

MAINTENANCE TASK OF AN ERP SYSTEM BY USING DATA MINING TECHNIQUES: A STUDY

Mahtab Alam

Department of Computer Science, Poona College, Pune, India

Abstract: This paper examines how the maintenance task is carried out post implementation of an ERP system. It also checks the reliability and validity of the data estimated in an ERP system. Descriptive research helps in the study of the complete characteristic of a phenomenon. It is widely deployed to assess association between the variables and it involves utilization of different statistical tests to analyse the primary data of an Educational ERP (e_ERP) systems.

Keywords: Maintenance, Reliability, Validity, Descriptive research, e_ERP, Statistical tests.

I. INTRODUCTION

Descriptive Research studies are ideal for studying complete characteristic features of phenomenon under study (Montero and Leon, 2007). Hence, it accurately depicts and portrays research participants as the frame from where information is collected is not manipulated. Descriptive research can further be categorized into Observation method, Case study method (Dissertation India, Descriptive vs. Analytical approach to research).

Primary data is used for the purpose of this study which is collected from respondents by means of using a questionnaire. Primary data refers to the data that is obtained by researcher through first hand investigation (Reference an IAC Publishing. What is primary and secondary data?).

II. REVIEW OF LITERATURE

An E.R.P. system is an information backbone and reaches into all areas of the business and value chain. Replacing it can open unlimited business opportunities. The cornerstone of this effort is finding the right partner and specialist. The long-term business strategy will form the basis of the criteria for the selection of an E.R.P. system replacement. The E.R.P. provider must be part of the vision. It is the duty of the software provider to do their part to make sure the next system will be the last E.R.P. system replacement (Epicor Software Corporation, 2009).

It examines the use of enterprise resource planning (E.R.P.) solutions by institutes of higher education. In particular, it examines the cost, technical, and customer risks of implementing E.R.P. solutions by universities. For universities, E.R.P. is an information technology solution that integrates and automates recruitment, admissions, financial aid, student records and most academic and administrative services (David F. Rico, 2002).

Most E.R.P. systems are based on client-server architecture and the elements of E.R.P. integration: database, application software, user interface, tools and business processes (P. Tumbas, 2008).

Data mining refers to extracting or “mining” knowledge from large amounts of data (Jiawei Han and Micheline Kamber, 2006). Data mining consists of five major elements:

- Extract, transform, and load transaction data onto the data warehouse system.
- Store and manage the data in a multidimensional database system.
- Provide data access to business analysts and information technology professionals.
- Analyze the data by application software.
- Present the data in a useful format, such as a graph or table (Anderson, 1995).

Data mining is related to the subarea of statistics called exploratory data analysis, which has similar goals and relies on statistical measures. It is also closely related to the subareas of artificial intelligence called knowledge discovery and machine learning, (Raghu Ramakrishnan, 1997).

III. METHODOLOGY

Instrument reliability and validity is estimated step by step. Reliability refers to overall consistency of a measure and measure is said to have high reliability if it produces similar results under consistent conditions (Reliability–Statistics, Wikipedia). To test reliability of measurement scale, Internal Consistency test is used. Internal Consistency test compares two different versions of the same instrument to ensure that there is a correlation and they measure same thing (explorable.com, Definition of reliability).

This study involves utilization of different statistical tests to analyse the primary data and hence can also be termed as Analytical Research. Being an Analytical research approach it takes into account the process of deriving final result rather than giving importance to just the results (Dissertation India, Descriptive vs. Analytical approach to research).

In the current study reliability of the instrument is assessed using the test_retest method. In the test_retest reliability is assessed by administering the same instrument on the same respondent on two different occasions. The two set of responses are then correlated to study reliability.

Validity was assessed using face value. Face validity is a subjective way of assessing validity. In this method experts opinion is sort on the contents of the instrument measuring underlying variable. In the current study five experts were contacted

and were requested to rate the ability of the instrument to measure the underlying variable. Using the five point scale (1=Do not measure the underlying variable, 2=measure the variable to less extent, 3=measure the variable to some extent, 4=measure the variable to great extent and 5=completely measure the underlying variable).

The S.P.S.S. (Statistical Programme for Social Sciences) Software version 23 and AMOS for windows is used for further analysis. AMOS is an added module of S.P.S.S. used for SEM or Path Analysis or Confirmatory Factor Analysis.

To formulate a conceptual framework for defining the association between the two sets of responses. The objective of the study is as follows:

- To study how the maintenance task is carried out and to check the reliability and validity of the data estimated through phi and cramer’s V method in an educational ERP system.

IV. ANALYSIS AND INTERPRETATION

Descriptive Analysis

(i) Frequency distribution for “How the maintenance task is done (M.T.)”?

Respondent were asked to tell how maintenance task is done by using four options:

1. = Dealing with errors found and fixing it.
2. = Dealing with changes and adapting in the software environment.
3. = Accommodating with new/changed user requirements which concern functional enhancements to the software.
4. = Concerns activities aiming on increasing software maintainability and prevent problems in the future.

Table (a): How the maintenance task (M.T.) is done

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Dealing with errors found and fixing it	82	62.1	62.1	62.1
Dealing with changes and adapting in the software environment	3	2.3	2.3	64.4
Accommodating with new/changed user requirement which concern functional enhancement to software	30	22.7	22.7	87.1
Concerns activities aiming on increasing software maintainability and prevent problems in the future	17	12.9	12.9	100.0
Total	132	100.0	100.0	

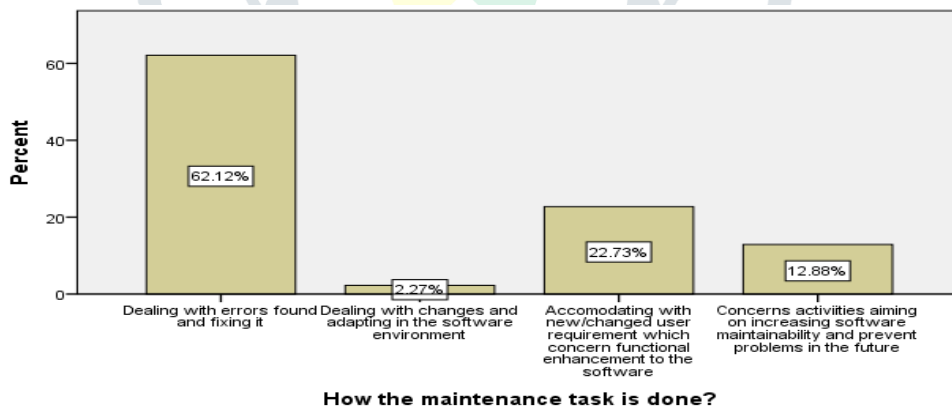


Fig. (i): How the maintenance task is done

Interpretation: The above frequency distribution table shows that the maintenance task of the ERP software is done as mention below:

1. Dealing with errors found and fixing it: 62.12%
2. Dealing with changes and adapting in the software environment: 2.27%
3. Accommodating with new/changed user requirements which concern functional enhancements to the software: 22.73%
4. Concerns activities aiming on increasing software maintainability and prevent problems in the future: 12.88%

(ii) **Table (b): Reliability Test – Retest Method**

Pair	Coefficient Test	P Value	Result
MT(TEST)↔MT(RETEST)	Phi = 1.476	0.000	Reliability Supported

Statistical Test:

Table (c): Descriptive Statistics

	N	Mean	Std. Deviation
MT	5	5.00	.000
Valid N (list wise)	5		

V. CONCLUSION

In the current study the maintenance task is being done by the four different options. The variables under study are the categorical variable. The phi and cramer's V was used to study the degree of associations between the two set of responses. Phi and cramer's V value from the above table (b) is more than 0.5 which indicates the reliability. In the current study the variables are above threshold, hence reliability is supported.

From the above table (c) it can be seen that the variables have the mean value above 4.0. Hence validity is supported.

In the current study all variables are above the threshold, hence reliability is supported and also it indicates that there is a degree of associations between the all the four set of maintenance response.

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