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**"LISREL Model Medical Solid Infectious Waste Hazardous
Hospital Management In Medan City"**

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LISREL Model Medical Solid Infectious Waste Hazardous Hospital Management In Medan City

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Abstract. Hazardous and toxic waste resulting from activities at most hospitals contain various elements of medical solid waste ranging from heavy metals that have the nature of accumulative toxic which are harmful to human health.

Medical waste in the form of gas, liquid or solid generally include the category or the nature of the hazard and toxicity waste. The operational in activities of the hospital aims to improve the health and well-being, but it also produces waste as an environmental pollutant waters, soil and gas.

From the description of the background of the above in mind that the management of solid waste pollution control medical hospital, is one of the fundamental problems in the city of Medan and application supervision is the main business licensing and control alternatives in accordance with applicable regulations.

Keywords: toxic waste, medical solid waste, non-medical solid waste, infectious and human health.

1. Introduction

Hospital activities will generate a number of by-products in the form of waste, both solids, liquids and gases that contain pathogens, chemicals and medical equipment which are generally dangerous and toxic ([12], [17]). In order to improve the quality of services, hospitals should be able to cope with such waste ([16], [19]). As for the waste treatment facilities in the hospital one of them is to use incinerators [4].

The problem of waste is a serious concern of the people and government of Indonesia, especially since the last decade, mainly due to the business development activities of the hospital which is the backbone of economic development for Indonesia [2]. Waste management is a necessity for the



preservation of human health and the environment in general [1, 7]. However, the procurement and operation of medical solid waste processing facility hospital was still considered burdensome for the hospital [6, 7, 8].

2. Problem Formulation

If the amount of waste collected quite a lot, it is necessary to increase the number of containers. Containers are usually made from metal or plastic [3]. Medical waste category of medical waste can be classified based on the potential dangers of hanging in it, as well as the volume and persistence properties which cause problems [2] for example:

1. Waste sharp objects such as needles, intravenous equipment, pasteur pipette, broken glass, and others;
2. Infectious waste, has a sense as waste associated with patients who require isolation of infectious diseases (intensive care) and laboratory waste [14];
3. Waste pathology (body tissue) is removed from the body tissue surgery or autopsy process;
4. Waste cytotoxic is material contaminated or possibly contaminated with bath cytotoxic during compounding, transport or treatment measures cytotoxic;
5. Waste pharmaceuticals derived from expired drugs that are not needed;
6. Chemical waste resulting from the use of chemicals in action, medical, veterinary, laboratory, sterilization processes and research;
7. Radioactive waste is material contaminated with radio-isotopes originating from medical or research used to radionucleous [20].

Until now, there are various laws and regulations governing the management of hazardous and toxic chemicals, but not sufficient, especially to prevent pollution or environmental damage [10]. For example, the Government Regulation on the Management of hazardous and toxic chemicals, the issue focused on the management of hazardous and toxic materials for solid waste hospital medical and other third parties who act as producers, users, transporters, storage, user and collection especially for solid waste home medical in accordance with certain diseased appendix in the regulation [13].

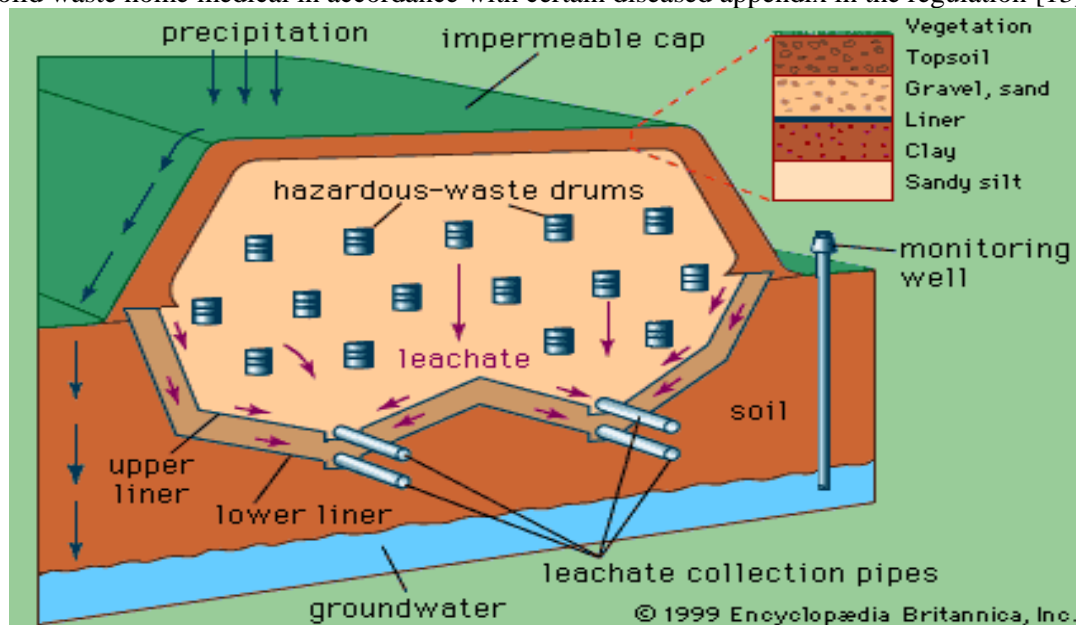


Figure 2.1. *Secured Landfill* (Management of Medical Solid Waste Hospital in Medan).

Sets and indices

One quality that is fairly common in the LISREL model is that the models disregard the means and regard all variables to be centered about their group means. This, in turn, results in

having the models with zero means. This is done in order to reduce the complexity associated in the analysis [11, 15].

If a multi-group model is being worked on with the help of LISREL, then it will give the same output of that process as is obtained by running a regression with dummy variables in SPSS [18].

LISREL helps the researcher in providing a fairly influential and flexible means for the examination of various group differences. It provides indicative information called modification indices which help the researcher in identifying the equality constraints [5].

LISREL can help the user to identify the interaction effects that need to be included in the model and the ones that do not need to be included in the model. The indicative information can be used in diagnosing the model specification for medical solid infectious waste hospital management in Medan city [9].

Variables

- Variable performance of machines and tools (incinerator) in the treatment of hospital medical solid waste (X1).
- Variable availability of medical solid waste from the activities of hospital activities (X2).
- Variable of environment variable availability of human resources according to the rules in the Decree of the Minister of Health of the Republic of Indonesia Number 12 Year 2004 (X3).
- Variable overcome the impact of the hospital's medical solid waste (X4).

Parameters

- X1.1 = Source hospital medical solid waste.
- X1.2 = Type hospital medical solid waste.
- X1.3 = Number of hospital medical solid waste.
- X1.4 = Production of hospital medical solid waste.
- X2.1 = Number of rooms and patient.
- X2.2 = Facilities or Facility Storage While medical solid waste.
- X2.3 = Physical condition of availability of raw materials activities of hospital activities.
- X2.4 = Medical solid waste collection process hospital.
- X3.1 = Condition Availability HR environment.
- X3.2 = Graduates HR environment.
- X3.3 = Ability or expertise HR environment.
- X3.4 = Training officers in the handling of hospital medical solid waste.
- X4.1 = Condition of society in the hospital environment.
- X4.2 = Attitude of people in a hospital environment.
- X4.3 = The level of awareness of the hospital against medical solid waste treatment.
- X4.4 = Level of medical solid waste pollution hospital.

3. Mathematical Formulation

Scheme dependent and independent variables influence in the determination of the conceptual study, are: $R = Y$, and

$$Y = a_1X_1 \{ (a_1X_{1.1}) + (a_1X_{1.2}) + (a_1X_{1.3}) + (a_1X_{1.4}) \} + a_2X_2 \{ (a_2X_{2.1}) + (a_2X_{2.2}) + (a_2X_{2.3}) + (a_2X_{2.4}) \} + a_3X_3 \{ (a_3X_{3.1}) + (a_3X_{3.2}) + (a_3X_{3.3}) + (a_3X_{3.4}) \} + a_4X_4 \{ (a_4X_{4.1}) + (a_4X_{4.2}) + (a_4X_{4.3}) + (a_4X_{4.4}) \}$$

Model LISREL medical solid infectious waste hospital management in Medan city for Living protected Environmental Law paying. Applicable Legislation (Y). Whatever t formula = statistic test if will n_1 = the total number of samples and n_2 = number of sample groups.

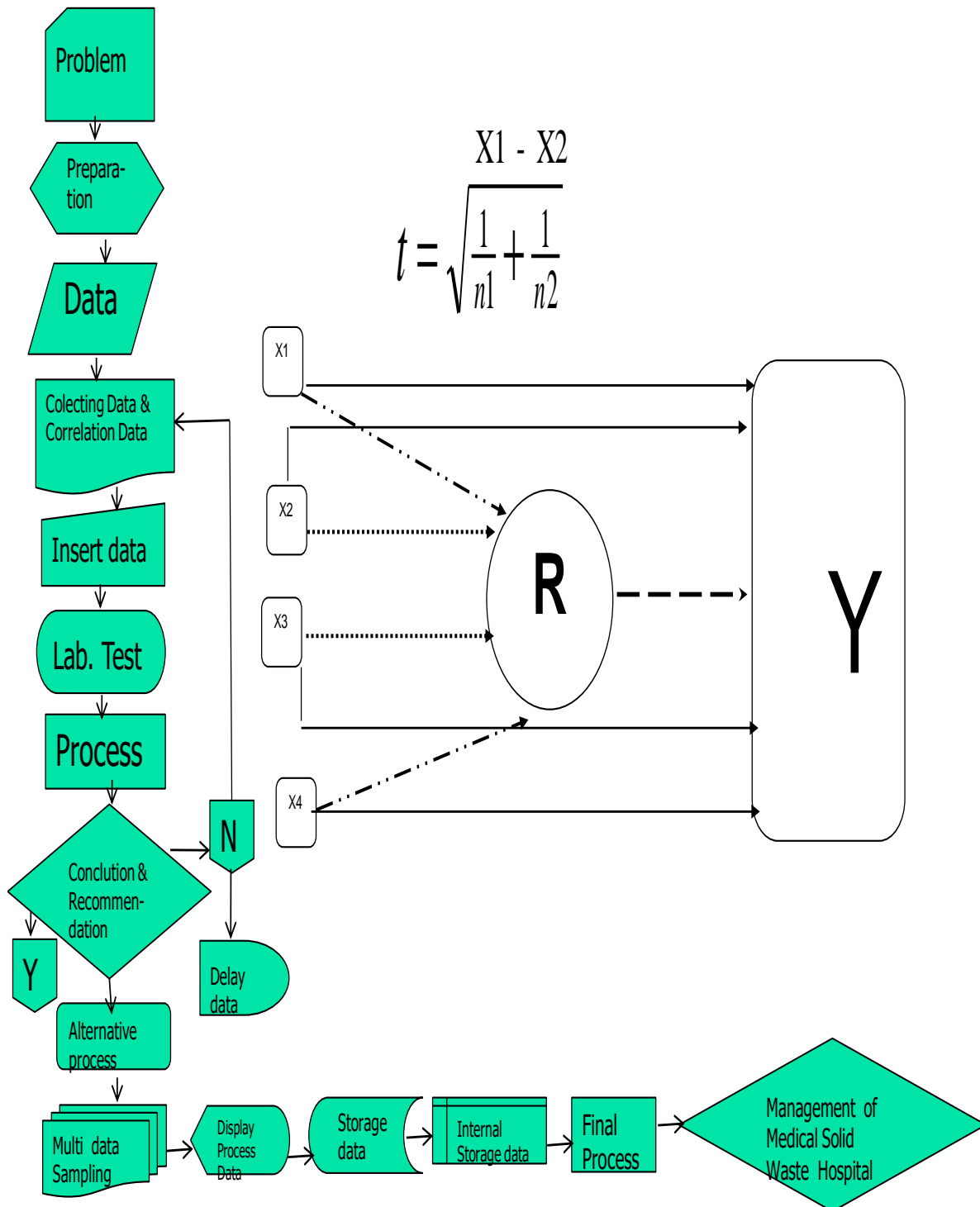
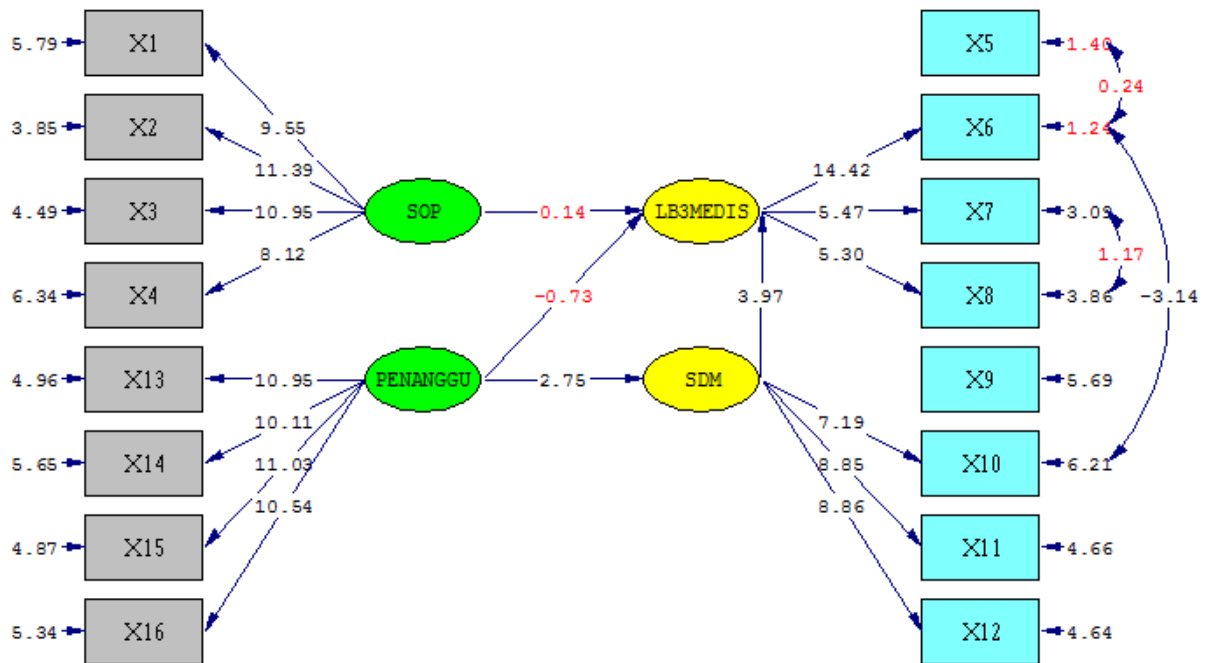
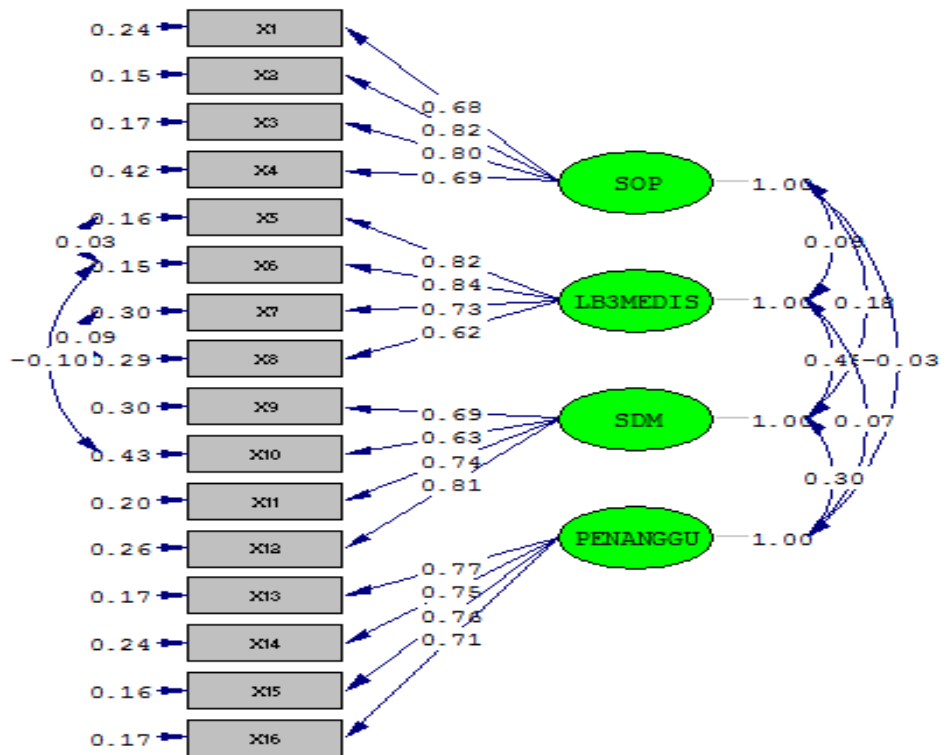


Figure 3.1. Conceptual Framework Scheme.



Chi-Square=110.65, df=96, P-value=0.14568, RMSEA=0.039

Figure 3.2. Statistical T Test Table LISREL Models



Chi-Square=107.99, df=95, P-value=0.17091, RMSEA=0.037

Figure 3.3. LISREL Models

4. Conclusions

The conclusions of the model LISREL medical solid infectious waste hospital management in Medan City, can be stated as follows.

- a. Internal hospital solid waste collection process internally. ($X_1 = 0.768$).
- b. Sources of hospital medical solid waste. ($X_2 = 0.743$).
- c. Number of hospital medical solids produced ($X_3 = 0.738$).
- d. Type of hospital medical solid waste ($X_4 = 0.665$).
- e. Model suitable measures and efforts to become a model LISREL medical solid infectious waste hospital management in Medan City, is $Y = 0,768 X_1 + 0.743 X_2 + 0.738 X_3 + 0.665X_4$.

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