

# CHAPTER I

## INTRODUCTION

### 1.1. Background

Developments in terms of modernization, innovation, invention and transformation that change the world are marked by various industrial revolutions from the industrial revolution 1.0 to now the industrial revolution 4.0. The Industrial Revolution 1.0 occurred in the 1760s to 1830s, starting various innovations, modernizations and transformations that changed industry in the world. The industrial revolution 1.0 has the characteristic of changing human muscle strength to machine power for the first time, by using coal and steam engines to replace firewood. Furthermore, developments continue with the industrial revolution 2.0. The industrial revolution 2.0 is characterized by raw materials and energy sources included in production such as electricity, coal, iron, steel, petroleum, chemicals and others. The early 20th century was filled with major world wars and in the end the industry focused on war at that time.

Then, the industrial revolution 3.0 comes marked by programmed machines, mechanical and electronic technology, this also indicates that the world will enter digital development. Industrial Revolution 3.0 began in 1970 with various operational machines and those that support industrial operations that have been programmed and facilitate human work. At the start of the industrial revolution 3.0, there was a reduction in the workforce caused by the presence of these programmed machines. Finally, followed by

the industrial revolution 4.0, the notion of the industrial revolution 4.0 is a trend reversal in the industrial world that combines automation technology with cyber technology. This technological change has had a major impact on industrial activities in Indonesia. With Industry 4.0 it is hoped that the industrial sector will be more creative and create new opportunities. However, many experts discuss the impacts and challenges of the industrial revolution 4.0. The Industrial Revolution 4.0 was marked by the development of the Internet of Things (IoT). The existence of the internet in the industrial revolution 4.0 changed various aspects of the industry. These changes occur because the process of transferring data of people, objects and other data in large quantities and sizes is only done in seconds.

According to Professor Klaus Schwab, who founded the World Economic Forum (WEF) and wrote the book *The Fourth Industrial Revolution*, this revolution has the potential to drastically alter how we interact with one another and live, work, and interact. The fourth industrial revolution has the potential to limit environmental damage, speed up information mobility, and improve industrial organization efficiency (Harahap & Rafika, 2020).

With the development of various technologies in the industrial revolution 4.0, the world we live in today is in the VUCA (Volatility, Uncertainty, Complexity, and Ambiguity) era. Everything in the world today moves quickly, changes rapidly, changes are uncontrollable and are influenced by various factors. The US Army War College

coined the term "VUCA" to characterize the circumstances during the Cold War. Since then, businesses and organizations across a wide range of sectors and industries have embraced the VUCA idea to inform strategic planning and leadership.. Therefore, business people must rack their brains in dealing with conditions full of current uncertainties so that they can remain stable and develop.

Volatility is a condition where many new challenges arise whose causes are difficult to determine. The difficulty of seeing the root cause of a new challenge will make it difficult for businesses to see the pattern or concept of a challenge, which in the end the solution to overcome the challenge may change according to the conditions at that time. Uncertainty is a condition of uncertainty in all aspects of current business operations. Uncertainty is a nightmare for business people because they cannot measure or predict precisely the factors that will affect their business. Complexity is a condition with a very high level of complexity. This causes problem analysis in a business to be influenced by many complex factors. Factors that affect problems in a business can be new competitors, technological developments, supply chain changes, complex regulations, and many other factors. Finally, ambiguity can be interpreted as confusing and misleading. Ambiguity greatly affects the decision-making process, with various factors involved, with unpredictable patterns of challenges and problems, the decision-making process plays a big role in every step of a business so that it can survive and develop or wrong decisions can destroy the business.

Within this condition, companies need to have a good strategic management to gain competitive advantage to survive in the VUCA era. Sustainable competitive advantage can be gain from the process of Resource Based View (RBV). According to Barney in (Madhani, 2010) the Resource Based View (RBV) examines and evaluates an organization's resources to see how it maintains a competitive edge over time. The RBV focuses on the idea that a company's hard-to-copy qualities can provide both competitive advantage and higher performance. The three types of resources:

1. Physical capital resources (physical, technological, plant and equipment),
2. Human capital resources (training, experience, insights), and
3. Organizational capital resources (formal structure)

As a market is dynamic, company's resource also need to change over a period of time to make them relevant to changing market condition. According to Madhani (2010) The term "dynamic capabilities" refers to a company's resource-using operations, particularly those that integrate, reconfigure, acquire, and release resources. The dynamic capability focuses on how these resources and capabilities need to adapt over time to remain relevant in the ever-changing marketplace, whereas RBV primarily focuses on the kinds of resources and capabilities for their strategic value. The dynamic capabilities approach looks at how to gain a competitive edge in a globalized market that is changing quickly. To gain periods of competitive advantage in such dynamic marketplaces where the competitive environment is changing quickly, managers of

enterprises must establish capabilities inherent in the organization that are based on sequences of route dependent learning. According to Teece *et al.* in (Madhani, 2010), The dynamic capacities concept is particularly pertinent in the modern world, when industry landscapes are being altered by global competitive forces. In this more globalized world, strategies for gaining a competitive edge are rapidly evolving. Because of this, businesses operating in this industry need to have quick plans, adaptable infrastructures, and the capacity to combine resources and skills in novel ways.

Developing countries like Indonesia certainly develop many things in maximizing various processes in various sectors to improve the country's economy, educate the nation's life and other factors to become a developed country. Improving the country's economy certainly involves many aspects such as natural resources, human resources (HR), capital accumulation, managerial staff and production organization, political conditions and government administration, science and technology to socio-culture. These aspects are of course interrelated in terms of a country's economic growth. Focusing on managerial staff and production organization, science and technology and human resources (HR), these three aspects are of course closely related to existing business processes in various companies in Indonesia.

These three aspects certainly influence each other in the running of a company's business. Human resources are an important and main component in the running of an organization, humans as managerial staff who are equipped with reason and knowledge

are of course an aspect that is highly considered by every company. However, human resources will not be able to work optimally and produce the best output if they are not supported by good science, technology, managerial systems and organization. Humans as social beings certainly do not work alone in an organization, not only with other humans, but also with industrial systems that have been digitized.

One of Asia's fastest-growing telecommunications sectors is Indonesian. The gross domestic product (GDP) of Indonesia is boosted by the technology and communications industry to the tune of approximately 748.75 trillion rupiah. The industry includes mobile phone services as well as fixed and mobile broadband subscriptions. It is anticipated that the telecommunications sector would continue to expand quickly as Indonesia gets more digitally connected (Statista Research Department, 2023). Indonesia also has a well-developed telecommunication infrastructure where it can be seen from the presence of 100.000 mobile towers that stand throughout the country. This infrastructure allows Indonesia to have a very well 4G connection, and Indonesia is entering and start introducing the 5G connection to be used throughout the country. Telkomsel as one of the largest telecommunication companies in Indonesia contribute to millions of their users in the country. Telkomsel as one of the subsidiaries of PT Telkom Indonesia done a various ways and innovation to keep their product can fulfill their customer needs. PT Telkom Indonesia as one of the biggest holding companies that run in telecommunication sector done many kinds of development on their product through

the company and their subsidiary. This development done with adopting new technologies and work system to effectively and efficiently produce the product and deliver it to their customer.

The growing use of the Internet of Things (IoT) across industries has been recognized by telecommunication service providers (TSPs) as a unique opportunity to offer network devices and internet connectivity services. In the industrial era 4.0, industries are becoming more competitive due to the use of IoT by businesses. According to certain technical specifications and business process needs, the implementation of IoT in corporate operations should be done (Habib and Tenhunen, 2017; Sun and Ansari, 2018). Additionally, in order to facilitate the adoption of these new technologies, businesses should modify their capacities, resources, and skills (Saragih *et al.*, 2021).

The process of adopting various types of IoT, AI, and other aspects related to the industrial revolution 4.0, of course, must be integrated with all components in the organization so that it runs synergistically. The adoption process is also not an easy thing by changing various habits and even the culture of a company so that it can run effectively. The transition process in adoption is also very important, and in the current era many companies are adopting an agile organization system with an agile transition process in the transition process so that they can meet the needs and adjustments in the industrial era 4.0.

Redefining a new client base is critical to the company's value chain, which makes business process transformation within an organization difficult. The actors in the organization's multiple directorates, stakeholders, corporate organizations, and a comprehensive corporate environment are all involved in the required changes. Employee behavior ought to alter in tandem with the core modifications that are put into place. To restructure complicated corporate processes, a sophisticated methodology must be used (Saragih *et al.*, 2021).

One of the many business transformations that has been carried out is changing the organization's strategy to an agile organization system. The agile organization system was introduced in 2001 by a group of seventeen software developers who identified as the Agile Alliance. The Agile Manifesto, which was released by the Agile Alliance in February 2001, contains 12 principles that have come to be valued in the work. These include prioritizing people and their interactions over processes and tools, working software over extensive documentation, customer collaboration over contract negotiations, and adapting to change rather than sticking to a set plan. Agile businesses have developed to survive in an environment that is unpredictable and changing quickly, much like biological systems. Organizations that are agile are both dynamic and stable. They put the needs of their clients first, making everything they do customer-centric. They have tried-and-true procedures that they can easily modify in response to shifting consumer demands, technological advancements, governmental regulations, and market



conditions. They embrace uncertainty and ambiguity with greater confidence and are transparent, inclusive, and non-hierarchical. They evolve continually without the need for periodic disruptive restructurings that are necessary in more mechanical companies. We think these kinds of companies are considerably more prepared for the future (De Smet, Aaron, Michael Lurie, and Andrew St George, 2018).

An agile change that spans the entire organization must be thorough and iterative. That is to say, it should be iterative because not everything can be planned ahead of time and comprehensive because it addresses strategy, structure, people, process, and technology (Brosseau *et al.*, 2019). The transition process to become an agile organization is of course related to the organizational structure that is transformed according to the tasks, functions, and also the roles that exist in an agile organization system within a company. Agile organization also relates to the people who are involved in it which of course must change in terms of culture, talent management, and also the leadership used in organizational processes. Third, the process of transitioning an organization to an agile organization also relates to the processes carried out at each stage, from the planning process, execution to the monitoring process using various methods. Finally, the transition process to an agile organization is also very closely related to technology, technology that helps all processes carried out by each individual based on the work structure of an organization. This transformation to technology is also an indication of the existence or process of adaptation to the industrial revolution 4.0.

Enterprise agility can be reached through a variety of routes. Certain firms adopt an agile operating strategy from the beginning; they are inherently agile. Regarding others, in general, there are three different kinds of agile journeys: Three approaches are available: All-in, which comprises an agile transformation strategy that encompasses the entire company and a number of waves of agile transformation; Step-wise, which takes a methodical and more discrete approach; and Emergent, which basically takes a bottom-up approach (Brosseau *et al.*, 2019). In this way, the process of transitioning a business organization to an agile system is not immediately carried out, there are many considerations from aspects of team dynamics and activities, operational processes, and the organizational environment that must be considered because these three aspects also have various things to consider.

PT Telkom Indonesia is a state-owned company operating in the telecommunications, technology and information sectors. As one of the largest companies operating in the telecommunications, technology and information sectors in Indonesia, PT Telkom Indonesia of course has several subsidiaries that run according to the business lines of PT Telkom Indonesia. In this way, the role of PT Telkom Indonesia as a holding company is of course a concern starting from strategic direction, organizational form, duties and authority, control of company finances, and so on.

According to Daems (2012), holding companies are institutions for organizing and structuring the corporate control market. These institutions are able to gain and hold such

control because they issue securities to buy and hold 'substantial' blocks of stocks (controlling interest) in operating companies and other holding companies. From this it can be seen that the role of a holding company is in aspects of organizing, structuring, strategic direction which have an impact on market control. In this case, of course, PT Telkom Indonesia's role as a holding company is in matters relating to strategic plans for subsidiaries in order to fulfill aspects of organizing and structuring the telecommunications, technology and information markets.

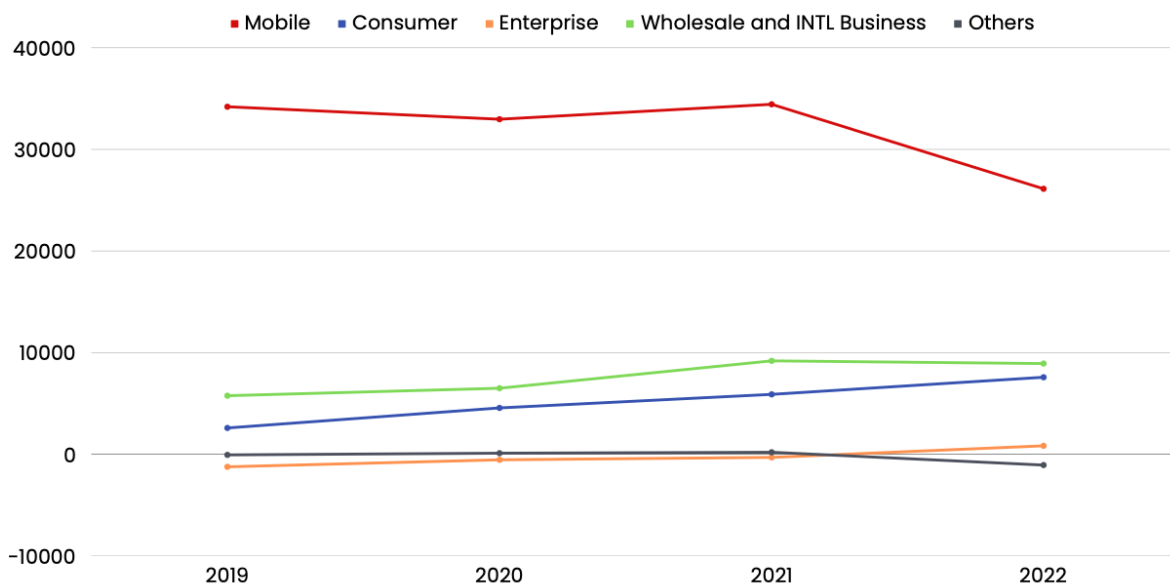
In carrying out this function, there are various aspects that PT Telkom Indonesia as a holding company must pay attention to. Several aspects that need to be considered are the company's business lines, subsidiary growth, market share demand, company organization, and so on. In this case, the form of the company becomes important as a basis for operating the business.

According to Williamson in (Kumar, 1992), describes two basic forms of corporate organization; the U-form, or unitary organization, and the M-form, or multidivisional organization. In a unitary organization or functional form, the chief executive is above and oversees various operating units based on functions such as sales, finance and manufacturing. Advantage in the form of specialization by function lies in the possibilities it affords for vertical integration and reduction of transaction costs. Meanwhile, the disadvantage in this form is the extreme load on the chief executive as the firm expands.

Then in multidivisional corporations, functional divisions are replaced by autonomous operating divisions, mostly based on product, brand or geographic lines. The advantage of a multidivisional corporation is that executives do not need to be involved with the company's daily routine, the tasks of the general office are only related to strategic planning, decision making and resource allocation, and there is internal performance control of the various existing divisions. However, in the past few decades, observing the economy in the US has been concerned with the separation of ownership and control of companies related to shareholdings and joint stock corporations. So, there is a new company form, namely a holding company or H-form. In a holding company or H-form, there is a holding company that oversees several subsidiaries which have their own functional units in the company. The worst disadvantage of this form is that the general office or headquarter will only function as an administrative office for collection and aggregation of financial reports and earnings. However, of course this can be anticipated with policies and a clear division of duties and authority between the company and its subsidiaries.

In this case, PT Telkom Indonesia's urgency in implementing Agile Adoption Best Practice can be seen from the meaning, function and also the form of the holding company. Currently, PT Telkom Indonesia as a holding company in the telecommunications sector is not only focused on strategic, financial and market planning for the telecommunications sector but is also still carrying out the product sales

process which should be the task of the subsidiary. This is proven by the still functioning of several directorates whose function is to sell products, such as the Directorate of Enterprises and Business Services and the Directorate of Wholesale and International Services. Not only that, this aspect also impacting to the market capitalization value of the company is stuck in Rp300-Rp400 trillion every year. In 2019, the market capitalization value of the company is Rp 393 trillion, in 2020 was in the number of Rp 328 trillion, in 2021 was in the number of Rp 400 trillion, and in 2022 was in the number of Rp 371 trillion. Based on the Annual Report of PT Telkom Indonesia (2022) and Annual Report PT Telkom Indonesia (2021), the segment financial performance in the company is fluctuating.



**Figure 1.1 Segment Financial Performance**

Source: Annual Report PT Telkom Indonesia (2022)

Seeing the urgency of telecommunication company to fulfill the needs and wants of the customers, PT Telkom Indonesia also transform the program operational and products to customer-centric. PT Telkom Indonesia transform their organizational structure to a segmented typed of organizational structure. PT Telkom Indonesia also needs to accelerate digital transformation on the operational of the company with several kinds of strategic planning and programs to achieve it. In 2022, PT Telkom Indonesia accelerate their digital transformation with the theme “Enhance digital capability and business performance for sustainable growth”. The realization of this theme was by 3 main program which are: Deliver the best quality of services with excellent customer experience; Excel in the 3 digital domains and unlock business leveraging group synergy; and Accelerate digitalization and lean organization development for impactful operation.

Not only that, PT Telkom Indonesia also initiated a value unlocking strategy which is called “Five Bold Moves”. This strategy is aimed to develop competitive advantage in the digital connectivity, digital platform, digital services, and strengthen the position of PT Telkom Indonesia to be a world class telecommunication company. The Five Bold Move are: Fixed Mobile Convergence (FMC); InfraCo; Data Center Co (DC Co); B2B Digital IT Service Co; and DigiCo.

In this research, it will be mainly sees the process of adoption of agile organization using agile adoption best practice in PT Telkom Indonesia. Agile adoption best practice

is one of the parts of agile organization system in the aspect of transforming the organization. Agile organization system is related to the system that being built in and organization which is part of the strategic management theory. This research came up because author saw several kinds of gaps that happen in PT Telkom Indonesia between the headquarters and the regional office on their organizational system that involves the human resource, technologies, and their works. Author also saw several ineffective coordination, monitoring, and evaluation system in some division. These problems are the seen problems that can hinder the goal of PT Telkom Indonesia to be a world class telecommunication company.

## **1.2. Problem Formulation**

Based on this research, the authors will analyze the Agile Adoption Best Practice process and the sustainability of Agile Organization implementation with Agile Metrics at PT. Telkom Indonesia. Agile Adoption Best Practice in PT Telkom Indonesia implemented through value unlocking strategy which is called “Five Bold Moves”. This strategy is aimed to develop competitive advantage in the digital connectivity, digital platform, digital services, and strengthen the position of PT Telkom Indonesia to be a world class telecommunication company. The Five Bold Move are: Fixed Mobile Convergence (FMC); InfraCo; Data Center Co (DC Co); B2B Digital IT Service Co; and DigiCo.

Further analysis is carried out based on the following problem formulation:

1. What are the urgency for PT Telkom Indonesia to implement Agile Adoption Best Practice?
2. How was the implementation of Agile Adoption Best Practice in PT Telkom Indonesia?
3. What are the constraints of PT Telkom Indonesia in implementing Agile Adoption Best Practice?

### **1.3. Research Purposes**

Based on the background and problem formulation above, the objectives of this study are as follows:

1. Describe the urgency of PT Telkom Indonesia to implement Agile Adoption Best Practice.
2. Analyze the implementation of Agile Adoption Best Practice in PT Telkom Indonesia.
3. Analyze the constraints of PT. Telkom Indonesia in implementing Agile Adoption Best Practice.

### **1.4. Benefit of Research**

#### **1.4.1 Theoretical Impact**

Through conducting this study, researchers gained insight and knowledge directly related to the implementation of the Agile Organization System, especially in telecommunications companies.



### **1.4.2 Managerial Impact**

The findings from this study are expected to be used as an evaluation for companies in implementing a good and effective Agile Organization System.

### **1.4.3 Social Impact**

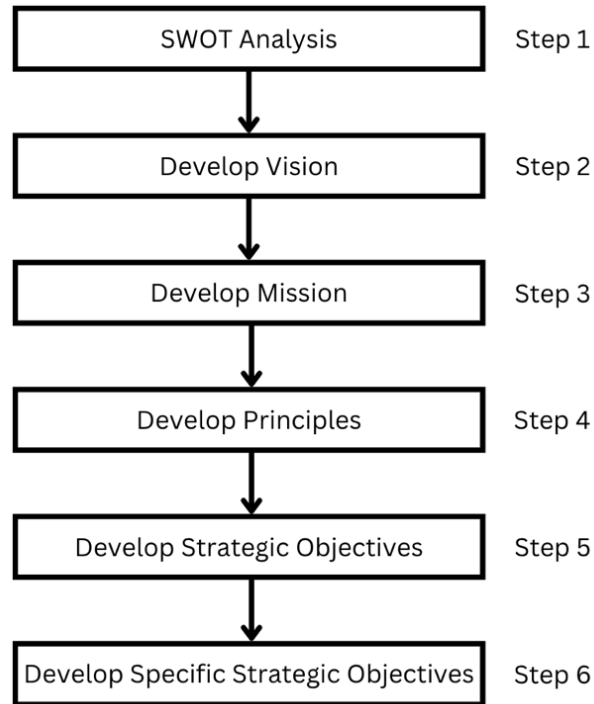
For all parties who collaborate with company policy making and academics who need information about the research results. As a reference material for other companies, especially telecommunications companies in implementing Agile Organization Systems.

## **1.5. Theoretical Framework**

### **1.5.1 Strategic Management**

The art and science of developing, putting into practice, and assessing cross-functional decisions that help a company accomplish its goals is known as strategic management (objectives) (Nugraha, 2019). Strategic management takes on various roles in an organization because of course each line of the organization has its own functions and objectives that must be achieved with various strategies. Strategic management is divided into 2 main components, namely strategic planning and strategic implementation. Strategic planning includes the planning process for the entire company sector which includes things such as vision, mission, values, organizational culture to the tactics planned to achieve the goals of the company. Strategic planning focuses on analyzing internal strengths and weaknesses, and opportunities and challenges from external companies. Process analysis plays an important role at the beginning of the

process or steps in strategic planning. The following are the steps in the strategic planning process.



**Figure 1.2 Strategic Planning Process**

Source: Nugraha (2019)

There are many analysis techniques that can be used in the organizational strategic planning process, but what is often used and is quite common is the SWOT analysis technique, which is an evaluative SWOT analysis technique which will look at the organization's progress in previous years to become the basis for make strategic planning.

SWOT analysis is one of the analysis techniques that is often used in the organizational planning process. SWOT analysis consists of 4 components namely strengths, weaknesses, opportunities and threats. Strengths are the superior capabilities of an organization. In contrast to strengths, weaknesses are aspects that are lacking or that are not optimal in an organization. Then opportunities, opportunities are external factors that support or good opportunities for the organization. While threats are external things that will hinder the development, growth and activities of the organization. In the end, with SWOT analysis, company leaders as strategic planning pioneers can determine the direction and movement of the organization with the results of SWOT metrics from the SWOT analysis process carried out by the company.

The second step is the vision development process, the vision development process becomes important as a guide and reference for all elements of an organization. Vision is the big goal that an organization wants to achieve. The big vision of an organization certainly has several missions that help the organization to support the process of achieving the vision of the organization. The vision and mission are created based on the organizational conditions obtained from the results of the SWOT analysis of the organization.

Then strategic planning enters the phase of developing guiding principles. The guiding principles are the fundamental principles that an organization has that must be carried out by all sectors within an organization. The guiding principles of an

organization include such things as the morals, values, as well as the culture of an organization. Organizational morals, values and culture are important components in maintaining the stability of an organization. With these various principles, the organization will have a principle attitude in addressing various matters in future strategic implementation. The guiding principles are also important in maintaining the performance, climate, and habits of an organization in order to optimally achieve its goals.

The last is the development of broad strategic objectives and the development of specific tactics. Broad strategy development is the development of strategies that will be thoroughly implemented in all sectors within an organization. The broad strategic objectives are also the development of aspects in achieving the common goals of an organization because an organization certainly stands and runs based on the same goals. While the development of special tactics are tactics that are used in more detail in various sectors according to their respective duties and functions within an organization, because of course a field and other field within an organization have different tasks and functions but still have a common goal as an organization that oversees these two fields.

The second component of strategic management is strategic execution. After all aspects of the planning have been made, start the execution or strategy implementation phase. In this case, of course, implementation does not always run smoothly according to what is planned. Various factors can influence, ranging from deficiencies in the

planning process to unexpected aspects in the implementation of the plan. In implementing the plans that have been made of course there are many challenges that must be faced, therefore, the role of rational thinking processes with various data analysis processes and intuitive thinking based on experience will greatly influence decision making and risk management.

The external environment's complexity, the organization's structure and type, the leadership style, the production process's complexity, and the nature of the difficulties faced are the five elements that impact the implementation of strategic management (Nugraha, 2019). The types and organizational structures that we know only lead to the formal identity of an organization. However, the type and structure of this organization greatly impact the communication flow, command flow, command flow, and coordination flow. This causes the work pattern of an organization to also depend on the type and structure of the organization it has. Then leadership style, leadership style certainly greatly influences the implementation of strategy in an organization, this is because strategy is often part of what is created and designed by organizational leaders. Leadership style will affect the planned strategy can run well or not in its implementation. The results of democratic leadership styles will certainly be different from authoritarian leaders. The work patterns built by democratic and authoritarian leadership styles will also be different. Therefore, leadership style will greatly affect the success of a strategy in its implementation, and in the running of an organization, there

is not only one leadership style that is suitable in all situations, but every situation and condition have the right leadership style to use.

Next is the complexity of external conditions which can greatly affect the implementation of the strategy. Even in the SWOT analysis process, external conditions are also factors that are considered in the analysis process in order to take advantage of opportunities and prevent threats that will occur to the company. Examples of external conditions that can influence are pandemics, globalization, digital transformation, and others. The fourth is the complexity of the production process. The complexity of the production process will greatly affect businesses that produce goods/services. The production process involves many aspects and many parties such as human resources, technology, innovation, raw materials to the supply chain. The strategy in the company's organization certainly also focuses on how the complexity of the production process can be overcome. Finally, it is the essence of the problem which is interpreted as a problem-solving process that exists in an organization. The solution process in an organization must be thorough to the cause of a problem, not only at the point of effect. Therefore, the organization can fully resolve the problem without having to fear that the problem will recur. Strategic management is closely related to the presence of organization, this is because of strategic planning and implementation will be done by the organization that involve in the plan and implementation.

### 1.5.2 Organization

A formal gathering of people with one or more common objectives is called an organization. Sociologists define "organization" as the deliberate, planned, and coordinated actions of people toward the creation or gathering of a shared good or service, whether it be intangible or tangible. Form (institutional regulations) and formal membership typically frame this activity. In sociology, the terms "planned formal organization" and "unplanned informal organization," or "spontaneously formed," are distinguished (Boella & Van der Torre, 2006).

In every component in the society we can find many kind of organization. These organization formed in the reason of the same place on living, on studying, they also shared the same goals that they want to achieve together for the goods of their group, institution or even the society. Based on Azwani (2023) The following are some organizational goals that are generally used as the goals of organizational development, namely:

- Increase the independence and ability of the resources they have.
- A platform used for individuals who really want to have positions, awards and a clear division of labour.
- Platform to have control and power.

- Helping every individual in it so that they can increase their association and make optimal and useful use of free time.
- A place that helps to make profits together with well-divided cooperation.
- Helping to manage the environment together.
- Achieving goals effectively and efficiently in accordance with the initial goals of an organization.

Other than that, for an organization to work and run well in an effective and efficient way. There are several element that mostly organization have so it can run well. Based on Azwani (2023) there are some elements that must exist in the organization are:

- Organizational members consisting of leaders who manage the organization in general, managers who head certain units according to the function of their field of work and people who work under the manager. This designation is usually adjusted to the type of each organization.
- Collaboration is an important part of an organization, with good cooperation, organizational goals can be achieved together. So that the level of members will help make it easier to organize work parts to establish better cooperation.
- Organizational goals will be the direction of the organization's journey in determining the activities carried out later.



- The environment such as social, cultural, economic and technological conditions becomes a support in achieving the goals of the predetermined organization.
- Equipment is a means such as material, budget and other capital goods that can be a place of work or gathering of organizations.
- Communication will certainly greatly affect how each member of the organization can work well together. Good communication will greatly support the development of the organization more optimally in accordance with the work processes that have been arranged in such a way.

An organization run well with many components that involve inside of it. One of the important component that an organization should have is the presence of a system in the process of running the organization. System will be tau main part that corelates many components that an organization have.

### **1.5.3 System**

McLeod (2001) on Simanungkalit (2012) characterizes a system as a collection of integrated parts working toward a common objective. The system boundaries are suitable for a certain functional area as well as an organization or business. The organization is made up of several resources, all of which are employed to accomplish a specific objective set by the owner, management level, or leader. Furthermore, Marimin et al.

(2006) on Simanungkalit (2012) characterizes a system as a business entity made up of interconnected components that work to accomplish a task in a challenging environment.

Based on the definition by Simanungkalit (2012), from the definition of the system, we can understand that something can be declared as a system if it fulfills the following conditions:

- The system must be set up to accomplish the goal.
- Elements of the system must have a defined plan.
- There is a relationship between the elements of the system.
- The basic elements of the process (flow of information, energy, and materials) are more important of the system elements.
- Organizational goals are more important than elemental goals.

From those definition of system, it can be seen that a system consist of many elements, parts, which are mostly integrated and work together to achieve a goal. With that definition it can be seen that there is a common correlation between system and organization which these two things are elements that work together to achieve a goal. Many kinds of system that are being developed to get the best way for an organization to achieve their goal. Agile organization system is one of the systems that being developed to help organization to achieve their goals.

#### **1.5.4 Agile Organization System**

The Agile approach was articulated in 2001 by 17 software developers where they called themselves the Agile Alliance. Based on GAO, Agile Assessment Guide: Best Practices for Agile Adoption and Implementation (2020), the Agile Alliance came up with the “Agile Manifesto” and through the work it came up with 4 values which are:

1. Individuals and interactions over processes and tools.
2. Working software over comprehensive documentation.
3. Customer collaboration over contract negotiations.
4. Response to change over following a plan.

The Agile Alliance then pictured it becoming 12 principles. The 12 principles behind the Agile Manifesto are:

1. Our highest priority is to satisfy the customer through early and continuous delivery of valuable software.
2. Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage.
3. Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter time scale.
4. Business people and developers must work together daily throughout the project.

5. Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done.
6. The most efficient and effective method of conveying information to and within a development team is face-to-face conversation.
7. Working software is the primary measure of progress.
8. Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely.
9. Continuous attention to technical excellence and good design enhances agility.
10. Simplicity, the art of maximizing the amount of work not done, is essential.
11. The best architectures, requirements, and designs emerge from self-organizing teams.
12. At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly.

There are various types of approaches and frameworks that can be used in implementing an Agile Organization System. In the implementation of each framework has its own uniqueness and characteristics. Each framework also has its own terms and concepts, and Agile Organizations can use more than one framework or a combination of more than one framework that can be adapted to the needs of the organization. In the course of the Agile Organization System, it is required to unify the perception of the terms used in order to get the same perception regarding a matter. The following are

various types of frameworks that are often used based on GAO, Agile Assessment Guide:

Best Practices for Agile Adoption and Implementation (2020):

**Table 1.1 Agile Frameworks**

<b>Framework</b>	<b>Description</b>
<b>Individual Team Framework</b>	
eXtreme Programming (XP)	XP is a process that originated from taking software best practices to the extreme. XP processes incorporate five key values: 1) communication, 2) feedback, 3) simplicity, 4) courage, and 5) respect. XP values constant communication between customers, developers, user stories, and management as well as having a simple and clean design. Pair programming and 100 percent unit testing are some examples of key XP practices.
Feature Driven Development (FDD)	In FDD, development is driven from the functionality perspective. FDD adheres to the following steps: develop the overall model, build feature list, plan by feature, design by feature, and build by feature. FDD uses a number of best practices, including Domain Object Modeling and Individual Code Ownership.
Kanban	The Kanban framework seeks to limit work in progress in order to alleviate bottlenecks throughout development. Team members “pull” work when they are able to, as opposed to work being “pushed” down to them, to smooth the flow of work and eliminate unevenness. Kanban uses the following practices: visualize the work flow, limit work in progress, manage flow, make policies explicit, implement feedback loops, and improve collaboratively. Kanban’s most prominent feature is a visual task board divided into columns, at a minimum: to-do, in process, and done. Tasks are written on notes and placed on the board, and move horizontally through the columns as the work is completed. As with other team frameworks, electronic means for facilitating flow are available to supplement manual-based visualization.
Scrum	Scrum defines the team by three core roles: product owner, development team, and scrum master. Development is broken down into time boxed iterations

Framework	Description
	called sprints, where teams commit to complete specific requirements. During a sprint, teams meet for daily stand-up meetings. At the end of the sprint, teams demonstrate the completed work to the product owner for acceptance. A retrospective meeting is held after the sprint to discuss any changes to the process.
<b>Agile at Scale Framework</b>	
Disciplined Agile (DA)	Building on different Agile methodologies, DA is a decision framework that can be scaled and is intended to address the whole product life cycle. Key aspects of DA include: people-first, learning-oriented, hybrid methodologies, full delivery life cycle, process goal driven, solution focused, risk/value life cycle, and enterprise aware. DA has defined roles of team members within the framework.
Dynamic Development (DSDM)	System Method Previously known as DSDM Atern, this is a framework for rapid development. There are eight principles: 1) Focus on business need, 2) deliver on time, 3) collaborate, 4) never compromise on quality, 5) build incrementally from firm foundations, 6) develop iteratively, 7) communicate continuously and clearly, and 8) demonstrate control. One core technique of DSDM is prioritizing requirements as Must have, should have, could have, and won't have but would like, or MoSCoW.
LeSS	Large Scale Scrum (LeSS) is a scaled-up version of one-team Scrum and it maintains many of the practices and ideas of one-team Scrum. In LeSS you will find: 1) a single prioritized backlog, 2) one definition of done for all teams, 3) one product owner, and 4) many complete, cross-functional teams with no single specialist teams. In LeSS, all teams are in a common iteration to deliver a common, shippable product.
Scaled Agile Framework (SAFe)	SAFe is a framework for implementing Agile at scale. The framework provides guidance for roles, inputs, and processes that can include four configurations (essential, large solution, portfolio, and full), tailored to each unique context. There are ten principles: 1) take an economic view, 2) apply systems thinking, 3) assume variability, 4) build incrementally in cycles, 5) base milestones on

<b>Framework</b>	<b>Description</b>
	evaluation of working systems, 6) visualize and limit work in progress, 7) apply cadence, 8) unlock motivation of workers, 9) decentralize decision making, and 10) organize around value.
<b>Hybrid Framework</b>	
Scrumban	A combination of Scrum and Kanban, teams generally abide by Scrum roles while using Kanban to view workload and improve flow. Scrumban can be considered the application of Kanban to a Scrum framework to help an organization tailor its Scrum to better align with their goals. With Scrumban, the amount of work is not limited to the sprint, but to the work in progress limit. Meetings in Scrumban are often scheduled as needed, as opposed to a specific schedule with sprints.
<b>Related Frameworks</b>	
Crystal	The Crystal method outlines different methodologies based on the number of people involved and the criticality of the software. The framework that most closely resembles Agile is called Crystal Clear. The methods rely on trust and communication. Unlike other methodologies that dictate discipline to specific practices, Crystal allows freedom for individual preferences and work habits.
DevOps	DevOps, with its name stemming from a combination of development and operations, emphasizes collaboration between development, IT operations, and quality assurance with the goal of more frequent software releases. The overall DevOps values align with Agile, and DevOps is considered an expansion of Agile implementation practices to all areas of a product's life cycle. One common DevOps principle is, "infrastructure as code", meaning operating environments are managed the same as code, with version control, automation, and continuous testing.
Iterative Development	Iterative development breaks down the work into smaller chunks known as iterations, in order to design, develop, and test in cycles.
Lean Software Development	Lean software development applies principles from lean manufacturing to software development. There are seven

Framework	Description
	key principles: 1) eliminate waste, 2) amplify learning, 3) deliver fast, 4) decide late, 5) empower the team, 6) build integrity in, and 7) optimize the whole product.

Source: GAO (2020)

In the whole process of an agile organization system, the very beginning phase of the system is the process of transforming the organization to use agile system. This first phase needs to be considered to see the condition of the organization to really prepare it to transform. This phase will also determine the aspects that needs to be improved and changed towards the transformation that will be done. This beginning phase is called by the agile adoption phase with the indicator of agile adoption best practice.

### **1.5.5 Agile Adoption Best Practice**

Based on GAO, Agile Assessment Guide: Best Practices for Agile Adoption and Implementation (2020), Adaptive Adoption The process of switching to Agile software development methodologies is known as "best practice," and it calls on practitioners to do more than just put new or modified tools, procedures, and processes into place. Adopting the Agile Manifesto's ideals and principles is necessary to convert to Agile. Agile stresses rapid, frequent delivery of production-quality software. However, switching from Waterfall development methodologies to those of an iterative approach, like Agile, presents hurdles.

The process of transitioning an organization in implementing an Agile Organization System is certainly not just an ordinary transition with modifications to devices,



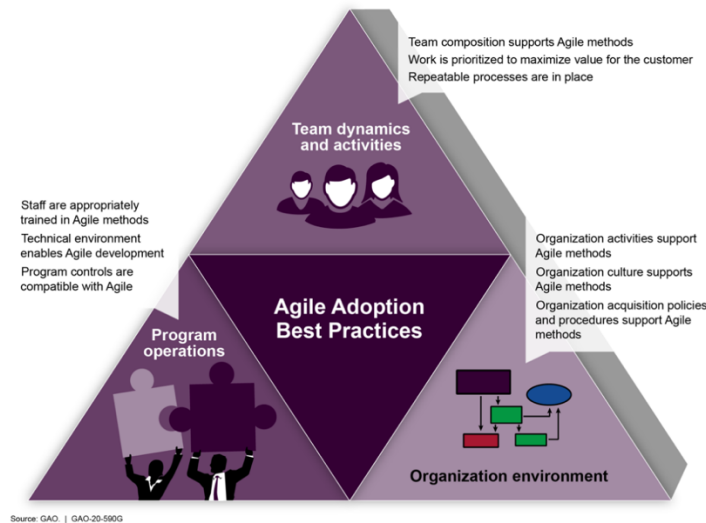
operations, and processes within the organization. However, the transition process to an agile organization system must of course be able to implement an agile manifesto with 4 values that are closely related to the 12 principles of the agile manifesto. The values and principles of the agile manifesto are of course a transition and change from the waterfall system that guided organizations in the past.

Adopting an agile organization system to be implemented in an organization needs many aspects to be seen and assessed first to be able to determine what kind of transition process is good to do with a good strategy in prioritizing aspects that will undergo transition. In the transition period there are 3 main aspects namely team, program and organization. These three aspects must be seen for their respective readiness which is adjusted to the stability of the aspects that will change, the nature of a system, and the complexity of a program (GAO, Agile Assessment Guide: Best Practices for Agile Adoption and Implementation, 2020).

The process of transitioning an organization into an agile organization system is very difficult to do all at the same time. Therefore, agile adoption best practice is present to prioritize aspects of the transition process. If an organization prioritizes the order of adoption, it can end up giving individual practices from the groupings of practices—team dynamics and activities, program operations, and organization environment—more weight than the total collection of practices from any one group (GAO, Agile Assessment Guide: Best Practices for Agile Adoption and Implementation, 2020).

Based on GAO, Agile Assessment Guide: Best Practices for Agile Adoption and Implementation (2020), there are 3 main aspects in agile adoption best practice, these three aspects are as follows.

1. Team dynamics and activities
2. Program operations
3. Organizational environment



**Figure 1.3 Agile Adoption Best Practice**

Source: GAO (2020)

In the team dynamics and activities aspect, there are 3 key factors that support the team dynamics and activities aspect. The first factor is the composition of the team that supports agile methods, the composition of the team is an important factor in this aspect because the team will work and indirectly help the transition process. The second factor

is work is prioritized to maximize value for the customer. Work in the team is prioritized to increase value for customers, because the focus of this agile system is how to fully meet the needs of customers in the product development process of a business. Finally, repeatable processes are in place, where in an agile process, the team's activities are repeated many times to get maximum results from each stage of the process undertaken in the product development stage.

In the program operations aspect, there are also 3 factors that support the program operation aspect. The first factor, staff are appropriately trained in agile methods, which means that in this factor before there is a transition to becoming an agile organization, all staff must receive appropriate training to support the transition process later. Second, the technical environment enables agile development, in which various technical matters included in program operations can support agile development. Finally, program controls are compatible with agile, the controlling process is an important process in management so that all program progress can be monitored properly and can be evaluated according to the desired standards. Controlling here, of course, must be re-examined whether the process is compatible with an agile organization system.

The last aspect is the organizational environment aspect, there are also 3 main factors that support this aspect, namely organizational activities supporting agile methods. Here not only individuals and small groups, but also organizations as a whole whose activities can support or support agile implementation. Second, organization culture supports agile

methods, the culture of an organization certainly plays a very big role in every activity and environment in the organization, culture represents the habits that are carried out by the organization, both good and bad. Here are how the habits that are included in this culture can be things that support the agile organization system in the organization. Lastly, organization acquisition policies and procedures support agile methods. Not only culture and activities, but rules and procedures within the company must also be able to support the running of the agile organization. Regulations and procedures also play a major role in shaping organizational culture and habits so that they can support the transition process from an agile organizational system.

**Table 1.2 Agile Adoption Best Practice**

<b>Agile Adoption Best Practice</b>	<b>Summary</b>
<b>Team Dynamics and Activities</b>	
Team composition supports Agile methods	<ul style="list-style-type: none"> <li>• Agile teams are self-organizing</li> <li>• The role of the product owner is defined to support Agile methods</li> </ul>
Work is prioritized to maximize value for the customer	<ul style="list-style-type: none"> <li>• Agile teams use user stories to define work</li> <li>• Agile teams estimate the relative complexity of user stories</li> <li>• Requirements are prioritized in a backlog based on value</li> </ul>
Repeatable processes are in place	<ul style="list-style-type: none"> <li>• Agile programs employ continuous integration</li> <li>• Mechanisms are in place to ensure the quality of code being developed</li> <li>• Agile teams meet daily to review progress and discuss impediments</li> <li>• Agile teams perform end-iteration demonstrations</li> <li>• Agile teams perform end-iteration retrospectives</li> </ul>
<b>Program Operation</b>	

<b>Agile Adoption Best Practice</b>	<b>Summary</b>
Staff are appropriately trained in Agile methods	<ul style="list-style-type: none"> <li>• All members of an Agile team have appropriate training, since techniques used are different from those used for Waterfall development programs</li> <li>• Developers and all other supporting team members have the appropriate technical expertise needed to perform their roles</li> </ul>
Technical environment enables agile development	<ul style="list-style-type: none"> <li>• System design supports iterative delivery</li> <li>• Technical and program tools support Agile</li> </ul>
Programs controls are compatible with Agile	<ul style="list-style-type: none"> <li>• Critical features are defined and incorporated in development</li> <li>• Non-functional requirements are defined and incorporated in development</li> <li>• Agile teams maintain a sustainable development pace</li> </ul>
<b>Organization Environment</b>	
Organization activities support Agile methods	<ul style="list-style-type: none"> <li>• Organization has established appropriate life-cycle activities</li> <li>• Goals and objectives are clearly aligned</li> </ul>
Organization culture supports Agile methods	<ul style="list-style-type: none"> <li>• Sponsorship for Agile development cascades throughout the organization</li> <li>• Sponsors understand Agile development</li> <li>• Organization culture supports Agile development</li> <li>• Incentives and rewards are aligned to Agile development methods</li> </ul>
Organization acquisition policies and procedures support Agile methods	<ul style="list-style-type: none"> <li>• Guidance is appropriate for Agile acquisition strategies</li> </ul>

Source: GAO (2020)

### **1.6. Previous Research**

Previous research is very important as a basis for the preparation of the thesis. There are several previous studies that have similar themes and become the author's reference in compiling this research, including:

## **1. Research 1 - Giovanni Giachetti, Jose Luis de la Vara, and Beatriz Marin (2023)**

The research was done in the title of “A Model-driven Approach to Adopt Good Practices for Agile Process Configuration and Certification”. The research was published by Computer Standards & Interfaces on 27 February 2023. The author of the research are Giovanni Giachetti, Jose Luis de la Vara, and Beatriz Marin with the purpose of the research is to provide model and methods on adopting agile process configuration and certification. This is a qualitative research with the variable that being used is Agile Adoption Practice Methods. There are several perspectives that being used in the theoretical framework of the research which are model perspective, quality model perspective, quality model to method model weaving, and process model to method model weaving model. The research result is as the following:

- The model-driven approach offered offers a theoretical and useful way to express and implement best practices about the setup of agile processes in accordance with particular standards.
- When quality criteria have not been established for the use of agile techniques and the design choices are based solely on the expertise of a small group of specialists, the information pertaining to the adoption of agile practices that meet these standards is particularly relevant.

- When the method was used, it was found that the amount of work needed to configure and validate development processes for particular projects was decreased.
- It is necessary to compare the company's processes to the reference certification models and identify any gaps. The suggested method makes this gap analysis easier by outlining the tasks, resources, and best practices required to evaluate adherence to a particular standard.
- The method offered offers best practices and guidance for rearranging current development processes to incorporate agile substitutes that adhere to the relevant quality requirements.
- Existing model-driven technologies also support the modeling architecture described, enabling the implementation of tools that promote the reuse of expert knowledge across many projects.
- The majority of the conceptual definitions offered can be used in different situations, even though the technique was developed and proven for the configuration of agile development processes in line with quality standards.

## **2. Research 2 - Dr. Raffaele Fabio Ciriello, Jeppe Aagaard Glud, and Kevin Helge Hansen-Schwartz (2022)**

The research was done in the title of “Becoming Agile Together: Customer Influence on Agile Adoption within Commissioned Software Teams”. The research

was published by Information & Management on 1 April 2022. The author of the research are Dr. Raffaele Fabio Ciriello, Jeppe Aagaard Glud, and Kevin Helge Hansen-Schwartz with the purpose of the research is to transform becoming agile with customer influence on software teams. This is a qualitative research, and theory-developing case study with the variable that being used are agile adoption, agile practices, and customer influence. There are several aspects that being used in the theoretical framework of the research which are customer engagement, planning routines, teamwork practices, collaborative routines, trust in the software teams, and conflicting interest. The research result is as the following:

- During the agile adoption process, the commissioning software team had to actively involve the customer. Negative consumer interaction did not provide the input required for self-organization. When there was a dearth of active client participation, the software team turned to waterfall-style procedures.
- The software team that was commissioned had to switch from fixed to agile development planning in order to implement agile adoption. Regular planning schedules did not allow for the adaptability needed for self-organization. The software team had to create agile planning procedures in order to become agile.
- The agile adoption process for the Commissioned Software Team involved a change from managed to self-organized cooperation techniques.



- For the commissioned software team to use agile principles, the customer needed to go from inflexible to flexible collaboration routines. While flexible collaborative routines promoted self-organization, rigid collaborative routines hindered it.
- The customer's adoption of agile principles required a significant degree of trust to be established in the development team. When the software team was not feeling trusted by the customer, it was hard for them to self-organize.
- The customer had to establish adaptable routines for collaborative work once the software team was commissioned to actively involve the customer. Similarly, the commissioned software team needed to actively involve the customer in order for them to build adaptable collaboration routines. Consequently, there was a reciprocal influence between the software team's customer interaction methods and the customer's routines for collaboration.
- The software team implemented set planning practices when the customer showed signs of scepticism. In turn, the customer's trust was not inspired by the software team as long as it was unable to reassure them through agile planning procedures. Thus, the software team's planning procedures and the customer's faith in the team had a reciprocal effect.
- Despite the customer's perceived lack of trust, the software team believed that switching to self-organized cooperation methods would be dangerous.

Conversely, the customer's trust in the software team's agile techniques was undermined by tightly controlled teamwork practices. Thus, the software team's collaborative methods and the customer's faith in the team had a reciprocal effect.

### **3. Research 3 - Fahad S. Altuwaijri and Maria Angela Ferrario (2022)**

The research was done in the title of “Factors affecting Agile adoption: An industry research study to the mobile app sector in Saudi Arabia.”. The research was published by The Journal of System & Software 190 on 25 April 2022. The author of the research are Fahad S. Altuwaijri and Maria Angela Ferrario with the purpose of the research is to describe what are the factors that influence Agile adoption. This is a mix-method (qualitative and quantitative) research with the variable that being used are people factors, organizational factors, environmental factors, and technical factors. The theoretical framework of the research is focusing on the key factors of agile adoption. The research result is as the following:

- People aspects: This study demonstrates the significance of people aspects in the adoption of Agile in Saudi Arabia, including team competence, training and learning, and customer involvement. Examining the specifics of the results of these interviews in more detail, "team capability" is thought to be the most crucial element in the adoption of Agile. The next most crucial

element was "customer involvement," followed by "training and learning" in third place.

- Organizational elements: "Organizational culture" is regarded as one of the most significant organizational elements impacting adoption, according to the study's findings. Additionally, this study highlights the significance of "management support" as well as "communication and collaboration" in relation to Saudi Arabia's Agile adoption.
- Environmental Factors: According to the study's findings, "national culture" is the most significant environmental factor influencing Agile adoption. Cultural factors that are organizational and national in nature have an impact on software development SMEs' adoption of Agile and how software practitioners apply it.
- Technical Factors: This study also indicates that "tools and technologies," or technical factors, have a significant impact on Saudi Arabia's adoption of Agile. This study concluded that "delivery strategy" and "agile software techniques" are not significant determinants when it comes to the adoption of Agile in the nation; the findings of multiple other studies support this conclusion.

#### **4. Research 4 – Imran Ghani and Mannir Bello (2015)**

The research was done in the title of “Agile Adoption in IT Organization.”. The research was published by KSSI Transaction On Internet and Information System on 8 August 2015. The author of the research are Imran Ghani and Mannir Bello with the purpose of the research is to present guideline related to avoid or overcome the barriers towards adoption of agile. This is a quantitative research with the variable that being used are quality, cost, and time. The theoretical framework of the research is focusing on agile adoption. The research result is as the following:

The relationship between the success variables found and how they affect IT firms' performance is the primary finding of this study. The following identified problems and success factors should be taken into consideration by organizations that wish to adopt agile methodologies and project managers who wish to try them as project management methodologies: very strong support management, a friendly and agile team environment, a skilled team, strong customer involvement, a responsive project management process, and the ability to have an effective delivery technique to increase project success. Professionals from at least two firms mentioned in their comments that they employed a combination of agile concepts instead of using Scrum or Kanban directly.

#### **5. Research 5 – Aniket Mahanti (2006)**

The research was done in the title of “Challenges in Enterprises Adoption of Agile Methods.”. The research was published by Computing and Information

Technologies on 3 March 2006. The author of the research is Aniket Mahanti with the purpose of the research is to present the challenges of adoption agile methods in enterprises. This is a qualitative research with the variable that being used are agile chasm, challenges, agile methods, agile adoption strategies, agile practices, determinants of change, and limitation of agile software processes. The theoretical framework of the research is focusing on agile adoption methods. The research result is as the following:

The software industry has faced several obstacles that have prevented agile approaches from being widely adopted. It is essential to comprehend the dynamics of organizational change in order to successfully implement new techniques. The manner in which the new techniques are implemented within the company will determine how well agile adoption goes.

From several previous studies, some similarities and differences were found with the research that the author will do. From the research 1 - Giovanni Giachetti, Jose Luis de la Vara, and Beatriz Marin (2023), there are some similarities and differences. The similarities are previous research discussed the same variable, namely Agile Adoption Practice, and previous studies have also analyzed the gap between Agile Adoption processes in companies and certified processes. In the other hand, the difference is previous research has focused on the methods and models used in Agile Adoption Practice.

From the research 2 - Dr. Raffaele Fabio Ciriello, Jeppe Aagaard Glud, and Kevin Helge Hansen-Schwartz (2022), there are some similarities and differences. The similarities are previous research discussed the same variable, namely Agile Adoption. In the other hand, the differences are previous studies have different measurement indicators, and previous research focused on examining the customer influence factor on Agile Adoption.

From the research 3 - Fahad S. Altuwaijri and Maria Angela Ferrario (2022), there are some similarities and differences. The similarities are previous research discussed the same variable, namely Agile Adoption. In the other hand, the differences are previous research has focused on objectives to see what factors influence Agile Adoption, and previous studies have different measurement indicators.

From the research 4 - Imran Ghani and Mannir Bello (2015), there are some similarities and differences. The similarities are previous research discussed the same theoretical framework, namely Agile Adoption, and the subject is also IT organization. In the other hand, the differences are previous research has focused on the variables of quality, cost, and time, and previous studies is quantitative research.

From the research 5 - Aniket Mahanti (2006), there are some similarities and differences. The similarities are previous research discussed the same theoretical framework, namely Agile Adoption. In the other hand, the differences are previous

research has focused on the challenges in adopting agile organization system, future prospect, and the limitation of agile process.

## **1.7. Conceptual and Operational Definition**

### **1.7.1. Conceptual Definition**

The definition of the concept is loaded with the intention of providing understanding to become a limitation in researchers to discuss and solve problems.

- **Agile Adoption Best Practices**

Based on GAO, Agile Assessment Guide: Best Practices for Agile Adoption and Implementation (2020), Adaptive Adoption The process of switching to Agile software development methodologies is known as "best practice," and it calls on practitioners to do more than just put new or modified tools, procedures, and processes into place. Adopting the Agile Manifesto's ideals and principles is necessary to convert to Agile. Agile stresses rapid, frequent delivery of production-quality software. However, switching from Waterfall development methodologies to those of an iterative approach, like Agile, presents hurdles.

Based on GAO, Agile Assessment Guide: Best Practices for Agile Adoption and Implementation (2020), there are 3 main aspects in agile adoption best practice, these three aspects are as follows.

1. Team dynamics and activities
  - Team composition supports Agile methods

- Work is Prioritized to maximize value for the customer
  - Repeatable processes are in place
2. Program operations
- Staff are appropriately trained in Agile methods
  - Technical environment enables Agile development
  - Programs controls are compatible with Agile
3. Organizational environment
- Organization activities support Agile methods
  - Organization culture supports Agile methods
  - Organization acquisition policies and procedures support Agile methods

### 1.7.2. Operational Definition

The operational definition aims to identify criteria that can be examined in order to facilitate the research process and there are clear limitations in measurement.

**Table 1.3 Operational Definition**

<b>Program</b>	<b>Agile Adoption Best Practice</b>
<b>1. Fixed Mobile Convergence (FMC)</b>	Team Dynamics and Activities
PT Telkom Indonesia continue to strengthen market penetration, cost efficiency and operational excellence, along with enhancing the best customer experience by developing our technology and services to optimize interoperability between our fixed and mobile networks to enable customers to	Team composition supports Agile methods <ul style="list-style-type: none"> <li>• Agile teams are self-organizing</li> <li>• The role of the product owner is defined to support Agile methods</li> </ul>
	Work is prioritized to maximize value for the customer <ul style="list-style-type: none"> <li>• Agile teams use user stories to define work</li> <li>• Agile teams estimate the relative complexity of user stories</li> </ul>



Program	Agile Adoption Best Practice
switch seamlessly regardless of location and device.	<ul style="list-style-type: none"> <li>Requirements are prioritized in a backlog based on value</li> </ul>
<p><b>2. InfraCo</b> PT Telkom Indonesia seeks to unlock the potential of consolidating our infrastructure assets including optical access network infrastructure and towers to create higher value. PT Telkom Indonesia believes this initiative will provide benefits including optimal asset utility, effective connectivity costs, and accelerated market penetration so that in the end it will be able to increase the value of infrastructure assets and attract investors to join.</p>	<p>Repeatable processes are in place</p> <ul style="list-style-type: none"> <li>Agile programs employ continuous integration</li> <li>Mechanisms are in place to ensure the quality of code being developed</li> <li>Agile teams meet daily to review progress and discuss impediments</li> <li>Agile teams perform end-iteration demonstrations</li> <li>Agile teams perform end-iteration retrospectives</li> </ul>
<p><b>3. Data Center Co</b> PT Telkom Indonesia is in the process of consolidating data centre assets and increasing data centre business capacity. Apart from that, we also collaborate with hyper-scalers and technology giants to accelerate data centre business growth and expand our data centre presence in the region - starting from Indonesia and ASEAN</p>	<p>Program Operation</p> <p>Staff are appropriately trained in Agile methods</p> <ul style="list-style-type: none"> <li>All members of an Agile team have appropriate training, since techniques used are different from those used for Waterfall development programs</li> <li>Developers and all other supporting team members have the appropriate technical expertise needed to perform their roles</li> </ul>
<p><b>4. B2B Digital IT Service</b> PT Telkom Indonesia is transforming towards B2B Digital IT services through partnerships and collaboration with technology giants, such as Microsoft and AWS. Furthermore, we are preparing Telkomsigma to become a leading B2B Digital IT Service player</p>	<p>Technical environment enables agile development</p> <ul style="list-style-type: none"> <li>System design supports iterative delivery</li> <li>Technical and program tools support Agile</li> </ul> <p>Programs controls are compatible with agile</p> <ul style="list-style-type: none"> <li>Critical features are defined and incorporated in development</li> <li>Non-functional requirements are defined and incorporated in development</li> <li>Agile teams maintain a sustainable development pace</li> </ul>

Program	Agile Adoption Best Practice
serving the corporate market, state-owned enterprises, governments and MSMEs.	<hr/> Organizational Environment <hr/> Organization activities support agile methods <ul style="list-style-type: none"> <li>• Organization has established appropriate life-cycle activities</li> <li>• Goals and objectives are clearly aligned</li> </ul>
<b>5. DigiCo</b> PT Telkom Indonesia is developing a digital company (DigiCo) that focuses on the B2B and B2C segments to accelerate digital services by utilizing PT Telkom Indonesia's advantages that competitors do not have. Telkomsel through PT Telkom Ecosystem Digital (TED) is developing a vertical business portfolio in the digital sector, namely health-tech, edu-tech and mobile gaming.	<hr/> Organization culture supports agile methods <ul style="list-style-type: none"> <li>• Sponsorship for Agile development cascades throughout the organization</li> <li>• Sponsors understand Agile development</li> <li>• Organization culture supports Agile development</li> <li>• Incentives and rewards are aligned to Agile development methods</li> </ul> <hr/> Organization acquisition policies and procedures support agile methods <ul style="list-style-type: none"> <li>• Guidance is appropriate for Agile acquisition strategies</li> </ul>

## 1.8. Research Methods

### 1.8.1 Research Design

The type of research used in this research is a type of qualitative research using a qualitative descriptive approach. Qualitative research according to Sugiyono (2005) is research or research that intends to understand an event or activity experienced by the subject of the study which in this study the activity in question is the implementation of agile organization with the subject of PT Telkom Indonesia. In this presentation, the researcher describes through a description of how the implementation of the agile

organization system at PT Telkom Indonesia is in accordance with the guidelines set by the guidelines for evaluating the implementation of the agile organization system.

### **1.8.2 Research Site**

Research on the analysis of the implementation of the agile organization system was carried out at PT Telkom Indonesia which is located at The Telkom Hub area, Telkom Landmark Tower, 39th Floor, Jalan Jenderal Gatot Subroto Kav. 52, West Kuningan, Mampang Prapatan, South Jakarta, DKI Jakarta, Indonesia 12710.

### **1.8.3 Research Subject**

The subjects or informants in this study were the leaders of PT Telkom Indonesia.

### **1.8.4 Data Type**

The types of data in this study are divided into 2, namely words and actions, and written data sources. Both types were obtained by researchers through interviews and literature studies.

#### **1.8.4.1 Words**

Data in the form of words and actions can be obtained from interviews and literature studies. The author will write in small notes in the form of answers to questions during the interview and then process and rewrite them to make information that can be understood.

#### 1.8.4.2 Written Data Source

Written data sources are additional materials derived from written sources such as books and scientific articles, sources from archives, personal documents and official documents. In this study, the authors took mostly written data sources from the 2021 Annual Report published by PT Telkom Indonesia.

#### 1.8.5 Data Source

According to Arikunto (1998) data source is the subject from which a data can be obtained. Moleong (2001) explains that recording data sources through interviews or observation is the result of a combination of seeing, hearing, and asking questions. Sources of data used in research include the following.

##### 1.8.5.1 Primary Data

Primary data is data based on information obtained first-hand by researchers relating to interest variables for specific study purposes. In this study, primary data was obtained by interviewing PT Telkom Indonesia employees who met the criteria. These criteria are certain people who are considered to have mastered the problem to be studied, have sufficient expertise and insight (Suyatna, 2005). The key informant in this research sources themselves include:

**Table 1.4 Key Informant Scope of Information**

No	Position	Scope of Information
1.	Head of Strategic Investment Digital Telco	<ul style="list-style-type: none"> <li>• Strategic investment in the 5 Bold Moves program</li> <li>• Main purpose of 5 Bold Moves program</li> </ul>

<b>No</b>	<b>Position</b>	<b>Scope of Information</b>
2.	Head of Corporate Strategic Planning	<ul style="list-style-type: none"> <li>• Strategic planning of the 5 Bold Moves program</li> <li>• Roadmap of 5 Bold Moves program</li> <li>• Main purpose of 5 Bold Moves program</li> </ul>
3.	Head of Group Corporate Transformation	<ul style="list-style-type: none"> <li>• Strategic planning of the 5 Bold moves program</li> <li>• Roadmap of 5 Bold Moves program</li> <li>• Main purpose of 5 Bold Moves program</li> </ul>
4.	PIC/PMO FMC	<ul style="list-style-type: none"> <li>• Main purpose of FMC</li> <li>• Roadmap of FMC</li> <li>• Implementation of team dynamics and activities in FMC</li> <li>• Implementation of program operation in FMC</li> <li>• Implementation of organization environment in FMC</li> </ul>
5.	PIC/PMO InfraCo	<ul style="list-style-type: none"> <li>• Main purpose of InfraCo</li> <li>• Roadmap of InfraCo</li> <li>• Implementation of team dynamics and activities in InfraCo</li> <li>• Implementation of program operation in InfraCo</li> <li>• Implementation of organization environment in InfraCo</li> </ul>
6.	PIC/PMO DC Co	<ul style="list-style-type: none"> <li>• Main purpose of DC Co</li> <li>• Roadmap of DC Co</li> <li>• Implementation of team dynamics and activities in DC Co</li> <li>• Implementation of program operation in DC Co</li> <li>• Implementation of organization environment in DC Co</li> </ul>
6.	PIC/PMO B2B Digital IT Service	<ul style="list-style-type: none"> <li>• Main purpose of B2B Digital IT Service</li> <li>• Roadmap of B2B Digital IT Service</li> <li>• Implementation of team dynamics and activities in B2B Digital IT Service</li> <li>• Implementation of program operation in B2B Digital IT Service</li> </ul>

No	Position	Scope of Information
7.	PIC/PMO DigiCo	<ul style="list-style-type: none"> <li>• Implementation of organization environment in B2B Digital IT Service</li> <li>• Main purpose of DigiCo</li> <li>• Roadmap of DigiCo</li> <li>• Implementation of team dynamics and activities in DigiCo</li> <li>• Implementation of program operation in DigiCo               <ul style="list-style-type: none"> <li>• Implementation of organization environment in DigiCo</li> </ul> </li> </ul>

### 1.8.5.2 Secondary Data

Secondary data is data obtained from information that has been collected previously or it can be said from second, third, and so on parties. Secondary data in this study are in the form of reports in the Annual Report which are published on the official website of PT Telkom Indonesia and news related to PT Telkom Indonesia available in the media.

### 1.8.6 Data Collection Technique

Data collection techniques are several methods used by researchers to obtain data. In qualitative research data collection generally uses observation, documentation, and interview methods (Subadi, 2006). In this study, the data collection techniques used were:

#### 1. Interview

Interviews can be interpreted as a data collection technique by conducting question and answer questions with sources that are in accordance with the objectives and formulation of the research problem. Interviews in qualitative

research data collection can be done with open or closed question interviews. Arikunto (2013) gives the understanding that free guided interviews are interviews conducted by giving free questions but still related to the problem or topic being studied. In the interview, the author will ask about the sustainability of the implementation of the agile organization system that is running at PT Telkom Indonesia by the interviewee.

## 2. Literature Review

The bibliographical method is a technique for obtaining data that focuses on theories to support research through various reference books, journals and supporting documents. In this case the author also uses sources from the Annual Report published by PT Telkom Indonesia in 2021. Literature studies can also be carried out to support primary data through analysis of various readings like previous research.

## 3. Passive Participatory Observation

According to Sugiyono (2015), in this observation, the researcher is involved with the daily activities of the person being observed or used as a source of research data. With passive participation: means the researcher is present at the scene of action but does not interact or participate. So, in this case the researcher comes to the place of activity of the person being observed, but is not involved in the activity.

### **1.8.7 Data Quality**

In qualitative research, data quality can be obtained by conducting data validity tests in order to avoid errors. The existence of testing the validity of the data is also used to obtain valid research results. A data from qualitative research can be said to be valid if there is no difference between what happened in the field and what was written with various tests, including:

#### **1.8.7.1 Credibility Test**

According to Sugiyono (2010) testing the credibility of the data or trust in data from qualitative research can be done by:

1. Triangulation

Willian Wirsen in Sugiyono (2010) said that the triangulation technique to carry out research credibility testing is a technique by checking data obtained from various sources at different times and situations. According to Sugiyono (2010) types of triangulations are divided into 3 ways, namely source triangulation, triangulation of data collection techniques, and time.

- a. Source Triangulation

Source triangulation is carried out by checking the results of data obtained from several sources to test the credibility of the data. The conclusion of the results of the data analysis carried out by the researcher



was then carried out by cross checking and comparisons from other data sources.

b. Engineering Triangulation

Technical triangulation is carried out by checking the correctness of data from the same sources but with different retrieval techniques. Triangulation technique aims to test the consistency of the results of the data obtained. If different results are found, the researcher can hold discussions with data sources to determine certainty and agreement.

c. Time Triangulation

Time triangulation is carried out through data collection using various techniques but in different timeframes or circumstances. Time triangulation aims to determine the consistency of the data considering that time often affects the validity of the data.

### **1.8.7.2 Transferability Test**

The transferability test is a test to determine the extent to which research results can be understood or even applied in other cases or studies. To achieve this, researchers must explain the results of their research in detail and clearly so that they are easy to understand.

If after reading the research results, they are able to make a decision whether or not to use it in their research for various reasons, then it can be likened to the fact that the

research has met the transferability standard because it is likened to knowledge that has been understood by the reader.

#### **1.8.7.3 Dependability Test**

The dependability test can also be called the reliability test. If the results of the research or research process can be repeated or replicated by others, then the research is considered reliable. Reliability is also related to data stability, where if there are two or more researchers who conduct research with the same object, they will produce the same results.

The dependability test is carried out by carrying out tests for the entire research process. These tests or examinations can be carried out by supervisors to test the correctness of all research activities or processes starting from the researcher determining the problem or focus to making the conclusions determined by the researcher.

#### **1.8.7.4 Confirmability Test**

Confirmability test is a test associated with the process being carried out. The confirmability test is often carried out together with the dependability test because the test process is almost the same. The results of the research will be tested whether they are aligned with the functions and research processes that have been carried out, if they are appropriate then the research results are considered to have passed the confirmability test stage.

### **1.8.8 Data Analysis and Interpretation**

Miles and Huberman in (Sugiyono, 2005) suggest that in qualitative data analysis, so that the data obtained is full, the activities need to be carried out directly continuously until they are complete and interactive.

To make it easier to answer the problems in this study, the authors conducted several data analyzes to support this research. There are 3 analytical activities used in this study, namely:

1. Data reduction

Data reduction has a meaning as a process of choosing words to simplify, abstract, and transform "rough" data that arises from several written records in the field (Sugiyono, 2015). Reduction in data collection includes writing research results in detail and clearly and making important points from observations in the field. To obtain the final conclusion, data reduction is needed to minimize or sharpen the data obtained during data collection.

2. Data Presentation

Presentation of data is carried out after the author has done data reduction or simplification in the previous stage. The purpose of the data presentation stage is to make the research data obtained from the field easy to read and understand. In presenting data in qualitative research, brief descriptions, flowcharts, and narrative texts are usually used.

### 3. Conclusion Drawing

The final stage in Miles' theory is the conclusion stage. The conclusions drawn by the author can still change if other things are found in data collection. In the ongoing process of drawing conclusions, verification must be carried out thoroughly, both the data collection process and the data. Therefore, at the end it will bring up valid conclusions and can be tested for the truth and accounted for. In qualitative research, it is possible for the formulation of the problem set at the beginning to be answered by conclusions, but it may be the other way around, considering that the formulation of the problem is temporary.