CHAPTER I. INTRODUCTION

I.1 Background

In Indonesia food laws and regulations, that has been approved by Indonesian Constitution in 2012, food is defined as the main basic human need that all the activities in order to fulfill this basic human needs are concluded into human rights activities which are guaranteed by the Constitution of Republic of Indonesian in order to embody the qualified human resources. Thus, Indonesian Constitution have to provide a sufficient food supply troughout the country equally. In order to fulfill the task, Indonesian goverment has formed an organization that particularly manage food supply chain alongside Indonesia despite Logistic affairs agency or known as Bulog is a food security institution Indonesia that takes care of rice trade system. Bulog is a company engaged in providing daily foods that our communities most likely consume such as rice, sugar, oil, meat, egg etc. Based on Keppres No. 13 Year 2001 regarding the implementaion of tasks and function of LPND (nondepartemental in goverment agency) clause 40, Bulog has assigned to carry out goverments' tasks in managing food logistic regarding to the constitution that has been set. As one of company that holds up the important role in providing Indonesians daily needs, then a management control process within the activities in Bulog to monitor every movement to prevent from instability that leads to food insecurity is required.

Table I-1 Food consumption in Indonesia by region in 2016 (kg/ capita/ week) (Hafizah, Hakim, Harianto, & Nurmalina, 2020)

Food Type	Sumatra	Java	Bali and East Nusa Tenggara	Kalimantan	Sulawesi	Maluku and Papua
Rice	1,83	1,58	0,12	1,66	2,03	1,42
Other Carbs	0,26	0,28	0,46	0,23	0,36	1,64
Fish	0,44	0,24	0,32	0,46	0,66	0,63
Meat	0,12	0,14	0,12	0,17	0,06	0,08
Egg, Milk, Beans	0,81	0,95	0,47	0,82	0,55	0,35
Vegetable	0,78	0,82	0,82	0,59	0,73	0,79

Food Type	Sumatra	Java	Bali and East Nusa Tenggara	Kalimantan	Sulawesi	Maluku and Papua
Fruit	0,47	0,48	0,37	0,51	0,57	0,43
Fat	033	0,25	0,20	0,25	0,27	0,28

In Indonesia, rice is one of staple food that most consumed the most over the years. According to nationmaster.com, just in 2004 Indonesia is the third country that has the highest number of people that are consuming rice each year. Another data to strengthen this argument is, according to rice consumption rate in Indonesia is 111,58 kg/capita/year, which means that each year one person in Indonesia consume rice as much as 111,58 kg. Based on consumption rate research in 2006, rice is the most consumed for carbohydrate source other than any source of carbohydrate food. Rice consumption in Java alone can reach 1,58 kg/capita/week (Hafizah, Hakim, Harianto, & Nurmalina, 2020). Which means, if in one year there are 52 weeks, in one year rice consumption in Java reach 82,16 kg/capita/year. Therefore, rice is the most important among the nine basic of food.

Table I-2 Link indices land utilization in Indonesia (Statistik, 2020)

Type of Land Utilization	2015	2016	2017	2018	2019
1. Wetland (*Sawah*)	99,37	101,17	99,69	51,85	51,14
1.1 Irrigation	99,88	100,58	99,21	52,3	51,55
1.2 Non-Irrigation	99,51	102,01	100,37	34,6	36,77
2. Dry Land	102,36	97,15	101,45	64,35	69,1
2.1 Dry Field / Garden	98,75	97,29	101,66	53,26	54,52
2.2 Shifting Cultivation	103,35	97,76	102,91	13,71	15,11

Despite being the most important food for Indonesians, rice production has been decreasing for over the last couple of years due to decreasing agricultural land

due to functional shit from agricultural into industry or residential areas (Rangkuti, 2009). According to data that has been gathered by BPS (Badan Pusat Statistika), land utilization for food croops has been decreasing significantly. In Table I-2 can be seen that wetland (*sawah*)—land that is used for paddy cultivation—has been decreasing from 2015 to 2019. Despite increased in 2016, the overall paddy cultivation land is decreasing by 48,23% troughout 2015 to 2019.

An English economist and demographer, Thomas Robert Malthus in 1798 released an essay anonymously which he arguably said that human population will always outrun the human subsistence—i.e food, clothes, and shelter. Since human population is growing similarly to geometric progression, meanwhile the means of human subsistence is growing in an aritmethic progression (MacRae, 2021). In other word, food demand will eventually exceed food supply, if that happen food will become unavailable, unafforadble, and human will no longer take food quality and safety into consideration. This may leads to an extreme condition where food borne illnesses break out violently and threaten human existence. Thus, food security is an important issues to be taken seriously.

Measuring and monitoring performance is believed in helping stakeholders in making good decision. Gladys Lopez-Acevedo *et al* expressed their opinion about monitoring and evaluation (M&E) performance in their book. M&E performance can provide information about the performance of a government, of individual ministries and agencies, and even of managers and their staff. It can also identifies what works, what does not, and reasons why (Lopez-Acevedo, Krause, & Mackay, 2012). Monitoring and evaluation can be done in almost any aspects of food security agency, such as food supply chain. Furthermore, the lack of a balanced approach between financial and non-financial, and also lack of distinction between metrics at strategic, tactical, and operational levels, are the reasosns why performance measurement is important for effective management in supply chain (Gunasekaran, 2001). Since food supply chain plays a siginificant role for our food security, as we rely on that to distribute foods evenly troughout the country. Therefore, to keep Indonesia from having food security issue, it reqiures a supply chain performance

measurement and monitoring system that balanced to make sure that our food production meet our food demand and safety stock for the next 6 months.

Balanced scorecard first introduced by Kaplan and Northon in 1992 as the means of performance evaluation tools. This performance evaluation tools covers four perspective which three of them are non-financial perspective, with the goals of this performance evaluation tool is to balance out between long term and short therm objectives, between financial and non-financial measures, between lagging and leading indicators, and also between (Bhagwat & Sharma, 2007). Another performance evaluation tool that have been caught the attention is SCOR (Supply Chain Operation Reference) model. The model that links business processes, performance metrics, best practices technology, and people into a unified structure. However one limitation in SCOR is that this performance evaluation provides an established framework that focuses strictly on a set of pre-defined metrics for evaluating, comparing, and improving supply chain (Chorfi, Benabbou, & Berrado, 2018). However, by intergrating between BSC and SCOR enhance the effectiveness of supply chain function (Jitesh, Arun, & S.G, 2009). Therefore this research use the intergrated model between BSC and SCOR model.

I.2 Problem Formulation

Based on the background described above, the problem faced by Indonesia National Logistic Agency to maintain a stable food security amongst our country are:

1. How to design supply chain perfomance measurement system on rice procurement and distribution in Bulog Subdivre Bandung?
2. How to design supply chain perfomance monitoring system on rice procurement and distribution in Bulog Subdivre Bandung?

I.3 Research Purposes

As for research purposes, this research is made to complete some purpose, namely :

1. To design supply chain perfomance measurement system on rice procurement and distribution in Bulog Subdivre Bandung.
2. To design a supply chain monitoring performance system on rice procurement and distribution in Bulog Subdivre Bandung.

I.4 Research Limitation

To avoid over-wide problem scope which might cause blured out the focus in this reasearch, this research is limited to certain problem scopes, as namely:

1. This research is done only in Bulog rice procurement and distribution Subdivre Bandung.
2. This researh is limited to only how to design a supply chain performance measurement and doesn't discuss about how to correct bad processes.
3. This monitoring system is not designed to process real-time data.

I.5 Research Benefit

The benefit of this research is expected to give benefit for several readers, as follows :

1. For Bulog Subdivre Bandung this research is expected to :
    a. Facilitate rice procurement and distribution stakeholders in decision making.
    b. Facilitate the stakeholders to identify a problem more effectively.
2. For Telkom University academics and future researchers this research is expected to give an insight for a further research.

I.6 Writing Systematics

This research is written in this systematics writing order as follows :

Bab I Introduction

In introduction section, writer defines background of this research and reasons why supply chain performance measurement and monitoring system helps the stakeholder to make good decision in

order to achieve food security. This chapter aslo describe research purposes and benefit for the company and academics. Problem formulation, scope and limitations, and writing systematics are also identified in this chapter. Therefore the focus of this research is cleared.

Bab II Literature Study

In the literature study, the theories and relevant literatures which have correlation with this research is discussed in this chapter. The previous research can also be found in this chapter as comparison to the prior studies. This section discuss about performance measurement method comparison to see why the combining BSC-SCOR is the best method to measuring supply chain performance that existed.

Bab III Research Methodology

Reseach methodology contains the explanation of detailed research steps, which includes : the stages of problem formulating, problem-relevant theories formulating, designing conceptual model of this research, and also problem solving systematic.

Bab IV Data Collection and Processing

In data coletion and processing discussed about all the stakeholder in Bulog, process business of rice procurement and distribution, SCOR metrics, and also BSC startegic map. This chapter started with all the consisting stakeholders to give a better view of our studied object. And after that, the existing process business is described here to understand rice procurement and distribution in Bulog Subdivre. And the end of this chapter there is a combined of BSC-SCOR metrics that showed in a table as a result.

Bab V Data Implementation

In this chapter, the combined BSC-SCOR metrics are implemented into monitoring system. This chapter started with designing monitoring system using use case diagram. The result of this chapter is a mock-up of monitoring system.

Bab VI Conclusion and Suggestion

As for this chapter, there are sugestions for Bulog and future research, so that another measuring and monitoring of food supply chain system can be developed into greater concepts. The conclusion of this research are also listed here to facilitate other researchers find out the result of this research.