The paper tries to analyse the game elements present in the Stackoverflow virtual rewards system - Reputation Scores and Badges, and understand how the popularity and impact of users are affected by these elements. To draw preliminary insights, a survey was conducted among Stackoverflow users, which lead to the formation of hypotheses that Reputation and Badges are positively correlated with the popularity as well as impact of the users, with Reputation being the better of the two. To operationalise Popularity and Impact Scores, we define them as number of distinct views on profile page and sum total views on questions, and answers with certain conditions respectively. Three set of features were used - Control Model(CM) which consisted of features like number of days since joining, number of questions, answers. Reputation Model(RM) consisted of Control features along with the Reputation of the user. Badge Model(BM) consisted of control features along with one additional feature per badge. Gradient Tree Boosting Regression was used to analyse the data. For Popularity, RM provided more explanatory power as compared to CM, and also indicated it as a good predictor of popularity. However, BM outperformed the others in terms of goodness-of-fit because badges aggregate various sets of actions, providing more information than just reputation. For Impact, reputation points were good indicators, but BM outperformed the others. This is because Reputation earned by commenting, bounty-hunting diminishes its weight as compared to Answer Badges. For both, the 5 most important badges were Answer badges. This lead to the conclusions that high Reputation corresponds with higher popularity and impact, only certain Answer badges are reliable signals, and contrary to the previous hypothesis, these are better predictors of popularity and impact as compared to reputation. The time user joined also was found to be an important signal of impact. A large concentration of users, including most new users and majority of old users were found to have low popularity and impact, whereas highly popular and impactful users joined in the early years. It was also found that impactful or popular users mostly had badges for well-received answers rather than questions. Highly popular users also had lot more answers and questions as compared to Highly Impactful users, indicating that they are more active, and number of Answer badges and questions asked were higher for Highly Impactful users, implying that answers drive popularity whereas questions offer more influence.

Some of the improvements could have been using better metrics for impact, as number of views of post wouldn't be only measure of impact, but could also include comments, acceptance of answer. Further, unlike 'Followers', Profile Views aren't best indicators of popularity. Also, a larger set of programmers could have been used for the survey, as StackOverflow is universal among programmers, and such questions could have been answered by them. Some future work in this project could be studying the impact of linguistic nature of posts on their impact and popularity, as well as exploring such game-elements in other Social Media like Reddit.