

## SUMMARY

### COMPARISON BETWEEN CONJOINT ANALYSIS OF NON-METRIC DATA WITH RANK SCALE AND LIKERT SCALE TO DETERMINE THE PREDICTIVE ACCURACY OF PATIENTS' SATISFACTION OF NURSING CARE AT TROPICAL WARDS, DR SOETOMO HOSPITAL, SURABAYA

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Conjoint analysis is a multivariate method with which the author determines factors (specific attributes) and levels in arranging stimuli. The stimuli will be valued by respondents and then subjected to conjoint to estimate predictive accuracy from the results of conjoint. In conjoint analysis data used may present as metric as well as non-metric data. For metric or numeric data, respondents are asked to order the stimuli and then to provide rating or value to each stimulus independently. For non-metric or categorical data, respondents are asked to rank the stimuli made in the previous step. Generally, ranking 1 is provided for stimulus with highest preference, and the last ranking is provided for the mostly disliked stimulus or that with lowest preference. Respondents are also asked to arrange in Likert scale (1 - 5), in which the value 1 represents the most disliked one, and 5 represents the most preferred one. The final results of conjoint analysis are the utility function of the levels in each attribute and the individual level part worth.

The purpose of this study was to analyze the difference of predictive accuracy of conjoint analysis on non-metric data from stimuli estimated in rank scale and Likert scale on the dimension of patients' satisfaction in nursing care.

Data instrument used in this study was that arranged by the author. The instrument comprised 5 factors and 10 levels, i.e. tangible factors (adequate facility and number of nurses), reliability factors (accurate and trustworthy service), responsiveness factors (fast and responsive), assurance factors (capable, polite) and empathy factors (attention, good communication). From the existing factors and levels, stimuli were arranged theoretically and comprised 32 stimuli. In theory, a respondent should have estimated these 32 possible combinations. As this was impractical, we selected 8 minimal stimuli to be estimated by the respondents, added with 2 holdout stimuli, so that there were totally 10 stimuli.

Results revealed that the predictive accuracy of conjoint analysis from stimuli estimated both in rank scale and Likert scale had high predictive accuracy, either in each respondents or in general estimation. The predictive accuracy of conjoint analysis in each respondent that used rank scale was 92%, higher than the proportion of Likert scale. Aggregate results from stimuli estimated using Likert scale had better predictive accuracy for it had lower significance value and higher Kendall's Tau correlation coefficient compared to those using rank scale. Although rank scale had lower predictive accuracy, it had a benefit of determining the utility function and importance factor of each respondent. The use of conjoint

analysis with Likert scale had better accuracy compared to rank scale. However, the use of this scale should be adjusted according to the requirement of the study as it has shortcomings in predicting utility function and importance factor of each respondent.



## ABSTRACT

### COMPARISON BETWEEN CONJOINT ANALYSIS OF NON-METRIC DATA WITH RANK SCALE AND LIKERT SCALE TO DETERMINE THE PREDICTIVE ACCURACY OF PATIENTS' SATISFACTION OF NURSING CARE AT TROPICAL WARDS, DR SOETOMO HOSPITAL, SURABAYA

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Conjoint analysis is a multivariate technique to estimate an individual's perception on an object that comprises one or several parts. The final result of conjoint analysis is the utility function of levels in each attribute and individual level part worth. Predictive accuracy is an important factor in estimating the utility function of each attribute.

The purpose of this study was to analyze the difference of predictive accuracy of conjoint analysis on non-metric data from stimuli estimated in rank scale and Likert scale on the dimension of patients' satisfaction in nursing care.

Each respondent in male and female Tropical Wards, Dr Soetomo Hospital, Surabaya, estimated the dimension of patients' satisfactory in nursing care for data in rank as well as Likert scales.

Data estimated in rank scale for respondent 1 revealed Kendall's Tau correlation coefficient value of 1 and significance of  $p = 0.0003$ , and aggregate results revealed Kendall's Tau correlation coefficient value of 0.929 and significance value of  $p = 0.0006$ . Data estimated in Likert scale for respondent 1 revealed Kendall's Tau correlation coefficient of 0.853 with significance of  $p = 0.0076$ , and aggregate results revealed Kendall's Tau coefficient correlation of 0.964 and significance of  $p = 0.0005$ .

High Kendall's Tau correlation coefficient indicated a strong correlation between rank estimates part worth and actual estimates part worth or high predictive accuracy from the respondents in determining the dimension of satisfaction in nursing care. Results revealed that 92% of predictive accuracy in rank scale had lower significance value compared to that of Likert scale. In aggregate results, predictive accuracy of rank scale ( $p = 0.0006$ ) and Likert scale ( $p = 0.0005$ ) was relatively not different, showing that both scales had high predictive accuracy in determining the dimension of patients' satisfaction in nursing care.

**Keywords:** *utility function, rank estimates part worth, actual estimates part, predictive accuracy*