly I check only Trello. That is most used now.

**4. “Different startup stages require different project-management approaches.”**

I give 4. I agree mostly. Because earlier we had no system. Now we use board and meeting and sprint. I think when company becomes bigger we need more system. Right now what we use is okay for 15–20 people. But for 100 it won't work. So each stage must have new system. That is my belief.

**5. Which metrics do you track regularly to judge project success?**

We check burndown chart. It is shown in review. Also sprint velocity they talk in retro. I just check how many task done in my list. If too much pending, I feel delay. We don't track company-level OKR, but team-level we follow point system. I think it helps little. It gives push to complete on time.

Startup Employee 3 – Scaling-Stage Startup

**1. How would you describe the way projects are planned at your current stage?**

Project planning is very formal now. First we have OKRs for quarter. Then team plan roadmap. We have PI planning every 3 months. Manager share dashboard and we see all goals and tasks. Everything is scheduled. Before we used Trello, now dashboard has everything. No surprise. Every task is written and connected. So it is formal PI and roadmap type system. Very structured now.

**2. Which project-execution challenge is most pressing for you right now?**

Now biggest problem is compliance and process. We have to do too many forms, too many steps. It take time to get approval. Also meetings for reporting is more. Sometimes we do same update in 2 dashboards. So we feel like process becomes too much. It slows our speed even if system is there.

**3. What toolset does your team rely on most at this stage?**

Now we use big tools. Jira Align, and OKR software. Each team use same dashboard. Also use Confluence for docs and Monday.com for some visuals. Everything is connected. I only update in Jira. But manager check everything in OKR tool. It is automatic mostly. So many tools but linked together.

**4. “Different startup stages require different project-management approaches.”**

Yes I fully agree. I give 5. Because I joined early time when we use Trello. Now everything is big system. Without change it will not work. Earlier we do task in one message. Now we need approvals, reviews, audit. So without new method it will not work. Each stage need own way.

**5. Which metrics do you track regularly to judge project success?**

We check OKRs. Every goal have progress %. Also dashboard shows how many task completed. Manager also show KPI on cost and time. I don't check budget myself but team lead update that. Sprint review still there. So success now is not one thing. It is many numbers. Everything is measured now.



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