IEH5F2 – Metodologi Penelitian

Multivariate

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GROWTH OF MULTIVARIATE TECHNIQUES (Kothari, 2004)

- economics
- sociology
- psychology
- agriculture
- anthropology
- biology
- and medicine

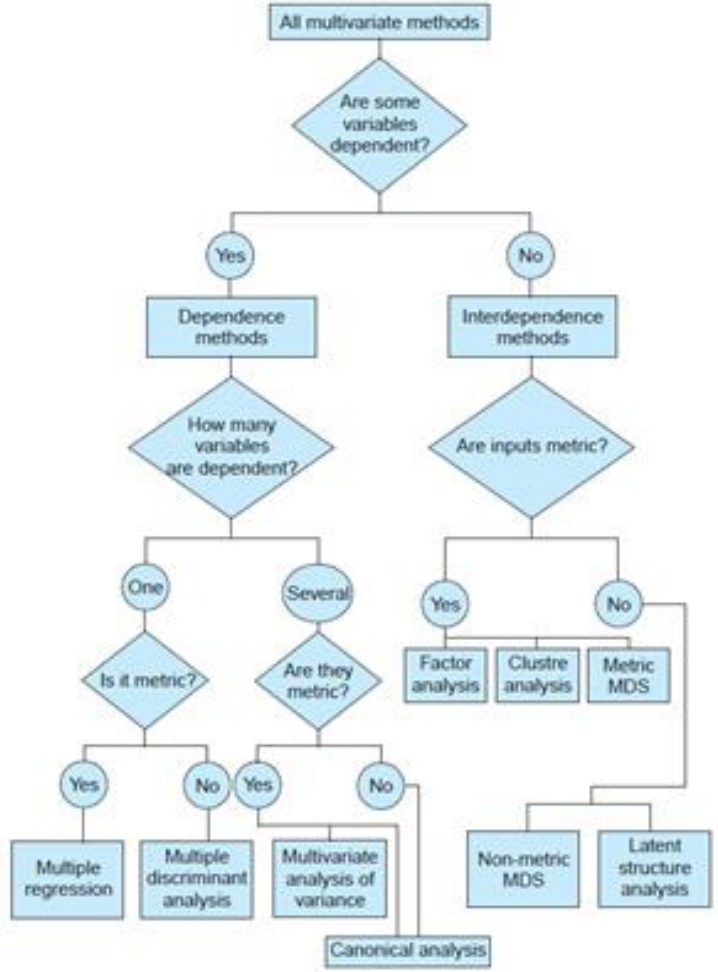
CHARACTERISTICS AND APPLICATIONS

Multivariate techniques are largely empirical and deal with the reality; the ability to analyze complex data. multivariate techniques also help in various types of decision-making.

multivariate techniques transform a mass of observations into a smaller number of composite scores in such a way that they may reflect as much information as possible contained in the raw data obtained concerning a research study.

The main contribution of these techniques is in arranging a large amount of complex information involved in the real data into a simplified visible form.

CLASSIFICATION OF MULTIVARIATE TECHNIQUES (Kothari, 2004)



Journal of Marketing, American Marketing Association, Vol. 35, No. 1 (Jan. 1971), pp. 13–19.

VARIABLES IN MULTIVARIATE ANALYSIS

(i) Explanatory variable and criterion variable:

If *X* may be considered to be the cause of *Y*,then *X* is described as explanatory variable (also termed as causal or independent variable) and *Y* is described as criterion variable (also termed as resultant or dependent variable).

In some cases both explanatory variable and criterion variable may consist of a set of many variables in which

case set : ($X1, X2, X3, \ldots, Xp$) may be called a set of explanatory variables and

the set ($Y1, Y2, Y3, \ldots, Yq$) may be called a set of criterion variables if the variation of the former may be supposed to cause the variation of the latter as a whole.

In economics, the explanatory variables are called external or exogenous variables and the criterion variables are called endogenous variables. Some people use the term external criterion for explanatory variable and the term internal criterion for criterion variable.

VARIABLES IN MULTIVARIATE ANALYSIS

(ii) *Observable variables and latent variables:* Explanatory variables described above are supposed to be observable directly in some situations, and if this is so, the same are termed as observable variables. However, there are some unobservable variables which may influence the criterion variables.

We call such unobservable variables as latent variables.

VARIABLES IN MULTIVARIATE ANALYSIS

(iii) *Discrete variable and continuous variable:* Discrete variable is that variable which when measured may take only the integer value whereas continuous variable is one which, when measured, can assume any real value (even in decimal points).

VARIABLES IN MULTIVARIATE ANALYSIS

(iv) *Dummy variable* (*or Pseudo variable*)*:* This term is being used in a technical sense and is useful in algebraic manipulations in context of multivariate analysis. We call *Xi* (*i* = 1, …., *m*) a dummy variable, if only one of *Xi* is 1 and the others are all zero.

IMPORTANT MULTIVARIATE TECHNIQUES

- Multiple regression
- Multiple discriminant analysis
- Multivariate analysis of variance
- Canonical correlation analysis

Multiple regression

This technique is appropriate when the researcher has a single, metric criterion variable. Which is supposed to be a function of other explanatory variables. The main objective in using this technique is to predict the variability the dependent variable based on its covariance with all the independent variables.

Multiple discriminant analysis:

Through discriminant analysis technique, researcher may classify individuals or objects into one of two or more mutually exclusive and exhaustive groups on the basis of a set of independent variables. Discriminant analysis requires interval independent variables and a nominal dependent variable.

For example, suppose that brand preference (say brand *x* or *y)* is the dependent variable of interest and its relationship to an individual's income, age, education, etc.

Multivariate analysis of variance

- Multivariate analysis of variance is an extension of bivariate analysis of variance in which the ratio of among-groups variance to within-groups variance is calculated on a set of variables instead of a single variable. This technique is considered appropriate when several metric dependent variables are involved in a research study along with many non-metric explanatory variables

Canonical correlation analysis

This technique was first developed by Hotelling wherein an effort is made to simultaneously predict a set of criterion variables from their joint co-variance with a set of explanatory variables. Both metric and non-metric data can be used in the context of this multivariate technique


Thank
you!!