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CHAPTER 1
INTRODUCTION

1.1 Research Object Overview

1.1.1 Company History

H&D store is a family business, started in 2010 by Mr. Ade and Mrs. Rita. The business run on reselling and distributing snacks and beverages product such as biscuits, packaged bun, instant coffee, drinks, etc. The store also sells daily needs such as sugar, flour, cooking oil, soap, shampoo, etc. Beside trade business, H&D also own a small egg farm. Currently, H&D already has 13 employees working in. The store is located in Ahmad Yani Street no 101, Payakumbuh City, West Sumatra Province.

H&D store's business model is B2B, so the customer of H&D is other businesses that sell same product, but they are sell it directly to the consumers. The customers of H&D store came from both inside the Payakumbuh city and outside the city that can be located hundreds of kilometers from the store. To help those customers who purchase the goods, H&D store provides delivery service under terms and condition.

Toko used to be the second hand or third hand, usually Toko get the goods from bigger wholesaler or official distributor of the product. Since, the year of 2018 Toko had tried to find out ways to purchase the goods directly from the factory and it got the way for some goods. Recently, in late 2020 Toko got an opportunity to become official distributor of Padimas product in West Sumatra Province area.

1.1.2 Company Logo

Figure 1.1 Company Logo

Source: Interview with the owner

1.1.3 Organizational Structure

H&D store is a sole proprietorship company which means the owner has unlimited responsibility in the organization. Each position within the organization is responsible directly to the owner. Below is the diagram of organizational structure of H&D store.

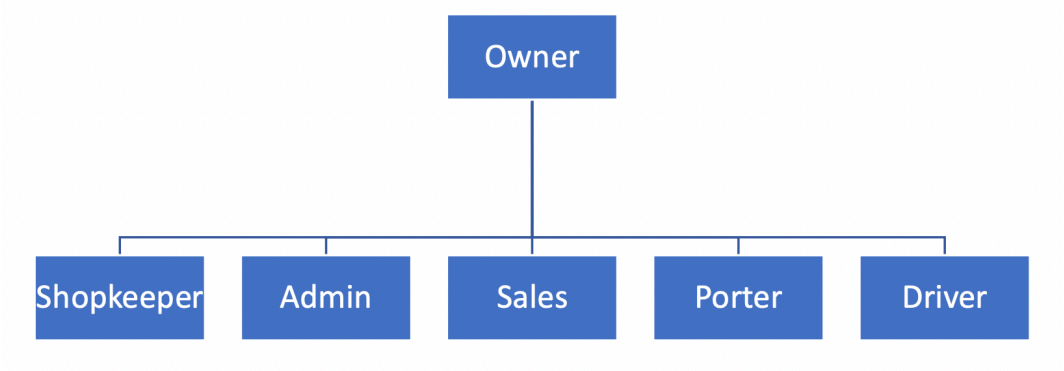

Figure 1.2 Organizational Structure of H&D store

Source: Interview

1.1.4 Working Area

The service area covered by H&D store, originally was the city of Payakumbuh and has been expanding until encompasses almost the whole area of west Sumatra province and a piece area in Riau province. Although the service area already covered almost the whole province, but the main

source of customers of H&D store is Pasaman county, Payakumbuh city, Tanah Datar and Pesisir. Below is the map of service area of H&D store

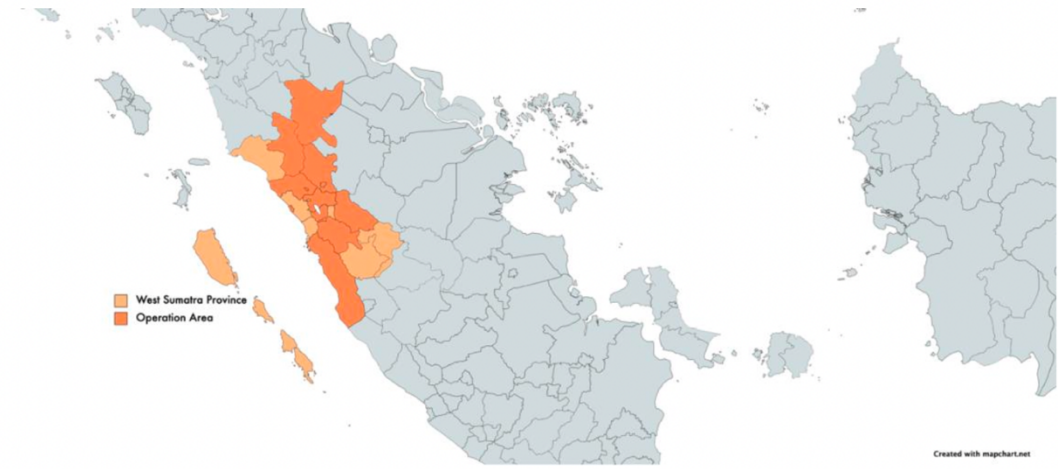

Figure1.3 Operation Area of H&D store

Source: Interview

1.2 Research Background

"Forecasting is the art of predicting future events, there are various number of method we can use to perform forecasts it may involves past data to create a projection of future with mathematical model and it may a subjective or an intuitive prediction" (Heizer, Render, & Munson, 2017). It may be based on demand data, customer plans to purchase, and may be a combination of those methods mentioned before to help the stakeholder to make a good decision. Good forecasts are having important role within each aspect of a business, even though forecast of a demand is a prediction until the actual demand becomes known. Therefore forecast of demand drive decision in many areas. According to (Heizer, Render, & Munson, 2017) demand product forecast may impact three areas as follows: supply chain management, human resource, and capacity. For H&D store which recently became an official distributor of packaged bakery product called 'Padimas',

it is important to choose the right method to forecast the demand so that Toko's stakeholder can plan their inventory effectively.

Since introduced by the Dutch in colonial era, bread consumption has become a habit among Indonesia people. It was indicated by the growth of bread factories in Indonesia. Member of Bakery Sub of Business Association of Food and Beverage, Maulana Wahyu Jumantara delivered "Quoting data of Euromonitor current average growth rate between 2010 – 2014 of cake and bread business in Indonesia rose about 14%. While the current average growth rate projected for 2014 – 2020 period will be 10%. Until 2020 the potential target of bread and cake business worth approximately IDR 20.5 trillion" (Hidayat 2017).

Based on data collected by National Economic and Social Survey, Statistics Indonesia (BPS) there are 10 cities in Indonesia with the highest bread consumption per individual per slices per month. One of those cities is Bukittinggi City that located in West Sumatra Province, the city is sit on fifth highest bread consumer in Indonesia with rate 4,5 slices per month per capita.

Nationally the citizen's expense on bread is relatively small to the total expense on all kinds of foods with ratio of 0,34%. According to MIREA Asset Security in a report year 2018 mentioned that stable economics can increase bread demand in Indonesia especially for middle-upper class citizens that can diversify their foods by adding western foods like bread and pasta. It could be a good opportunity for bread producers of Indonesia in the future (Lokadata, 2019). Therefore, in spite the people's expense on bread are small but it showed that it growing on positive direction, according to a report by Australian Exports Grain Innovation Centre the Indonesian bread consumption between 2013-2018 it increased 27% in total (Elliott, Kingwell, & Carter, 2019).

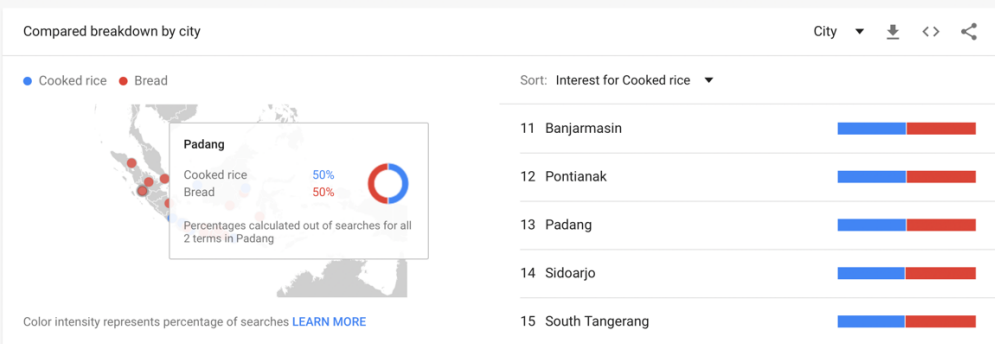

Figure.1.4 Comparison of people's interest to rice and bread in Padang

(source: trends.google, 2021)

As a new official distributor H&D store is expected to show good performance in distributing the Padimas products in its working area. To fulfil the task Toko should prepare the facility and infrastructure well to support it operation, beside proper facility it also require a plan on how Toko will manage the inventory so that Padimas product can be distributed very well. Unfortunately, based on demand and estimation data of Roti Panggang Padimas product H&D store did not satisfy the demand of the products. Below is the graph that shows the gap between deman and estimation of Roti Panggang Padimas in H&D store between December 2020 to March 2022 period.

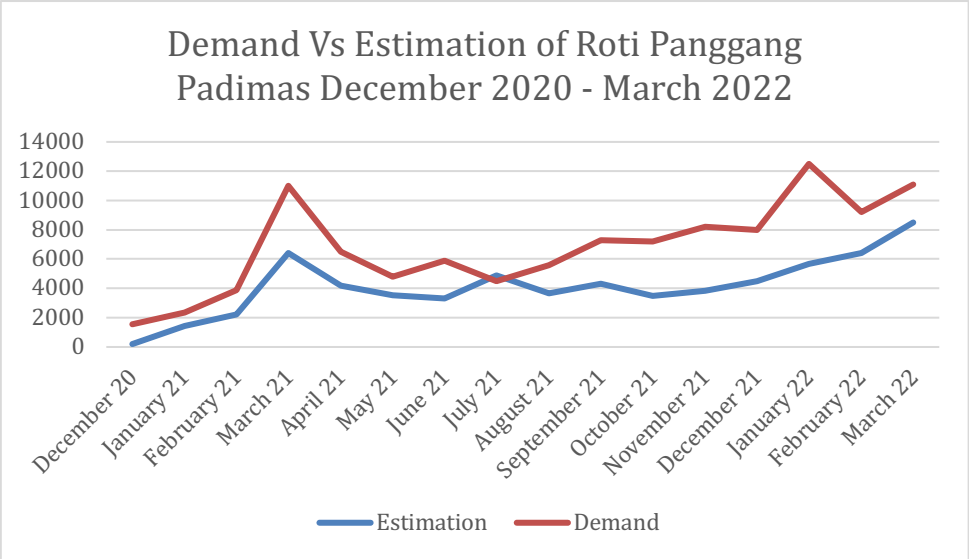

Figure 1.5 Graph Demand Vs Estimation of Roti Panggang Padimas from Dec 2020 to March 2022

Source: internal data of H&D store

According to figure 1.5 we can see that there are gap between demand of Roti Panggang Padimas and the estimation for almost the whole period except in July 2021, because the estimation in the period excessed the demand. The biggest gap has occurred in January 2022 with amount of 6.840 cartons, the potential sales missed by H&D store for January 2022 period only can reached Rp.670.320.000,00. For the period of 16 months, the amount of lost opportunity cost H&D store suffered is equal to Rp.4.217.920.000 it such a huge loss for Toko which caused by poor demand forecasting method used.

Table 1.1 Table of gap between Estimation and Demand of Roti Panggang Padimas in aggregate between December 2020 to March 2022

Month	Estimation	Demand	Gap
December 20	200	1550	-1350
January 21	1450	2350	-900
February 21	2200	3900	-1700
March 21	6400	11000	-4600
April 21	4200	6500	-2300
May 21	3550	4800	-1250
June 21	3300	5900	-2600
July 21	4900	4500	400
August 21	3650	5600	-1950
September 21	4300	7300	-3000
October 21	3500	7200	-3700
November 21	3850	8200	-4350
December 21	4500	8000	-3500
Jan-22	5660	12500	-6840
Feb-22	6400	9200	-2800
Mar-22	8500	11100	-2600
Total			-43040
			IDR (4.217.920.000)

Source: Internal data of H&D store

The insufficiency of current forecasting method used in H&D store need to be fixed. There are many methods can be used to conduct demand forecasting. In (Pradita, Ongkuranuk, & Leingpibul, 2020) based on research by (Mo, 2018) that studied container throughput forecasting with several methods such as group method of data handling (GMDH) neural network, support vector regression (SVR), back-propagation (BP) neural network, seasonal autoregressive Integrated moving average (SARIMA), and genetic programming (GP). Those methods are included into quantitative methods of forecasting, while qualitative forecasting method is analysed based on the opinions, judgements, and past performance of forecasting experts (Arvan, 2019) and qualitative method only used when the historical data is limited so

the quantitative methods are more commonly used among the practitioners (Pradita, Ongkuranuk, & Leingpibul, 2020). While the most common quantitative method used by practitioners are Time Series, Regression Model (Taylor, 2017; Pradita, Ongkuranuk, & Leingpibul, 2020), Autoregressive Integrated moving Average (ARIMA) (Min, 2008; Jaipuria, 2014; Khamphinit, 2016; Chong, 2017; Pradita, Ongkuranuk, & Leingpibul, 2020) Seasonal Autoregressive integrated Moving Average (SARIMA) (Farhan, 2018; Mo, 2018; Pradita, Ongkuranuk, & Leingpibul, 2020), Artificial Neural Network (ANN) (Jaipuria, 2014; Dhini, 2015; Pradita, Ongkuranuk, & Leingpibul, 2020).

Based on the research finding in (Pradita, Ongkuranuk, & Leingpibul, 2020) the intervention forecasting approaches perform better than the traditional time series methods which showed by the comparison of MAPE value of each method.

Even though H&D store already became a distributor, the store owner still using judgement forecasting to estimate the demand of Roti Panggang Padimas instead of using mathematical methods that based on data. This condition created high gap between demand estimation and demand realization (real demand always higher than estimated) causing H&D store cannot satisfy the customer's need. The amount of demand that cannot being satisfied by H&D store can be considered as a cost or loss because there is potential revenue that skipped.

The high frequency of gap between demand and estimation of Roti Panggang Padimas, and bread is favourite snack of people in Indonesia in general and at least there are only 2 distributors in West Sumatra Province one of them is H&D store which responsible to distribute Roti Panggang Padimas in Bukittinggi City, Payakumbuh City, Kab. 50 Kota, Kab. Agam, and Kab. Tanah Datar, etc so researcher is interested to doing research with

title “Demand Forecasting for Packaged Jam Sandwich Product to Reduce Gap between Estimation and Realization of Demand using Intervention Forecasting Approach in West Sumatra Distribution Area, Case Study: H&D store”.

1.3 Problem Formulation

The poor demand forecast of H&D store occur because of the owner do not implement proper forecasting technique to estimate the demand of their product which is roti Panggang Padimas. In result there is a gap between demand estimation and demand realization of Roti Panggang Padimas. The gap between demand estimation and realization draws amount of cost (lost opportunity cost) that H&D store suffer from insufficient forecasting method used, for period of December 2020 to March 2022 the lost opportunity cost H&D store has suffered is equal to IDR 4.2 billion. According to (Pradita, Ongkuranuk, & Leingpibul, 2020) the poor forecasting result can be improved by introducing Intervention Forecasting Approach that combining human insight from qualitative forecast with precision of mathematical approach of quantitative forecasting in iterative sequence. Based on the previous research, after exhibited ten time-series forecasting methods and compare it with Intervention Forecasting Approach (Pradita, Ongkuranuk, & Leingpibul, 2020) the intervention forecasting approach outperformed the traditional time series method with results showed that mean average percentage error (MAPE) for training datasets are 5.43% to 6.22% and 9.55% to 10.33% for testing datasets. Overall, the intervention forecasting approach can improve forecasting accuracy by 42.39% and 39.42% for 20 feet and 40 feet containers.