

Chapter 19

Data Quality Matrix: A Theoretical Perspective

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ABSTRACT

The objective of the study is to develop a data quality matrix, which can be used to measure the quality of data and response rate from respondents. The study is exploratory in nature, which applied the systematic review of literature extracted from different database. The study found that all the quadrants of the matrix (e.g., active, risky, and non-functional and deferential) have importance depending upon the nature of the study. The study further suggests that risky situation can be improved through enhancing the quality of data collected. The proposed matrix is very helpful in understanding the quantity and quality dimensions of the data in survey research. It helps to interpret survey results to fit between data representativeness and desired research outcomes.

INTRODUCTION AND BACKGROUND

The study was approached from the theoretical perspective where the matrix proposed the validation through investigating different scenarios of response rate with respect to quality of the data obtained during research investigation. The study explored the key-word search, “response rate” “Quality of data”, “survey representativeness” and “matrix” from various search engines viz. Emerald Insight, ProQuest, Science Direct, and Google Scholar.

Response rate and quality of data are two sides of the same coin that increase the representation of data. In social sciences, researchers’ relying on the survey, methodology is often confronted with a low response rate. Researchers have shifted their focus from higher response rate to the representatives of the survey (Schouten, Cobben, & Bethlehem, 2009). Over the past few decades, the length of the question-

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naire, and the mode of administration errors were the significant factors as compared to assessing the quality of the data. Schouten, Cobben, and Bethlehem (2009) opined that “response rates alone are not good indicators of non-response bias”. The higher response rate is meaningless if respondents simplify their task (Blasius & Thiessen, 2012).

The survey data in the current scenario is more prone to the numerous sources of errors. Errors including response and non-response bias, sample bias, researcher bias, and model bias can be minimized through rigorous control by the researcher (Blasius & Thiessen, 2015). Minimization of errors and assessing the quality of data is a primary aspect of social science research. Assessing the quality of the data includes three major sources that affect the trustworthiness of survey data: first the study architecture: second, institutional practices of data collection agencies (survey representative selection, adequacy of survey administrator training): third respondent behaviour (Blasius & Thiessen, 2012). Blasius and Thiessen (2015), propose that data quality assessment should be analyzed by looking into the fact of response simplification practices of data fabrication as well. According to Blasius and Thiessen (2015), data fragmentation is possible by understanding the signs of respondent task simplification behaviours and evidence of duplicated data that might have been fabricated simply through copy-and-paste procedures.

Previous studies suggest assessing the quality of survey data, independent of the survey mode often considered response rate and item nonresponse rates and subject silent factors (Groves, 2006; Groves, Presser, & Dipko, 2004; Biemer & Lyberg, 2003). Moreover, high response rates along with low item nonresponse are necessary for sample representation. The present study is an attempt to develop a matrix based on four quadrants which can highlight the issues related to response rate and quality of the data. The first section focuses on the item-response theory, the second section highlights the response rate, data quality process. The third section deals with the data quality matrix. The last section discusses the discussion, the golden rules followed, implications of the study, future research and conclusion.

Item Response Theory

The term *item* is generic, covering all kinds of informative item. “Item response theory models help to show the contribution of each question, to the variable being measured underlining construct. Further, it can also work as a powerful tool for developing scales shorter, reliable and targeted towards the phenomena being measured. It also helps researchers to validate “focus of the theory on each item” (Edelen & Reeve, 2007). Applying item response theory in questionnaire development guides the researcher to understand the missing values pattern, how outliers can be treated or analyzed. How best measures fit to generate consistency and accuracy of results to increase survey response rate and representativeness of data.

Response Rate

A meta-analysis study conducted by Anseel, *et. al.* (2010), found that response rate for organizational studies is closely related with respondent profile and lowest response rates for executive profiles highest for non-managerial profiles. The lower the response rate to a study, the greater the probability that the respondents may differ from non-respondents in their characteristics, which affects the precision (reliability) of the survey’s population estimates, resulting in study bias, and weakening the external validity (generalizability) of the survey results (Bowling, 2005).

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