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Tournament Bonuses in Lahore-Based Software Houses: Sprint Velocity and Developer Satisfaction

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Abstract
This study explores the impact of tournament-like bonuses on the speed and developer satisfaction in agile software development teams in Lahore, Pakistan. A quasi-experimental panel study was conducted over 9 months with 142 participants from small software organizations. The research examines whether performance-based bonuses improve sprint productivity and how they affect developer satisfaction. The study uses a mixed-method approach, including Jira metrics (velocity, bug rates), employee satisfaction surveys, burnout questionnaires, and HR exit logs. A difference-in-differences (DiD) estimator and placebo checks were applied to ensure robustness. Results indicate that while sprint velocity increased (beta = 1.12, p < .01), developer satisfaction decreased significantly (beta = -0.89, p < .05) over the 9-month period. Additionally, employee attrition increased by 4.7%, highlighting the negative long-term effects of performance-based contests. The findings suggest that while tournaments may boost short-term productivity, they may lead to lower morale and higher turnover. Software companies need to consider justice and fairness in the design of incentive systems to maintain developer satisfaction.

Keywords: *Tournament Bonuses, Agile Software Development, Developer Satisfaction, Behavioral Operations, Lahore, Performance Bonuses, Sprint Velocity, Employee Attrition, Job Satisfaction.*

Introduction

The establishment of tournament-based performance incentives in an agile software team creates a paradox in the software industry in the city of Lahore in Pakistan. Scrum and Kanban are two current Agile practices that have entrenched itself into software development by encouraging rapid delivery and high sweeping mass. Nevertheless, high customer demands and pressure are the reasons that led to burnout, lower employment rates, or miscontent among the developers, whose average employability time in a company is 2.5 years (Pasha, 2023). To curb this, most of the software houses in Lahore have introduced a system where the top-performing teams are rewarded periodically (ie: on a sprint-by-sprint basis) via tournament-styled bonuses. Although these incentives increase productivity, the issues of long-term effects of the same incentives are on how developers feel about them and whether such systems are really fair especially in the collectivist cultures where cooperation is given a lot of emphasis (Hofstede, 2001).

Literature on the topic of tournament incentives, which is predominately western-based economy and primarily centered on a person, does not look at team performance. Lazear and Rosen (1981) opine that the pay structure based on the tournament has the capacity to improve productiveness although it does not reflect the dynamism of team-based premises. Study by Kuhnen and Tymula (2012) emphasizes the positive performance outcomes that could be generated using performance-based feedback that even comes with a negative aspect of inducing stress when differences between individual and team goals arise. Cognitive behavioral operations analysis indicates that social and emotional issues in the context of work such as burnout, job satisfaction

are imperative in team setting (Bendoly et al., 2006). Nevertheless, very little has been done in terms of research regarding the impact of such incentive in agile teams, particularly in developing economies such as in Pakistan where cultural and economic factors are considerably different to that of Western countries.

In this study, Behavioral Agency Theory and Social Comparison Theory is applied to form an appreciation of the influence of tournament bonus on the agile software teams. Under the behavioral Agency Theory, utility maximization and risk aversion motivate managers and employees to act a certain way which may lead to their reactions to the use of performance-based incentives (Wiseman & Gomez-Mejia, 1998). According to the Social Comparison Theory, people compare their performance with other people, which results in an unhealthy form of competition and a feeling of dissatisfaction that can disrupt the teamwork (Festinger, 1954). The use of competitive incentives may reduce the cohesiveness of a team in an agile environment where collaboration is a key ingredient, and a poor workplace culture (Garcia et al., 2013).

Three important questions in this study are: (1) Does introduction of tournament bonuses have an effect on sprint velocity by sacrificing developers' satisfaction level? Does this imply that these bonuses promote long term dissatisfaction and a dampener of morale among the developers? Will it be mediated through the perceptions of fairness between tournament bonuses and performance of the team?

The study on these dynamics in the software industry of Lahore will help in understanding the impacts of incentive systems based on tournaments in the agile teams in a developing country. The results will offer information regarding the dilemma of short-term performance benefits and long-term job satisfaction. Considering the Pakistani culture has a distinct collectivism choice and the prevalence of agile practice, the study will include the assumption that it also will cover whether these types of incentive systems are appropriate or disagreement-generating in such a background.

All in all, the tournament bonuses can be argued to improve the momentary productivity but the consequences to the team morale and satisfaction are unknown in the long term. The study will provide a more adequacy of the way performance incentives influence individual as well as group dynamics in agile software development, with the emphases placed in a unique cultural and economic context of Pakistan. It will also present a viable guide to managers in the software industry to design a system to motivate them into being prolific and not at the expense of cooperation and mad job satisfaction.

Literature Review

Software business, especially in the developing economies such as the one in Pakistan is a special case integrating the agile practices and the performance-related incentive mechanisms. Bonuses based on tournaments have been newly introduced, especially in the last few years, in order to boost productivity in the agile software teams. However, how these incentive systems contribute to the satisfaction of work, collaboration and organizational culture within a long term is unclear. The complexity of performance bonuses, specifically the tournament bonus, and how it affects the dynamics of the team within an agile setting can be justified by looking at the available literature on this topic. This overview will discuss major studies on the issue of the tournament-based incentive, the dynamics of agile teams, and the role of the cultural and behavioral variables in the development of the effectiveness of such an incentive system.

The tournament-incentive concept has received massive research over the years in as far as labor economics and managerial behavior is concerned. Lazear and Rosen (1981) put on the table the concept of tournament incentives in a sense that workers compete over the rewards not based on absolute output, but through relative performance. They claim that incentives on tournaments can have the possibility of boosting individual effort because of the reward in the tournament. This is because in this approach employees will aim at wanting to perform better than their colleagues hence straining more. Nonetheless, when it is applied in the field of software development, wherein a team effort is crucial, the implementation of tournament-based incentives provokes the question regarding the possible detrimental impact it has on the team effort and morale (Knoeber & Thurman, 1994).

Tournament-style rewards have been associated with the scoring of sprint velocity as a performance measure of what work is done in a sprint in agile software development. The overall objective is to raise the level of productivity where the most productive teams or individuals are rewarded depending on their products of sprint. According to Schwaber and Beedle (2002), sprint velocity of an agile team is one of the most important indications of the team performance given the team efficiency and its capacity to compose with deadlines. Nevertheless, making sprint velocity a competitive element may bring a lot of difficulties in the context of keeping the team united. In a competitive environment, individual team performance may be encouraged at the expense of group performance, which will ruin the group ethos of agile development.

Although incentives that are based on tournaments can produce an immediate improvement in performance, there are also negative long-term implications of those costs on the dynamics within a team. Increasing findings argue that unless well attended, competition has the qualities to bring up adverse results in team-based setting. Kuhnen, and Tymula (2012) discovered that performance-based rewards do enhance amount of effort one puts up but they also bring with them stress and burnout, particularly where individual goals are not aligned in their team goals. Such a conflict between individual and team objectives may also give rise to poor team performance as well as to unhealthy competition, stress and job dissatisfaction.

They find that competition rewards also affect team cohesion, but the effect varies depending on the emphasis of task or social cohesion, with task cohesion as opposed to social cohesion being found only in complex teams in competition conditions (Beal et al. 2003). They postulate that performance incentives have a short-term positive effect to enhance task cohesion but it can destroy social cohesion especially when tension of competition arises in the team. When the social cohesion fails in an entity where teamwork is the key to project success, knowledge share, problem solving and the working efficiency of the whole team may be hampered within the agile software teams.

Two theoretical frameworks can be applied to the examination of the relationship between the incentives of tournaments and the performance of agile teams in particular, the Behavioral Agency Theory and the Social Comparison Theory. According to their version of the Behavioral Agency Theory, Wiseman and Gomez-Mejia (1998) theorize that people make choices regarding their utility maximization and verification of behavioral preferences which are risk aversion and a wish to enjoy social approval. Regarding tournament incentives, developers might have an incentive to receive a prize, but at the same time they might turn out to feel some stress because of the perceived threats of not hitting a performance goal. The theory also states that the role of

the managers in designing the system of incentives in such a way, which would ensure balance between short term performance and employee well-being in the long term.

Festinger (1954) argues that a person evaluates his/her competence and value in comparison to others in terms of Social Comparison Theory. In competition, the developers can continuously keep score of how they fare against others a state that can result to jealousy and resentment and a state of discontentment. This competition may demoralize teamwork and have a poisonous working atmosphere, since the members of the team are more concentrated on the feeling to beat others than on accomplishing common aims. According to Garcia et al. (2013), the integration of performance-based incentives into the organizational environment may worsen the social comparison mechanisms and cause the generation of unhealthy competition that destroys the cohesion and morale within a team.

The extent to which the literature on the motivation that tournaments provide is founded on Western economies has yet again received little focus as to how such systems operate within the context of a developing economy such as that of Pakistan. Lahore, which is an emerging source of software development, is an apt place to study the outcomes of tournament incentives in agile teams where the locales are different from the rest of the world. In Pakistan the competitive incentives could have a more pronounced focus on groups or collectivist culture looking at group harmony and group cooperation. According to the theory of cultural dimensions presented by Hofstede (2001), collective cultures are characterized by the fact that relationships and group-oriented goals have a priority over the individual ones. By injecting competition in the form of tournament-based rewards, the role of cooperation in a team may be undermined in such cultures and result in tensions.

In addition, there are no labor standards and established HR procedures in the software industry in Pakistan, which makes the application of tournament incentives even more complicated. Without the right instructions and safeguards in place, a performance-based bonus system can only lead to inequality, nepotism, and exploitation of the employees which will lead to a high turnover rate as well as dissatisfaction of the employees (Pasha, 2023). Although the tactic of incentive-based tournaments could perform best in an organization of high performance and individual oriented culture, it could not have the same impact on the Pakistan software industry where developers might be in need of job security, balance between life and work, and as well as being placed in a team environment rather than being subjected to individual rewards.

In the literature, however, tournament-based performance incentives and their effects on productivity are shown to be disadvantageous in the long-term relationships between team dynamics, job satisfaction and employee turnover. Competitive incentives might compromise team cohesion in software teams where collaboration is not only essential but there must also be a high degree of interaction among the team members. Competitive incentives in agile environment create stress and lower job satisfaction in general. BAT and SCT offer theoretical tools that address the mechanisms of these psychological processes in such contexts, and the shortcomings of this approach to organizational reward structure are seen through the negative effects they may induce. Use of such incentive systems might not be effective in developing economies such as Pakistan where there is high collectivism with regards to cultural values and thus may have unintended consequences such as high employee turnover and burnout. Thus, software firms in Pakistan should give close attention to creating and using performance incentives that are not

only effective in facilitating the efficacy of an individual but also beneficial to the health of a team over time.

Methodology

The research used triangulation methodology which involves using multi-Source and multi-Method to improve the internal validity of a research study. Jira is a tool that tracks performance of agile development teams, so archival data was obtained from this resource. The measures were sprint velocity (story points deployed during a sprint), bugs rates, and past demand with the inclusion of 18 teams across nine months (November 2023 to July 2024). This information was utilized in gauging the performance of teams in an objective way.

The survey data of developers was also presented in the study and was done before the intervention (pre-treatment) and 3 months of the operation of the intervention. The questionnaires were based on the job satisfaction, a sense of fairness and team cohesion and comprised of psychometrically valid scales. Confidentiality/anonymity was assured to all the respondents so that bias to the responses could not occur. HR administration data which were used in addition to self-reported data had information on employee attrition, bonus settlements, and variables on demographics (age, gender, tenure, education).

G Power software was used to conduct the power analysis to ensure that the power of the research is not inadequate due to sample size (Faul et al., 2007). The participants were 142 developers who were part of 18 different teams, 3 software companies that provided a tournament bonus (treatment) and 3 companies where there was no bonus (control). A medium effect size (Cohen s = 0.5) was used and statistical power = 0.87, which was sufficient, i.e., 0.80 as recommended (Cohen, 1988) was achieved.

Measure: Developer Satisfaction that was adapted in similar vein as Job Diagnostic Survey (Hackman & Oldham, 1976) that had very high reliability (0.81). Perceived Fairness was established with the help of 4-items scale applied to the distributive and procedural justice (Colquitt, 2001). Sprint Velocity has been calculated on the use of Jira data to determine what a team produces. Not only was cohesion measured using the Group Environment Questionnaire (Carron & Brawley, 2000), but its alpha = 0.76.

The control variables were the size of the team, experience of the developers, gender proportion and the performance before the intervention, which were obtained through HR and Jira records. In order to test the study in confidence and to remove biases, the study used pre-trend testing where performance comparison between groups was conducted prior to treatment. To control the interorganizational difference, HR policies and leadership styles served as types of fixed effects. In order to get rid of autocorrelation, there were delays in controls of satisfaction and velocity.
The test of endogeneity was carried out to make sure that causal inference did not have any biases. This was achieved by ruling out firm-specific variables and getting the validation of the treatment effects through regression analysis.

Results

The authors have discussed the introduction of the sprint velocity, developer joy, and team stability-based tournament as the bonuses to the 18 agile teams (N=142 developers) of 6 software firms in Lahore, Pakistan. The purpose of the research was to understand the effects of

performance-based rewards in enhancing the sprint speed and the effects of the incentive on job satisfaction, perceived fairness, and the group relationships.

The findings of the results established that there existed a crucial positive association between tournament bonuses and sprint velocity ($r = 0.48$, $p < .01$), which meant that advantaged teams with bonuses were at the same time faster concerning sprint velocity. The tournament bonuses however, showed a negative correlation with job satisfaction ($r = -0.37$, $p < .05$) indicating that although these bonuses were productive, they still affected the overall job satisfaction of the developers negatively. This is similar to what the available literature on the subject has previously pointed out where competitive rewards can destroy morale particularly in instances where there is lack of fairness (Colquitt et al., 2001; Frey & Jegen, 2001).

The difference-in-differences (DiD) regression model was used to carry out the Hypothesis Testing. The findings showed that the treatment effect on sprint speed was conclusively dense (beta = 1.12, SE = 0.31, $p < .01$). Nonetheless, the adverse influence on developer satisfaction could be seen as well: the development of satisfaction was down-graded very clearly during ten months (beta = -0.89, SE = 0.42, $p < .05$) which speak in favor of Hypothesis 2. The results indicate that although tournament bonuses can enhance immediate performance, they are likely to impede long term performance outcomes concerning morale and well-being of the developers, resulting in monetary dissatisfaction and in some cases burn out (Deci et al., 1999; Kuhnen & Tymula, 2012).

The other factors examined in the study were the mediating role of perceived fairness in the association between tournament bonuses and developer satisfaction. The mediation model of analysis (Sobel test) revealed that the magnitude of the meditational effect on satisfaction, which was as a consequence of perceived fairness, was significant ($z = 2.14$, $p < .05$). The findings indicate that the nature by which developers perceive the reward system as fair play has a pervasive effect on their satisfaction levels and this serves as a reminder of the significance of fair reward system allocation towards morale building.

The findings were made based on Robustness Checks in order to be certain of their reliability. Propensity score matching (PSM) allowed adjusting the results of the control and the treatment group to allow pre-treatment differences to be held constant, thus the results that are observed are as a result of treatment rather than the pre-existing differences between the groups. The outcome demonstrated that both groups were similar in relation to pre-treatment variables, which proves the worth of the treatment outcome.

The placebo tests were also carried out, when the control group was assigned as a treated one months before the actual process of interventions. There was no statistically significant difference in the results, which is an indication that the difference did not depend on some random trends or external conditions unrelated to the bonus system.

Standard errors and confidence limits were computed using bootstrapping and made the results very strong. It is allowed to utilise the 1,000 bootstrap samples, hence a greater degree of assurance in the findings is obtained (Efron & Tibshirani, 1994).

Lastly, interaction analysis considered the correlation that existed between perceived fairness, team cohesion and developer satisfaction. It was found that those teams in which the cohesion

and moderate good sense of fairness were high were the teams in which the dissatisfaction with the bonuses of the tournament was low. That implies that cohesion in a team is a protective factor in guarding against the adverse effects of competitive rewards. Nonetheless, the team cohesion did not curb the dissatisfaction associated with the tournament-based bonuses when there was a low perception on fairness, evidence which demonstrates the relevance of fairness in incentive schemes.

To conclude, the study discovered some positive results: the tournament bonuses can be used to increase sprint velocity, but it has got long-term adverse effects on developer satisfaction, especially when fairness is not guaranteed. The findings remind software companies that the performance incentives should be balanced with the interests of cohesive teams and the notion of fairness to ensure sustainable productivity and developer well-being. These results recapitulate with past literature on the deleterious effects of extrinsic rewards and on the intrinsic motivation and signify the intense reward dynamics in agile software outfits (Beal et al., 2003; Edmondson, 1999).

Discussion

The question that this paper seeks to answer is how utilization of the tournament-based bonuses in agile software teams attributed to sprint velocity and enjoyment among developers within the region of Lahore in Pakistan. It is through the research that the role of extrinsic motivation as much as performance-based rewards, their effects on the team performance and the general morale of developers can be understood. Although short-term productivity might be improved using tournament bonuses, the paper drizzles the psychological cost of the incentives, such as the side effects of the negative impacts of such incentives to its developer when considered long-term.

Another envisioned value of the study is the use of Behavioral Agency Theory (BAT) to agile teams at the emergent marketplace. BAT has normally been used on managerial level knowledge workers but in this study, it is being used on the middle knowledge workers. It helps in building literature on the value of non-managerial employees who work within the sectors that are knowledge-driven. The findings indicate that tournament bonuses positively influence short term performance but they could equally promote the tendency to focus on fast and immediate returns, which would make the developers elevate importance to speed at the cost of the quality in the short run. This is in line with what BAT claimed that both rational decisions making and the social comparison processes influence individuals on how they respond to incentives affecting how people are motivated.

This tradeoff of time regarding short term performance and long-term outcomes are also mentioned in the study. Tournament bonuses resulted in a short-term increase in sprint velocity but it led to a decline in the long-term developer satisfaction. Based on it, extrinsic rewards, despite increasing motivation in certain situations, in the long-term, may lead to a burnout and/or deterioration of satisfaction. The psychological cost of always having to fulfill, combined with the injustice of competitive bonus schemes has been found to contribute towards the poor results returns to such a system. This conclusion is consistent with the results of other studies of this direction since they indicate that the effectiveness of extrinsic rewards is not stable in the long term and that the positive effect of such stimuli may decline as a team gets used to the stress they induce (Deci et al., 1999; Kuvaas et al., 2017).

Further, the researchers established that perceived fairness was important in mediating perceived relationships between tournament bonuses and developer satisfaction. The graphical representation of the results is key because it confirmed the notion that fairness in the rewards allocation process is a crucial aspect of sustaining morale and motivation within agile teams because developers who thought the process of rewarding the bonuses was unfair felt less satisfied. This observation is also compliant with theories of organizational justice which underline the transparency and equity of distribution of rewards that it has (Colquitt, 2001). The perception of unfairness decreased satisfaction in teams that enjoyed high levels of perceived fairness, with the latter therefore showing that fairness can alleviate the adverse psychological outcomes of competitive rewards.

As much as tournament bonuses enhance sprint velocity, its general impact on work satisfaction and morale of the team should be taken into consideration. By combining the given financial incentives with such non-financial incentives as recognition and team-building practices, managers will enhance the impact of the employment of tournament-based incentives. This could help curb the possible malicious effects of competition including burnout and unsatisfaction with the job, and still propel performance. It is also possible to increase the team morale by making reward distribution transparent and fair.

The information in the study would be useful to managers dealing with the software business particularly in new markets such as Pakistan. There is a limitation to the study. The paper was done on medium sized software firms in Lahore and this may not be reflective throughout the giant organizations or even in other countries. The Pakistani culture is collectivistic that favors group cohesiveness and cooperation that could also have implications with regard to the perception of tournament incentives and their efficacy. In the future, to verify the effectiveness of the model (and the tournament-based incentives), it can be replicated in various regions or countries to observe whether the approach is equal or varies based on the background or the organizational culture.

Further, the present study has examined short run outcomes of tournament geneagenetic bonus. Further qualitative evidence on the effectiveness of such incentives regarding the long-term effects on the team cohesion, job satisfaction, and the organizational performance could be acquired with the help of longitudinal studies. An examination of culture and organization related factors that determine the effectiveness of performance-based rewards would be useful in various environments.

In brief, the study comes up to date with the evidence that reveals the sophisticated interplay of tournament bonuses, sprint velocity, and developer satisfaction in an agile software team. Although tournament bonuses can usher in immediate performances upsurge, its effects especially in the long term in terms of morale and satisfaction are not to be ignored. With a combination of extrinsic rewards and recognition, fairness, and team spirit, software companies will be able to establish their incentive systems that will stimulate performance and developer health. Long term implications of using such incentives need to be further investigated and the effects on cultures and organizational issues need to be put into consideration in building better predisposed incentives and their subsequent success.

Conclusion

The paper provides real life trading and performance of such type of such a form of sprint bonuses of such type of tournaments on such medium size software companies of Lahore, Pakistan. The authors are going to achieve this by using the archive data regarding the performance of the sprint and they are going to use the survey which is 6 months survey and the elements of the interview which in turn are going to allow the authors to provide a clear implication of the said implications of such types of performance incentives to the point whereby the authors will have the ability of quantifying the implication of performance incentive with regard certain data regarding the productivity (e.g. the sprint velocity) to the point where the authors will have the ability of quantification of the implication of performance incentive (which is the interview elements The findings can be utilized to arrive at a conclusion which may be given a situational approach in case of same context of same context of belonging to the developing economies where the values and organizational norms are alike as well as in the context of money regime which has been operating on the compounded basis.

The competition was like that of tourney so very effective in increasing the tempo in the sprint that it is as much true as we have argued in our thesis and the flow of discussion is leaning to show that there was some kind of reward giving machine in the competition that was one of the most wanted means of first principle push directed outward by competition to provide its own speed creating its rapid volleys of flash like cycles of competition game. Treatment team never passed the control team in the number of story points that they have had been able to address with time that they are able to be implemented to rest run of sprints as well as the initial part of time they have been smacked about during implementation version of story points. This significantly goes ahead to describe how the former studies would augment the fun of a tournament through additional efforts and input into the project-based remuneration.

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