

CHAPTER 1 – INTRODUCTION

1.1 Background

PT XYZ is a multinational company that have vision to be a world-class solution-driven company in heavy equipment, mining and energy for the benefit of stakeholders. Currently, the company is a critical player in various sectors and industries in the country through its six business pillars: Construction Machinery, Mining Contracting, Coal Mining, Gold Mining, Construction Industry and Energy. PT XYZ's distribution network is spread to 19 branch offices, 22 supporting offices, and 11 representative offices, including the Medan branch office. PT XYZ has territory coverage from Aceh to Martabe.

Aceh is the northernmost of PT XYZ Medan branch, which is spaced about 700 km from Medan, and then there is a supporting point office and warehouse at Aceh. Martabe is south of PT XYZ, which is spaced away about 367 km from Medan, and there is no supporting point office and warehouse at Martabe, as shown in Figure 1.2. Conversely, the competitor has a supporting point office and warehouse at Martabe.

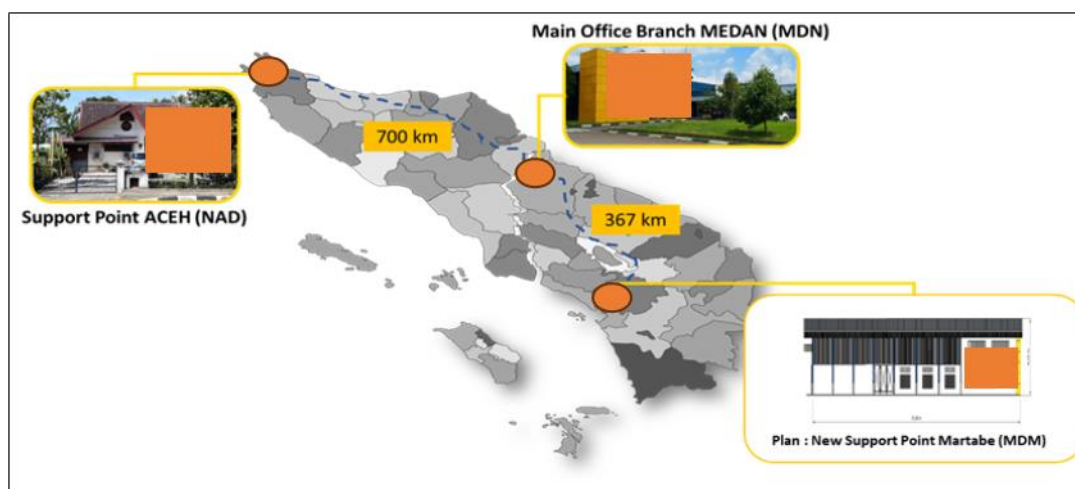


Figure 1.1 Territory Coverage from PT XYZ Medan Branch
(source: Internal Company,2023)

Martabe is a gold mine operated by PT ABC that has a single contractor, PT EFG, with two subcontractors, PT HIJ and PT KLM, with a functional area of 479 hectares. Construction of the Martabe gold mine started in 2018, and production began in 2012. Based on data in 2017 from CNBC, Martabe is one of the biggest gold mines in Indonesia which is the second largest gold production, with about 355 thousand troy ounces of gold and the fourth largest gold reserves of about 9 million troy ounces of gold (CNBC, 2017).

Furthermore, based on milestone data from the PT ABC's website, in 2018, PT ABC produced 410 thousand ounces of gold, a 15% increase from 2017. On December 4, 2018, PT XYZ Tbk bought a 95% share in PT ABC through a subsidiary business, PT OPQ. So, the contractor and subcontractor from PT ABC extended a new contract with a seven-year term in April 2023, which means the unit must use PT XYZ's product.

Sector Business at the Medan branch is dominated by gold mining (44%) at the Martabe site. Other sectors at the Medan branch are agribusiness (30%), construction (25%) and industrial (1%), as shown in Figure 1.2.

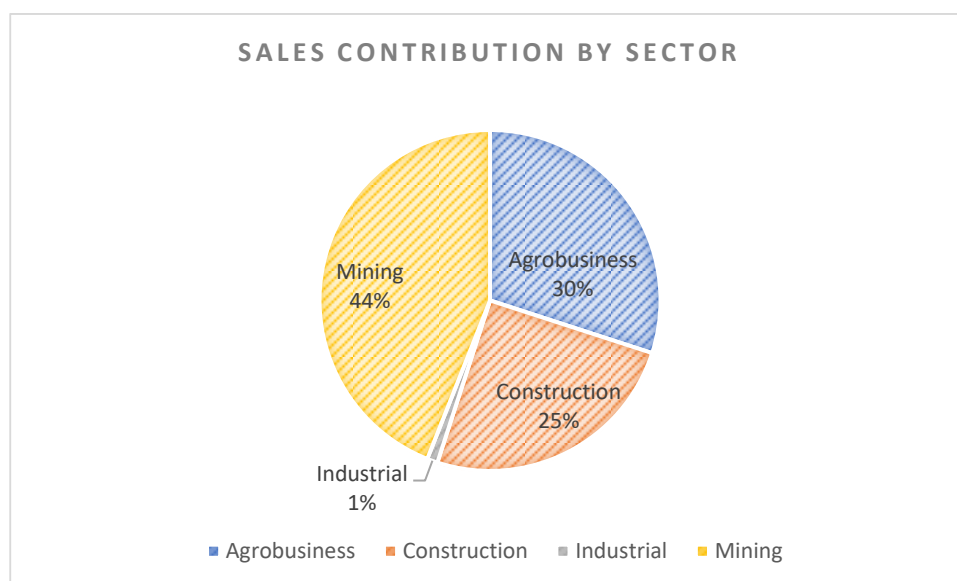


Figure 1.2 Sales Contribution by Sector at PT XYZ
(source: Company Data,2023)

The key buying decision in the mining sector is customer service level to maintain their unit performance. At PT XYZ, the customer service level can be measured by OTIF (On Time In Full), which guarantees the availability of parts and lead time delivery parts. OTIF rates are KPIs between PT XYZ and customers to evaluate the performance of PT XYZ towards the customer's purchase order (PO). OTIF rates calculate two aspects: fulfilment of spare parts and lead time delivery of spare parts based on customer request delivery date (CRDD).

1.2 Research Problem

PT XYZ Medan Branch is struggling to achieve a high achievement for spare parts sales, as shown in Figure 1.3. At the same time, there is a problem: PT XYZ's lack of service level measured by OTIF rates is 85%, which does not achieve the target of 90%. There is a gap of 5% for OTIF rates that have not been achieved. Lower OTIF rates at PT XYZ align with low achievement for availability parts. Availability is the ability of supply from our inventory to demand. PT XYZ's availability is 77%, which is not achieved from a target of 90%. There is a gap of 13% for availability that is not achieved.

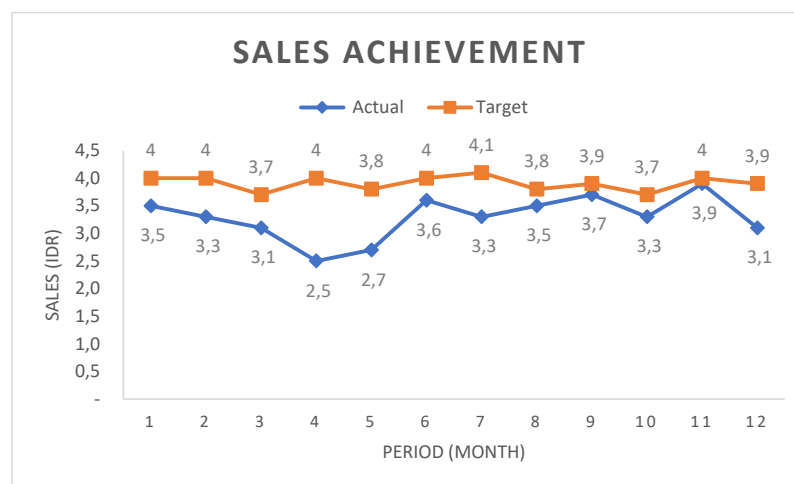


Figure 1.3 Sales Achievement at PT XYZ

(source: Company Data,2023)

There is no warehouse at Martabe site, and support delivery parts are from Medan. So, this situation risks delaying delivery due to the long distance (367 km or 12 hours by land transportation) between the central office (Medan) and Martabe.

1.3 Research Objectives

The purpose of this research is:

1. Increase spare parts sales at PT XYZ Medan Branch by evaluating the relationship between spare parts sales and customer service level measured by On-Time in Full (OTIF)
2. Increase customer service level measured by On-Time in Full (OTIF) rates through improvement of availability parts by inventory control management and development of a new support point.

1.4 Significance of Study

Several studies have learned how to get a good supply chain to enhance customer service (Liu et al., 2011; Mauli et al., 2012; Sabara et al., 2019). A study by Tadayonrad & Ndiaye (2023) and Li et al. (2020) explained that managing multi-storage inventory by forecasting demand increases parts availability. However, there is no explanation for making new support points based on inventory calculations to get effective supply chain management. It also explains that accurate demand forecasting can improve customer service levels but does not come with an explanation of the benefits of high customer service levels for the company. Therefore, this research completes the previous study to know how to design an effective supply chain and consider the feasibility of investment to guarantee parts availability and enhance customer service level, and then to know the impact of high customer service level on sales at this company.

1.5 Research Questions

This study developed three research questions to answer the aim of the study, namely:

Number	Research Questions (RQ)	Answer
RQ1	What are some potential solutions for improving sales by increasing OTIF rates at PT XYZ Medan Branch?	It will be answered by examining the relationship between the OTIF rate and the company's sales, measuring the effect of the OTIF rate on sales, and finding out what other factors can affect the relationship between the OTIF rate and sales.
RQ2	How to improve OTIF rates at PT XYZ Medan Branch?	It will be answered by examining root cause of low achievement of OTIF rates through Five Whys Analysis and examining the relationship between the availability parts, lead time delivery and OTIF rates, measuring the effect of the availability parts and lead time delivery on OTIF rates.
RQ3	How does improvement of availability parts impact to OTIF rates at PT XYZ Medan Branch?	It will be answered by analyzing inventory control and develop new support point to improve parts supply chain distribution.

Table 1.1. Objective Questions
(source: Internal Company,2023)

1.6 Hypothesis

This study hypothesizes that providing a new support point to improve spare parts supply chain distribution at PT XYZ Medan Branch will increase spare parts availability, reduce lead times, and improve OTIF. It will lead to better customer service and increased sales.