

# **CHAPTER I**

## **INTRODUCTION**

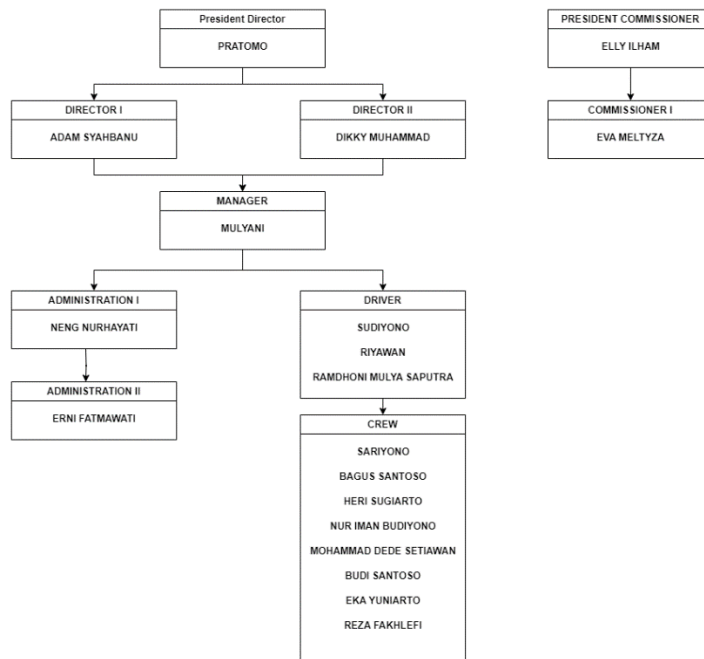
### **1.1 Object Overview**

PT. Artha Patra Kesuma, founded in 2005, has been dedicated to providing reliable energy solutions to the Tegal region. In 2009, the company shifted its focus from kerosene to Liquefied Petroleum Gas (LPG) as part of the government's initiative to promote cleaner and more affordable energy. This transition has enabled us to better serve households and businesses by ensuring they have access to a more sustainable energy source.

PT. Artha Patra Kesuma distribute a range of LPG cylinder sizes, including 3kg, 5.5kg, and 12kg. The 3kg LPG variant, which is subsidized by the government, is specifically aimed at supporting low-income households and small businesses. Each month, PT. Artha Patra Kesuma distribute around 60.000 cylinders throughout Tegal, strictly following Pertamina's guidelines to make sure the LPG reaches the people and businesses who need it most.

As an LPG PSO (Public Service Obligation) Agent, PT. Artha Patra Kesuma work closely with Pertamina, distributing 3kg LPG under government quotas to ensure the right recipients benefit from the subsidy. In addition to 3kg cylinders, PT. Artha Patra Kesuma also provide 5.5kg and 12kg options for customers with larger energy needs, ensuring they cater to a wide range of users.

At PT. Artha Patra Kesuma, they are committed to delivering dependable service with efficiency. Their goal is to provide households and businesses in the Tegal area with a steady and reliable supply of LPG, while adhering to all regulations and maintaining the highest standards. PT. Artha Patra Kesuma take pride in being a part of our community's energy network and look forward to continuing to meet the energy needs of our customers for years to come.



*Figure 1.1 ORGANIZATIONAL STRUCTURE*

PT. Artha Patra Kesuma has an organizational structure consisting of 5 parts, each of which has its own duties and roles in managing the company. The explanation is as follows:

1. President Director

The President Director is responsible for coordinating, supervising, and leading the overall management of the Company. They ensure that all business activities are conducted in alignment with the Company's vision, mission, and core values. As the highest-ranking officer, the President Director plays a crucial role in setting the strategic direction and making critical decisions for the company.

2. Director 1 & 2

Directors 1 and 2 assist the President Director in coordinating, supervising, and leading the management team. They help ensure that all business operations align with the Company's vision, mission, and values. By

supporting the President Director, they contribute to the overall effectiveness and success of the Company's management and strategic objectives.

3. President Commissioner & Commissioner

The President Commissioner and Commissioner are responsible for overseeing the management of the Company. They play an active role in supervising and providing advice to the Board of Directors. In addition to their supervisory role, they also offer strategic guidance and policy recommendations to ensure that the Company is managed effectively and in line with its objectives.

4. Operational

The Operational division manages and oversees all of the Company's operational activities. This includes implementing the work procedures established by Pertamina, particularly those related to safety, ensuring there are no violations. The team also provides counseling, education, and warnings regarding Pertamina's fixed procedures to all bases registered with the company, ensuring compliance with operational standards.

5. Administration 1 & 2

The Administration team is responsible for various essential tasks within the Company. They prepare monthly operational cost reports and create daily redemption reports for LPG cylinders delivered to the LPG bulk filling station (SPBE). They are also responsible for recording base data related to product distribution, recapitulating employee salaries, and preparing administrative data for tax purposes. Their work ensures the smooth administration of the Company's daily activities and regulatory compliance.

## 1.2 Research Background

Mining commodities in Indonesia are one of the factors that influence economic growth and are also one of the essential needs for the people of Indonesia. There is three types of mining commodities in Indonesia type A (Strategic), type B (Vital), and type C, these type divide by the outcome product. Type A is a mining material that is very important for national defense and security and is important for national economic stability such as oil, gas, coal, and etc. Type B is a mining materials that can fulfil the needs of many people such as iron, gold, copper, and etc. Type C mining materials for industry or which are not considered to directly affect the livelihoods of many people such as limestone, gems, marble stone, and etc (Azizah, 2023).

*Table 1.1 Mining Comodities Types*

Type	Term	Category
A	Strategic	<ul style="list-style-type: none"> <li>- petroleum, liquid bitumen, petroleum wax, natural gas;</li> <li>- solid bitumen, asphalt;</li> <li>- anthracite, coal, lignite;</li> <li>- uranium, radium, thorium and other radioactive minerals;</li> <li>- nickel, cobalt;</li> <li>- tin.</li> </ul>
B	Vital	<ul style="list-style-type: none"> <li>- iron, manganese, molybdenum, chromium, tungsten, vanadium, titan;</li> <li>- bauxite, copper, lead, zinc;</li> <li>- gold, platinum, silver, mercury, diamond;</li> <li>- arsine, antimony, bismuth;</li> <li>- yttrium, rhutenium, cerium and other rare metals;</li> <li>- beryllium, corundum, zircon, quartz crystals;</li> <li>- cryolite, fluorspar, barite;</li> <li>- iodine, bromine, chlorine, sulfur.</li> </ul>
C		<ul style="list-style-type: none"> <li>- nitrates, phosphates, rock salt (halite);</li> <li>- asbestos, talc, mica, graphite, magnesite;</li> <li>- gemstones, semi-gemstones;</li> <li>- quartz sand, kaolin, feldspar, gypsum, bentonite;</li> </ul>

Type	Term	Category
		<ul style="list-style-type: none"> <li>- pumice, trass, obsidian, perlite, diatomaceous earth, absorbent soil;</li> <li>- marble, slate;</li> <li>- limestone, dolomite, calcite;</li> <li>- granite, andesite, basalt, trachyte, clay, and sand</li> </ul>

Source: (Azizah, 2023)

One of the mining material in Type A are oil and gas. Oil and gas commodities are one of the most needed mining material by people in Indonesia. Especially in gas commodities that the production is expected to continue to increase. To encourage additional oil and gas production, SKK Migas is currently accelerating the completion of upstream oil and gas projects, with a goal of completing 15 upstream oil and gas projects by 2024, resulting in additional oil production of 46,837 barrels of oil per day (BOPD), additional gas production of 351 million cubic feet per day (MMSCFD), and 192 MT/D LPG (Indrawan, 2024).

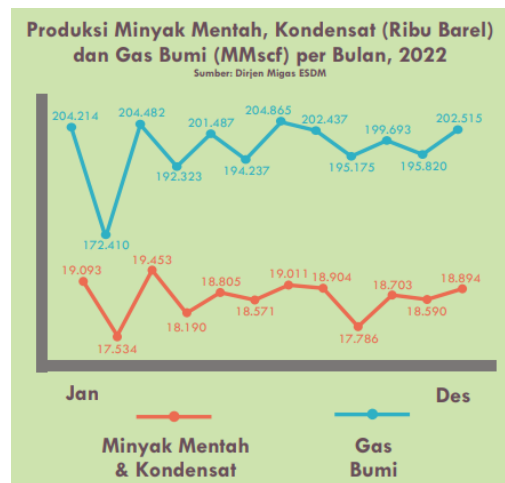


Figure 1.2 Oil and Gas Production Statistic

Source: (BPS, 2023)

As can be seen on *figure 1.2* above, the production volume of oil and gas in Indonesia for every month in 2022 is highlighted, efforts to increase oil and gas production align with the growing demand for mining products in Indonesia. The

Executive Director of ReforMiner Institute, Komaidi Notonegoro, stated that the government, through the National Energy Plan (RUEN) as stipulated in Presidential Regulation No. 22/2017, projects that Indonesia's oil and gas consumption in 2050 will reach 8.69 million barrels of oil equivalent per day (BOEPD). Although RUEN sets the share of oil in Indonesia's energy mix to decrease from a maximum of 25 percent in 2025 to a maximum of 20 percent in 2050, the volume of oil consumption in Indonesia is projected to increase by approximately 111 percent, from 2.19 million BOPD in 2025 to 4.62 million BOPD in 2050. RUEN also sets the share of gas in Indonesia's energy mix to increase from 22.4 percent in 2025 to 24 percent in 2050. The volume of gas consumption is projected to rise by approximately 171 percent, from 1.76 million BOEPD in 2025 to 4.79 million BOEPD in 2050 (Ridwan, 2021).

As mention before the high level of gas consumption in Indonesia, one form of product from gas mining that is used quite a lot in Indonesia is LPG. LPG in Indonesia is produced by PT. Pertamina Gas. The LPG variants produced by PT. Pertamina Gas are divided into four variants 3kg, 5.5kg, 12kg, and 50kg. Generally, the 3kg, 5.5kg, and 12kg variants are intended for households and small businesses, while the 50kg variant is typically used by large businesses such as restaurants and hotels (Aryani & Syarvina, 2022).

Specifically, the 3kg variant is a government-subsidized LPG intended for low-income communities. However, in reality, many households use the 3kg variant even though they do not fall under the low-income category. For example, some time ago, a famous celebrity named Prilly Latuconsina was caught on camera cooking at home using a 3kg gas cylinder(Santia, 2024). Prilly Latuconsina is not the only one discussed on social media regarding the use of 3kg gas cylinders, a while back, Raffi Ahmad's family was also found using and storing several 3kg gas cylinders in the garage of their house in Andara(Permadi, 2020).

With the increase in the number of users of the 3kg subsidized gas cylinders who are not the intended recipients, such as celebrities or those who can afford to buy other variants, the demand for 3kg gas cylinders in the community

could be risen. By using the Exponential Triple Smoothing (ETS), it predicted the consumption ratio of 3kg LPG has increased to 95.07 in Central Java (Novaria et al., 2024). Consequently, the distribution of the 3kg subsidized gas cylinders must be expanded to reach underserved areas, and distributors must aim to distribute the 3kg gas cylinders to the right people.

Currently, PT. Artha Patra Kesuma distributes approximately 60,000 3kg gas cylinders every month. PT. Artha Patra Kesuma always follows and complies with all regulations issued by Pertamina, including the use of a web-based system for distribution tracking and payments, created by Pertamina as a tool to support distribution records. This system can help to ensure the successful distribution of 3kg gas cylinders to the right communities. This system that provide by Pertamina also help this company to maintain its company's supply chain, so that PT. Artha Patra Kesuma as a LPG Agent to track and maintain the LPG quota every day between each sub-distributors that partnering with PT. Artha Patra Kesuma.

According to Tay & Loh (2022), To facilitate distribution activities, we must be able to transition from conventional methods to digital systems. However, we also need to create a high-quality digital distribution system by making improvements. One way to assess whether this system has improved is by using the Lean Six Sigma specifically using DMAIC method. In define phase voice of customer use to know the feedback from the web user or our customer, then in measure phase use value stream map to identify the Process and process time, moving to analyse phase fishbone diagram use to identify and classified to what needed in this research, so then in improve phase using poka yoke to identify and improve the process, and the last phase is control in this phase dashboard use to help monitor, sustain, and improve processes by visualizing key performance indicators (KPIs) and ensuring that the improvements made during earlier phases are maintained. Through this approach, the author can identify the strengths and benefits of the digitalized distribution system that PT. Artha Patra Kesuma use to maintain company supply chain running well in distributing 3kg LPG to customers.

### **1.3 Problem Formulation**

As explained in the research background overview, distribution digitalization is very important and crucial in maintaining the company's supply chain and its competitiveness. PT. Artha Patra Kesuma see these as a problem, the company still lacks of knowledge about the digitalization and controlling the sub-distributor to be able to use the website. But also, there are some external problem such as the weakness of Pertamina's server caused delays in updating payment data from sub-distributors. These problems impacting the supply chain and adaptation utilizing the digitalization distribution process.

PT. Artha Patra Kesuma have never implemented continuous improvement initiatives, as well as the Lean Six Sigma approach using DMAIC methodology. The author sees that while there has been extensive research on digital transformation and LSS, little has been said on how best to manage and implement digital transformation on an operational level and the changes are needed to improve supply chain performance. To ensure of technology are in well implementation in future, the author manage to see the potential benefits that can improve the effectiveness and quality of the system to be able to use in PT. Artha Patra Kesuma to help distribute 3kg LPG. Based on the background described above, the research problem can be formulated as follows:

1. What are the potential Benefits in adopting disruptive technology in operation and supply chain management in PT. Artha Patra Kesuma?
2. How can LSS and digital technologies be integrated for process improvements?

### **1.4 Research Objective**

1. To know what are the benefits from adopting disruptive technology in operation and supply chain in PT. Artha Patra Kesuma
2. To know how to integrate LSS and digital technology for process improvements.



## **1.5 Research Benefit**

### **1.5.1 Theoretical Benefit**

This research contributes valuable insights to the Lean Six Sigma field, particularly in applying the DMAIC method to digital transformations within the LPG distribution sector. By developing a structured framework, this study offers a foundation for future research and practical applications in similar industries. Additionally, it sheds light on digital transformation processes in traditionally non-digital industries, offering a useful model for other sectors aiming to undergo similar transitions. These theoretical benefits not only expand academic knowledge but also provide actionable insights for businesses considering digital adoption strategies in their operations.

### **1.5.2 Practical Benefit**

The practical benefits of adopting digital distribution at PT. Artha Patra Kesuma are clear and impactful. By moving to a digital system, the company can significantly enhance distribution efficiency, streamlining the process to reduce errors and ensure that 3kg LPG cylinders reach their intended recipients. This change not only improves the reliability of distribution but also elevates customer service, as tracking systems make it easier to respond to customer inquiries and resolve issues quickly. Additionally, the use of the Lean Six Sigma DMAIC methodology within this digital transformation allows the company to identify inefficiencies, potentially reducing costs. Furthermore, the digital system provides valuable data insights, which are essential for informed decision-making regarding stock levels, distribution patterns, and ongoing performance improvements.

## **1.6 The Systematics of Mini-thesis Writing**

This research will be divided into five chapters to make the research clearer and arranged well. The following structure that will conduct in this research are:

a. CHAPTER I INTRODUCTION

This chapter explained the details about the object that will be conducted in the research, research background, problem formulation, research question, research objective, and the writing systematic that used in this research.

b. CHAPTER II RESEARCH LITERATURE

This chapter describes the literature and theories that will be used to support the research that aims to build the framework as the base of the research.

c. CHAPTER III RESEARCH METHODOLOGY

This chapter contained the methodology used, the approach, tools to make the research work, how to determine population and sample, creating validity and reliability test of the research, and also the technique that be used in this research.

d. CHAPTER IV RESULT AND ANALYSIS

This chapter explained the discussion, analysis, and data processing also related to the object based on the technique and literature conducted mentioned in Chapters II and III.

e. CHAPTER V CONCLUSION AND SUGGESTION

This chapter is the conclusion related to all the point that stated in this research, including the problem, the analysis and result, and the suggestion for further research.