The performance evaluation of Mutual Funds plays a vital role to safeguard the interests of small investors in a developing country like India. The Data Envelopment Analysis method is used to estimate the performance of 29 Indian Mutual funds from September 2009 to January 2011. The study also uses the One-way Error Component Model with and without the time-dummies. to find out the category of fund which has the highest technical efficiency compared to the other categories. A binary indicator variable was created and a panel regression assuming that the error term follows a logistic distribution was run to find out which type of funds has the probability of achieving a technical efficiency score of one. The results showed that SBI Magnum Balanced was the most efficient fund and Reliance Media and Entertainment was the poor performing fund. With and without the time dummies the large-cap funds and the balanced funds were the most efficient funds. July 2010 records the best performing month and May 2010 turns out to be the worst performing month. The study also shows that the balanced fund category has significantly higher odds of achieving the best possible technical score.