Abstract

Sampling survey is the widely used statistical method to determine the accurate and precise results with the help of beneficial estimates. In sampling survey ratio and regression methods plays the important role for estimations. Ratio and regression estimates further divided into single or double phase estimators for estimating the population mean. Different auxiliary variables are used to get the precise results. Mixture estimators are used when we have to study the combine effect of qualitative variable and quantitative variable. In case if our auxiliary variable is qualitative like genders, likes dislikes etc then we will move towards the mixture estimators. Some variables are qualitative in our response which are much informative and cannot be ignored. To deal with such variables we mixed the qualitative and quantitative variables. The suggested estimators are the mixture of ratio and regression sampling methods for the combine qualitative and quantitative responses. In this study we have purposed some new mixture estimators of single phase and phase two. The expression of mean square error of various mixture ratio and regression estimators is derived in our study. For the estimation of population mean we have also determine the mean square errors of no information and partial information cases. Simple ratio, regression, ratio cum regression and ratio to exponential estimators for single phase and double phase for partial information and no information estimators are developed as the suggested mixture estimators. We have shown the comparison of mean square error by conducting the empirical study. We can enable to determine the best or worst mixture estimator by comparing the mathematical and numerical analysis. This study can be helpful to deal with the variables of both quantitative and qualitative nature. By combining these two auxiliary variables we can get the more precise results and we can obtain the minimum mean square error as compare to the existing variables for qualitative variables.