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Supplier Selection with Gray Based Rough Set Theory Method (A Case Study: Pharmaceutical Installation of RSU Grand Medica Tanjung Anom, Medan)

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Abstract

Based on the preliminary study and interviews to the Grand Medica Hospital Tanjung Anom Medan there are several problems, including the frequent delays of drugs and an increase in the percentage of disability drugs supplied by suppliers. Where the supplier is a top priority exactly shows the highest percentage of disability in the delivery period. From these problems, it is necessary to select the medicinal supplier of Grand Medica General Hospital by evaluating the criteria and subcriteria in the supplier assessment and will produce the output of more than one supplier that has been in accordance with the criteria. The purpose of this study is to assist the Hospital for making the right supplier selection decisions. Supplier selection is a matter of Multi Criteria Decision Making (MCDM) because in the selection process is done by evaluating each supplier which is seen some

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Supplier Selection With Gray Based Rough Set Theory Method (A Case Study: Pharmaceutical Installation Of RSU Grand Medica Tanjung Anom, Medan)

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Abstract. Based on the preliminary study and interviews to the Grand Medica Hospital Tanjung Anom Medan there are several problems, including the frequent delays of drugs and an increase in the percentage of disability drugs supplied by suppliers. Where the supplier is a top priority exactly shows the highest percentage of disability in the delivery period. From these problems, it is necessary to select the medicinal supplier of Grand Medica General Hospital by evaluating the criteria and subcriteria in the supplier assessment and will produce the output of more than one supplier that has been in accordance with the criteria. The purpose of this study is to assist the Hospital for making the right supplier selection decisions. Supplier selection is a matter of Multi Criteria Decision Making (MCDM) because in the selection process is done by evaluating each supplier which is seen some common criterion in supplier selection to fulfill requirement of raw material. The method used in this study is the method of Gray Based Rough Set Theory, where this m ethod will involve some decision makers who are considered to have an important role in this hospital. Gray Based Rough Set Theory is a combination of fuzzy or gray methods and rough sets. The selection of suppliers by this method also considers the importance of the decision maker by assigning weight to each decision maker. By providing the upper and lower limits of each calculation, this method is considered capable of producing better decisions, with the output of more than one selected supplier. Where the RSU Grand Medica currently needs suppliers to supply medicines to meet medical supplies at the Hospital. Based on the calculation of the value of the Gray Values factor, the results obtained for each supplier, namely supplier 1 (0.26), supplier 2 (0.31), supplier 3 (0.60), supplier 4 (0.60), supplier 5 (0.39), and supplier 6 (0.34). By analyzing the value of Gray Values factor, obtained the order of choosing the chosen supplier based on the weight of the biggest is supplier 4 (0,60), supplier 3 (0.60), supplier 5 (0.39), supplier 6 (0.34), supplier 2 (0.31), and the last supplier 1 (0.26).

1. Introduction

The hospital has a variety of clinical practices and is quite complex. Various kinds of practices can be found in hospitals such as emergency departments (IGD), Intensive Care Units (ICU), Intensive Cardiac Care Units (ICCU), Perina, childbirth services, operations, laboratories, radiology, polyclinic services, pharmaceutical installations, and various other services. One of the services found in a hospital is a pharmaceutical installation. Pharmacy or also known as a pharmacy is one of the most important parts of a hospital. A pharmacist has a role to provide medical counseling, prescription drug screening, giving drugs, and other managerial work related to drug stocks. According to [1] stated that errors related to

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Campus Sustainability Practice Assessment: An Empirical Finding from Jönköping University, Sweden

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Abstract. The role of higher education institutions (HEIs) nowadays in promoting sustainability has outspread over the past decades. This is a result of abundant declarations and conferences about the need for sustainability in higher education. As consequences, several HEIs have integrated sustainability into their curricula, research, programs, projects, partnerships, and assessments. The objective of the research is to assess the campus sustainability practice of Jönköping University, which is located in Jönköping, Sweden. The assessment includes three pillars of campus sustainability, i.e., environmental management, public participation and social responsibility, and research and teaching as well. The assessment is considered could yield various benefits, not only for the university but also for the stakeholders, surrounding society, as well as for the academic purposes.

1. Introduction

Since Stockholm Declaration in 1972—it is acknowledged as the initial declaration about sustainability in higher education, there is a growing number of higher education institutions (HEIs) which have incorporated sustainability into their research, curricula, operating activities, assessments, as well as reporting [1],[2]. The sustainability term could be viewed as an attempt to balance and harmonize the environmental concerns with social and economic issues [3]. In a more formal way, sustainable development can be defined as a "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" [4].

The HEIs are regarded to be in a unique position to address this challenge. Even though they mostly engage in education—not in the field of environment, social, and even not intended to gain much profit—but they are expected to offer an education to the students with knowledge that could have effects to the environment and influences on local communities [5]. Due to this circumstance, i.e., that HEIs could not embrace three pillars of sustainability (environmental, economic, and social); hence, a sustainable university is defined differently. There is a shared understanding that a sustainable university entails a balance between environmental issue, public participation and social responsibility, and teaching and research in policy formulation [6]. It does make sense as the economic pillar is substituted by teaching and research.

Several studies stressed out the need for sustainability in HEIs, see for example [7]-[9]. Some HEIs believe that this is a challenge to start formulating a sustainable campus program [10], while others employ to implement some established campus sustainability assessment tools or reporting, such as ISO 14001 (e.g., [11]-[13]), green building initiative [14], eco-management and audit scheme (EMAS) [15],

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Managing Blood Safety and Availability: A Preliminary Investigation of the Blood Supply Chain Dynamics in Indonesia

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Abstract. This paper reports the findings from our preliminary investigation into the blood supply chain in Indonesia. The aim is to obtain factors influencing blood safety and availability, and ultimately to better understand its dynamics. A single embedded case study was adopted as a research design. Data were collected using six semi-structured interviews, walkthroughs, and written documents available from a blood centre and four associated hospitals in Yogyakarta. Template and within-case analyses were then used to analyse the data and, subsequently, to identify and categorise themes emerging from the data. Governmental and organisational policies, costs, donor management, stock management, and facilities are the main factors emerging from the data. These factors are interrelated and, collectively, they influence blood safety and availability across the blood supply chain.

1. Introduction

Managing blood safety and availability remains a challenging problem for the blood supply chain in Indonesia. In 2013, it was found that 3% of the total donated blood were contaminated by infectious diseases [1]. It is not uncommon to find some hospitals and blood centres (i.e. the Indonesian Red Cross – PMI) being out of stock when particular blood groups are needed. That condition could be even worse during national holidays when PMI could only supply 30% of the stocks needed every day [2]. PMI once claimed that on average it could only supply 70% of the national blood demand [3]. This uncertainty in blood safety and availability can lead to an increasing risk of losing patients' lives due to transfusion transmissible infections and delay of transfusion process.

Despite the urgency in providing reliable blood supply chain operations, the root causes of blood safety and availability problem in Indonesia have not been fully understood. Whilst lessons can be learnt from the extant blood supply chain literature (e.g. inventory optimisation, supply management, and distribution scheduling of blood products – [4]), context specific studies are still required to understand the dynamic of the blood supply chain operations and how it influences blood safety and availability in a unique setting of Indonesia. To address this gap, this paper attempts to answer the following research questions:

1. What are the contributing factors of the blood safety and availability problem in Indonesia?
2. How are the factors interrelated and how does the interrelation influences blood safety and availability in Indonesia?

Revisiting Supply Chain System with Deteriorating Items and Transportation Cost

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Abstract. Supply chain system with deteriorating items and transportation cost with environmental consideration has recently become a popular research stream. This study revisits a supply chain system with deteriorating items and transportation cost. Processing the defective items, which increases cost, affects supply chain decisions. We present an integrated inventory model involving a three-stage supply chain and defective items with no shortage. We then derive the minimal total cost considering supply chain integration and deteriorating items. Numerical examples are provided to illustrate how these models can be applied in practice. Sensitivity analysis is performed to gain more insight on changing parameters in the numerical studies.

1. Introduction

Due to increasing globalization, firms face a highly rapidly changing industrial conditions. The objective of our study is to determine the optimal cycle time and the replenishment policy for the integrated system which minimizes the average total cost per unit time. The motivation for looking at such models comes from the competitive environment and greater information transparency between suppliers, manufacturers, and retailers in the supply chain. Some researches on three-stage supply chain model were done by the following researchers. Ben-Daya et al. [1] explored the joint economic lot sizing problem in the context of a three-stage supply chain. Sana et al. [2] investigated a three-stage supply chain consisting of multiple suppliers, multiple manufacturers, and multiple retailers. Neither of them considered deteriorating items and logistic cost. Chung et al. [3] developed an integrated two-stage production–inventory deteriorating product model, in which stock-dependent, imperfect items and just-in-time delivery were considered.

In this study, we developed a generalized mathematical model considering three-stage supply chain for deteriorating items considering transportation cost. Our objective is to minimize the total system cost per unit time. We illustrate the process with a numerical example and analyzed the sensitivity of crucial parameters to provide managerial insights.