CHAPTER I
INTRODUCTION

1.1 Object Overview

CV Aneka Sumber Rezeki is one of the many medium-sized enterprises in Indonesia that runs in the Food and Beverage sub-sector. It was a family-owned business that established in 1997, after twenty-five years later the business officially becoming a Commanditaire Vennotschaap (CV) in 2022. The company produces and markets a wide range of snack items such as cassava chips, sweet potatoes chips, banana chips, taro chips and many other traditional Indonesian snacks as shown in Figure 1.1. Several snacks like cassava, sweet potatoes and taro chips are independently manufactured by the company.

Figure 1.1 Product of CV Aneka Sumber Rezeki

Source: CV. Aneka Sumber Rezeki (2024)

CV Aneka Sumber Rezeki operates its own manufacturing facilities and snack shops in Bekasi and Sukabumi. As can be seen in Figure 1.2, the company has a simple yet complex organizational structure to run the business. In addition to this, the company leases 104-hectare agricultural land in Sukabumi. This land is dedicated to growing plants that provide a steady supply of high-quality raw materials at competitive prices and helping to reduce the production costs. The company produces between five and ten tons of cassava chips daily to meet growing market demand, focusing primarily on this product as it is their main offering.

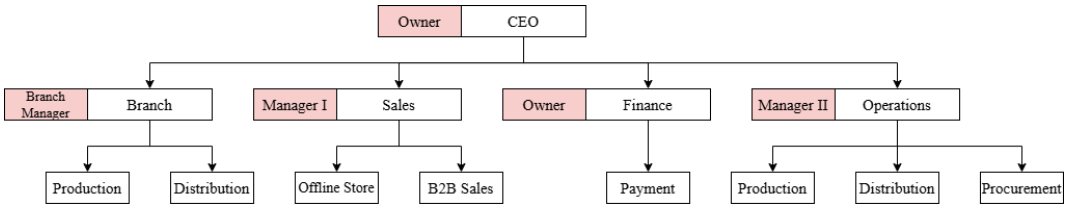

Figure 1.2 Company/Organization Structure

Source: CV. Aneka Sumber Rezeki (2024)

The cassava chips produced by CV Aneka Sumber Rezeki are sold under a white-label brand, which has gained increasing demand in both local and regional markets. This growing demand highlights the product's appeal across a wide range of consumer segments. The company utilizes a hybrid business model, combining business-to-business (B2B) and business-to-customer (B2C) approaches to reach a diverse customer base. These customers include frozen food suppliers, snack stores, traditional markets, and local communities, allowing the company to maintain a strong presence in both wholesale and retail markets. By leveraging this dual-model approach, CV Aneka Sumber Rezeki can maximize its market reach and ensure consistent demand for its products across different sales channels.

1.2 Research Background

Manufacturing plays a crucial role in driving Indonesia’s economic growth. As one of the largest contributors to the country's economy, understanding the performance of the manufacturing sector, along with other key industries, is essential to identify the main drivers of economic value. This understanding provides valuable insights for policymakers, businesses, and researchers to determine which industries have the most economic impact and to develop strategies for sustainable growth. Manufacturing’s role extends beyond its direct economic contributions; it supports employment, encourages innovation, and strengthens industrial competitiveness. Figure 1.3 presented and illustrates the Top Five Contributors to Indonesia's Economy by Industry in 2023, showcasing the

dominant sectors that together account for more than half of the nation's total economic value (BPS-Statistics Indonesia, 2024).

The Figure 1.3 below highlights that manufacturing leads all industries, contributing 18.67% or IDR 3,900.1 trillion to the economy. This is followed by trade (12.94%), agriculture (12.53%), mining (10.52%), and construction (9.92%). Combined, these sectors represent 64.57% of Indonesia's total economic value. This dominance reflects the resilience and adaptability of these industries, especially the Food and Beverage (F&B) sub-sector within manufacturing. The role of F&B highlights its ability to meet rising consumer demand, provide employment, and adapt to both local and global economic changes. These factors make the F&B sub-sector essential for economic stability and also serves as a strategic focus for further growth and development (BPS-Statistics Indonesia, 2024)

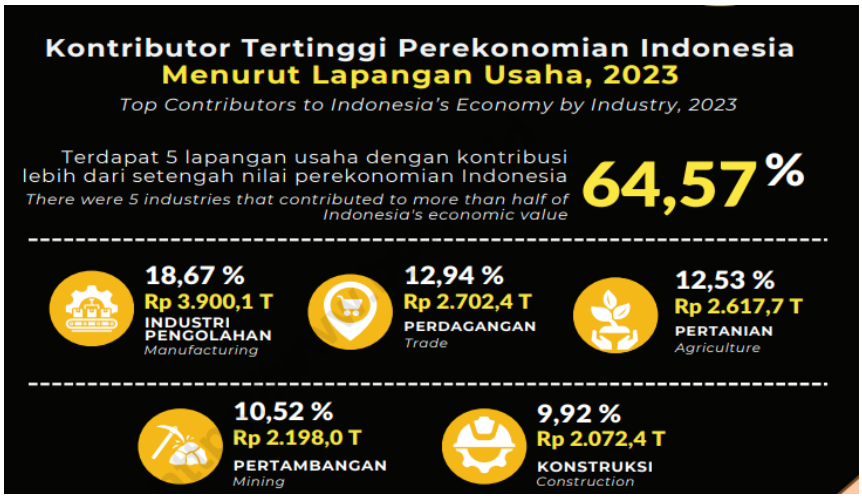

Figure 1.3 Top Contributors to Indonesia’s Economy by Industry 2023

Source: BPS-Statistics Indonesia (2024)

Particularly in the F&B sub-sector, the growth of Indonesia's Gross Domestic Product (GDP) has been consistent, as illustrated in Figure 1.4. The graph shows a steady increase in GDP generated by the Food and Beverage Industry from IDR 562.02 trillion in 2014 to IDR 1,368.43 trillion in 2023. This upward trend underscores the critical role of the F&B sector in supporting economic expansion. The steady rise reflects the sector's resilience and ability to adapt to changing

market conditions, including rising domestic demand and opportunities in international markets. This growth highlights the importance of the F&B industry and indicates potential for further investment and innovation. To strengthen this explanation, Figure 1.4 provides clear evidence of the sector's consistent contribution to GDP growth over the past decade, reinforcing its role as a key driver of Indonesia's economic progress that is full of potential.

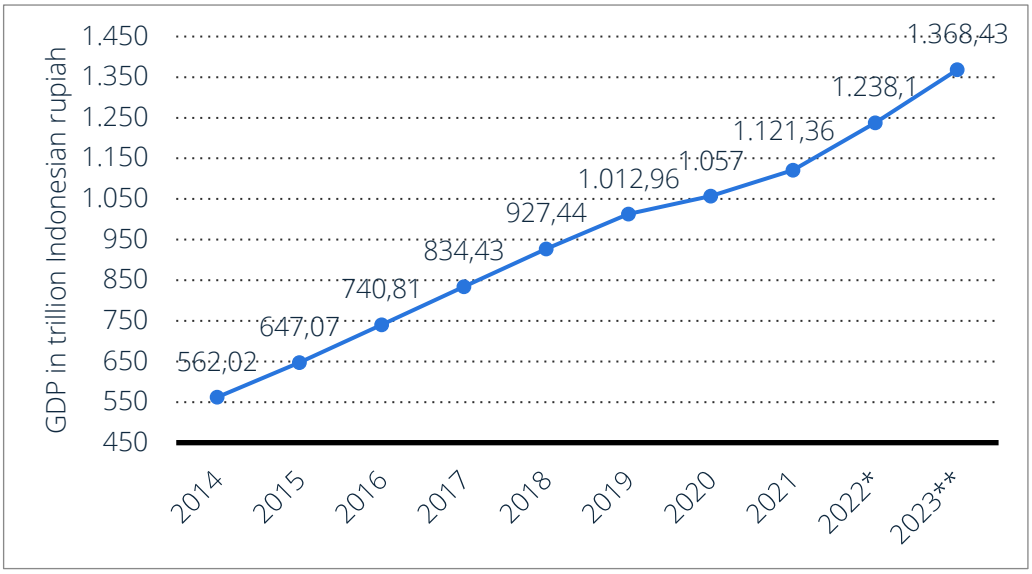

Figure 1.4 GDP from Manufacturers of food products and beverages in Indonesia from 2014 to 2023

Source: BPS-Statistics Indonesia, Retrieved in Statista (2024)

In response to the manufacturing sector's enormous potential, the government chose the nation's top five manufacturing sub-sectors, including F&B sectors, based on the industry's infrastructure conditions and the anticipated impact as measured by the industrial sector's contribution to GDP growth. To further harness this potential, the government has laid out 10 national goals aimed at accelerating the realization of this roadmap, two of those goals are empowering SMEs and redesigning industrial zones (Hidayatno et al., 2019).

The government's aim of empowering SME growth may be viewed as a major opportunity and stepping stone for SMEs in the F&B sub-sector to grow and

expand, including reaching out to and exploring markets internationally. However, being one of Indonesia's most mature sub-sectors, a huge number of businesses compete for sales. According to Indonesia's Ministry of Finance, the majority of businesses are SME (Small Medium Enterprises) or even micro enterprises; however, some larger companies, such as PT Indofood CBP Sukses Makmur Tbk (ICBP), which recorded net sales of Rp17.18 trillion in the first quarter of 2022 or during the first three months of this year, Wings Group, and Garuda Food, a subsidiary of Tudung Group, are included on the list. Those companies dominate the market through innovation, efficient production processes, and pricing strategies. These companies have the resources to adapt to rising costs and policy changes, making it difficult for SMEs to compete on equal terms (Sari, 2022).

Like many SMEs, it often lacks the infrastructure needed to sustain long-term efficiency, with gaps in production, inventory, and logistics management, which put pressure on its existing resources and capabilities. This is also aligning with Irjayanti & Lord (2024)said, SMEs often face challenges that lead to a high risk of failure and this failure could stem from factors such as limited access to capital, lack of managerial skills, inadequate technology, or market competition. These limitations faced by SMEs make it increasingly challenging to compete with larger companies. Without a solid infrastructure and resources that bigger businesses have, SMEs struggle to keep up with the pace, often finding themselves at a disadvantage in an industry where efficiency and scalability are key (Schmidt et al., 2015). However, according to Putri et al. (2022), SMEs also have better resilience in the face of crisis despite not having the productivity of giant companies. Among the SMEs facing these challenges is CV Aneka Sumber Rezeki, a small F&B manufacturer specializing in cassava chip production.

As explained in the context above, in today’s competitive manufacturing environment, achieving operational efficiency and maintaining product quality are critical for business success. For CV Aneka Sumber Rezeki, these priorities are particularly urgent as the company faces increasing market pressures. The manufacturing industry, especially within the F&B sub-sector, demands consistency in production processes to remain competitive against both larger

enterprises and other SMEs. Despite its established presence in the industry, CV Aneka Sumber Rezeki struggles with challenges that hinder its ability to optimize performance and meet market demands effectively.

CV Aneka Sumber Rezeki was chosen as the research subject because it represents a typical Indonesian SME that struggles with operational inefficiencies, making it an ideal case study for Lean Six Sigma implementation. Compared to other SMEs, it has a high production volume of cassava chips, where even minor process improvements can have a valuable impact on cost reduction and efficiency. Additionally, the company demonstrated a willingness to collaborate by providing operational data, ensuring that this study is based on real, measurable evidence rather than theoretical assumptions. These factors make it a scientifically valuable and practical choice for this research.

Preliminary interviews with the owner of CV Aneka Sumber Rezeki revealed inefficiencies in production processes. The company experiences frequent product defects, with approximately 10%-15% of daily production batches failing to meet quality standards due to the absence of a dedicated quality-checking process. Production delays, especially during peak seasons such as Ramadhan, can extend by up to 30% beyond the standard production schedule, causing missed deadlines and unfulfilled orders. Additionally, material waste during preparation contributes to an estimated 20% increase in raw material costs daily, further straining operational efficiency. These inefficiencies have resulted in operational costs that are nearly double the standard production expenditure during high-demand periods. Such financial and operational setbacks limit the company's ability to scale production, meet growing customer demand, and remain competitive in an increasingly saturated market. Despite recognizing these challenges, the company has not yet identified an effective strategy to address these persistent issues.

Therefore, according to Sharma & Sharma (2014), CV Aneka Sumber Rezeki must focus on ensuring the reliability of its production processes and maintaining strong quality management practices. Ahmad & Qiu (2009) also highlight that improving manufacturing performance, alongside a commitment to production reliability and quality management, can enhance a company's

competitiveness. Moreover, a competitive strategy and a focus on innovation are crucial, as both can positively impact company performance, enhancing economic benefits and overall quality of life within the company itself (Feng et al., 2021). Adopting a proactive maintenance strategy is essential for CV Aneka Sumber Rezeki, as it has the potential to improve manufacturing performance and, in turn, lead to improved advancements in operational and financial metrics (Sharma & Sharma, 2014).

According to Assarlind et al. (2012), the pursuit of operational excellence is fundamentally driven by Continuous Improvement (CI), which plays a crucial role in enhancing quality, operational efficiency, and overall performance within an organization, while also focusing on reducing waste and minimizing product variation across all processes. However, since its establishment, CV Aneka Sumber Rezeki has never formally adopted CI initiatives to address its operational inefficiencies. This absence of structured improvement practices has limited the company's ability to optimize production processes and maintain consistent quality standards. Over the past decade, the concept of CI has gained popularity, particularly when implemented through the Lean Six Sigma methodology. By applying Lean Six Sigma, companies can introduce CI more systematically and effectively, enabling them to streamline processes, enhance quality, and achieve operational goals at a faster pace (Panayiotou et al., 2022).

Lean Six Sigma (LSS) aims to combine the greatest aspects of both Lean Manufacturing and Six Sigma methodologies. Six Sigma is a structured process for improving systems/processes, eliminating waste, reducing variability, and preventing defects. The primary focus of Lean is to streamline operations, reduce non-value-added activities, and create flow in production. On the other hand, Six Sigma emphasizes the importance of reducing defects and ensuring consistency in product quality. Together, these methodologies are implemented through the DMAIC (Define, Measure, Analyze, Improve, and Control) process, a structured problem-solving approach, and can be applied in all sectors due to its non-standardized procedure (Assarlind et al., 2012; Kumar Sharma & Gopal Sharma, 2014; Panayiotou et al., 2022; Psychogios & Tsironis, 2012; Tarantino, 2022).

The DMAIC process serves as the backbone of Lean Six Sigma projects, ensuring that improvements are both effective and sustainable over time. According to De Koning & De Mast (2006), the DMAIC methodology consists of five key phases:

1. Define – Focuses on identifying problems and defining Critical to Quality (CTQ) characteristics. A CTQ is a key measurable characteristic of a product or process.
2. Measure – Converts problems into measurable data.
3. Analyze – Identifies root causes of inefficiencies.
4. Improve – Designs and incorporates targeted improvements.
5. Control – Focuses on maintaining and sustaining improvements over time.

The integration of DMAIC into LSS projects, as highlighted by Tenera & Pinto (2014), plays a key role in achieving optimized processes and measurable outcomes. This approach ensures that improvements are effective, data-driven and sustainable. CV Aneka Sumber Rezeki, as a conventional company, has never attempted any structured quality control practices or systematic operational improvements. Their operations have relied heavily on traditional, unsystematic approaches, which lack consistency and fail to address recurring inefficiencies effectively. Through LSS, with its data-driven DMAIC framework, it provides a systematic approach that focuses on identifying root causes, setting measurable goals, and implementing sustainable improvements. Furthermore, following the DMAIC method is regarded as the most effective strategy for efficient resource utilization and low-cost implementation, as demonstrated in various case studies. According to Yin (2003), this methodology also enables researchers and practitioners to retain the holistic and meaningful characteristics of real-life events, making it a well-rounded solution for CV Aneka Sumber Rezeki's operational challenges.

Furthermore, the selection of CV Aneka Sumber Rezeki allows this study to provide insights applicable to other SMEs facing similar production challenges. By focusing on an SME with real inefficiencies and measurable performance gaps, this

research ensures that the findings are practical, replicable, and beneficial for broader industry applications. By leveraging DMAIC, the company can systematically address inefficiencies, optimize resource utilization, and achieve consistent product quality—ultimately enhancing competitiveness in the challenging F&B market.

For this reason, the author's interest lies in understanding how this methodology, typically applied in large-scale enterprises, can be tailored to the unique needs of SMEs, improving both efficiency and competitiveness. By investigating the potential of DMAIC approach as a strategic tool for small businesses, therefore, the author has titled the study "**The Use of DMAIC Approach in Indonesian Snack Manufacturing SME: Driving Cost-Effective, High-Impact Improvement in Small Business Operations a Study Case at CV Aneka Sumber Rezeki**."

1.3 Problem Formulation

As explained in the research background, operational efficiency and quality control in the highly competitive F&B sector are very important and crucial in maintaining the company's competitiveness. As well as maintain flexibility to adapt, restructure, and refine the company plans in real-time (Azis & Irjayanti, 2024). Nevertheless, SMEs within this sector face ongoing challenges in maintaining operational efficiency and product quality, hindering their ability to compete with larger enterprises. Just like what Goetsch & Davis (2006) said, at every successive level of competition, the quality of the competitors a company might face is increasing. CV Aneka Sumber Rezeki is facing these challenges as well.

CV Aneka Sumber Rezeki faces critical inefficiencies in its operations. The company struggles with high product defect rates, where approximately 10%-15% of daily production batches fail to meet quality standards. Additionally, production delays during peak seasons, such as Ramadhan, can extend by up to 30%, disrupting schedules and causing missed orders. Material waste further exacerbates these challenges, with preparation inefficiencies contributing to a 20% increase in daily

raw material costs. These operational setbacks result in inflated costs, reduced scalability, and hinder the company's ability to remain competitive in an increasingly saturated market.

Despite awareness of these issues, the company has not adopted a structured improvement methodology to address them systematically. In response to these challenges, LSS, specifically through the DMAIC methodology, emerges as a strategic framework for systematically addressing inefficiencies.

Given the unique operational context of CV Aneka Sumber Rezeki, it becomes imperative to understand how LSS in DMAIC approach, a methodology often associated with large-scale enterprises, can be effectively tailored to address the challenges faced by SMEs. This study aims to bridge this gap by exploring the application of DMAIC in optimizing production processes, reducing costs, and enhancing operational efficiency at CV Aneka Sumber Rezeki. Therefore, this research will address the following questions that will be answered along with this research, such as:

1. How can the Define phase of DMAIC help identify and define the root causes of inefficiencies at CV Aneka Sumber Rezeki?
2. How can the Measure phase of DMAIC systematically quantify key performance indicators using tools like Data Collection Forms to assess production efficiency, product quality, and raw material cost at CV Aneka Sumber Rezeki?
3. How can data analysis in the Analyse phase of DMAIC be used to identify the root causes of inefficiencies in production at CV Aneka Sumber Rezeki?
4. What corrective actions can be implemented in the Control phase to improve and sustain production performance at CV Aneka Sumber Rezeki?

1.4 Research Objectives

Based on the research question that already mentioned, the research objectives will be describes as follows:

1. To investigate how the Define phase of DMAIC can help identify and define the root causes of inefficiencies at CV Aneka Sumber Rezeki.
2. To explore how the Measure phase of DMAIC can systematically quantify key performance indicators using tools like Data Collection Forms to assess production efficiency, product quality, and raw material cost at CV Aneka Sumber Rezeki.
3. To analyse how data collected in the Measure phase can be used in the Analyse phase of DMAIC to identify the root causes of inefficiencies in production at CV Aneka Sumber Rezeki.
4. To identify the corrective actions that can be implemented in the Control phase to improve and sustain production performance at CV Aneka Sumber Rezeki.

1.5 Research Benefit

1.5.1 Theoretical Benefit

From a theoretical perspective, this research contributes to the body of knowledge on the application of Lean Six Sigma in SMEs. While LSS is widely recognized for its success in large enterprises, its feasibility and effectiveness in smaller businesses are less explored. This case study of CV Aneka Sumber Rezeki will provide empirical evidence on how LSS can be adapted to suit the unique needs and constraints of SMEs. Additionally, the research will help expand the theoretical understanding of Critical Success Factors (CSFs) and barriers that affect the implementation of LSS in SMEs, contributing valuable insights to the academic discourse on operations management and process improvement in smaller enterprises. It will also explore the non-monetary benefits of LSS, such as process optimization and customer satisfaction, enriching the theoretical framework around LSS's broader impact beyond financial gains. Reference for further similar research and (Theoretical Benefit first and practical).

1.5.2 Practical Benefit

The practical benefit of this research is primarily aimed at providing actionable insights for SMEs, particularly those in the F&B sub-sector, like CV Aneka Sumber Rezeki. By exploring the implementation of LSS and the DMAIC methodology, this study will offer a practical framework for SMEs to improve their production processes, enhance product quality, and reduce operational inefficiencies. The findings can help SMEs understand how to optimize their use of limited resources, achieve cost-effective improvements, and boost customer satisfaction, ultimately increasing competitiveness in a market dominated by larger corporations. Moreover, this research may offer a pathway for SMEs to adopt CI practices without requiring large-scale investments, making it accessible to businesses with fewer resources.

1.6 Research Scope

This research focuses on the implementation of DMAIC in a SME focusing on the F&B industry, specifically CV Aneka Sumber Rezeki, a cassava chip manufacturer.

Among the various products produced by CV Aneka Sumber Rezeki, cassava chips were selected as the focus of this study owing to their substantial production volume and considerable influence on operational efficiency. Preliminary observations indicated that cassava chip production faced the most notable inefficiencies, including bad product quality, cycle time inconsistencies, and material waste. Additionally, cassava chips contribute the largest share of the company's revenue, making improvements in their production process highly beneficial for overall business performance. Given its standardized production steps, cassava chip manufacturing provides a structured and measurable process for applying DMAIC tools effectively.

The scope of the study is limited to the application of the DMAIC (Define, Measure, Analyze, Improve, Control) methodology within the company's production processes, aiming to address operational inefficiencies, improve product quality, and enhance overall productivity. The research will evaluate the

effectiveness of specific process improvement tools used within each DMAIC phase to determine their impact on achieving key outcomes such as waste reduction, defect minimization, and improved customer satisfaction.

This study will focus primarily on internal production processes and operational aspects of CV Aneka Sumber Rezeki, excluding external factors such as market dynamics or supply chain considerations, although they may be briefly referenced when relevant to operational efficiency. The research aims to provide both practical and theoretical insights into how DMAIC can be tailored to meet the needs of SMEs, specifically in the context of limited resources and the challenges faced by smaller enterprises in competing with larger corporations in the F&B sub-sector.

1.7 The Systematics of Mini-thesis Writing

This section provides an outline of how the mini thesis will be organised. The methodical preparation of the mini thesis writing comprises of Chapters 1–5, with the structure described as follows:

a. **CHAPTER I**

This chapter presents an overall, detailed, and brief description of the mini thesis findings. This chapter covers topics such as object overview, background, problem statement, research questions, objectives, benefits, scope, and mini thesis writing format.

b. **CHAPTER II**

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

c. **CHAPTER III**

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 the technique that is used in this research.

d. **CHAPTER IV**

This chapter presents a comprehensive and structured account of the research, including the discussion of findings that align with the formulated problem and research objectives.

e. **CHAPTER V**

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