Essay 2

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Does giving workers positive reinforcement lead them to work harder?

Nowadays, in the growing society, economics develops rapidly as well as the technology. The trend of the epoch hastens high-tech company one after another, just like Microsoft, Amazon, Apple and so on. The inventions and products of those magnates are making drastically changes and affecting the way of living and thinking for human beings thoroughly. I see people longing for more and more wonderful inventions and fantastic products. Improving production efficiency and the quality of products in those high-tech tycoons would really benefit the society. At the meantime, achieving better reputation and larger revenue to make them remain invincible are key to each company. Making right business strategies, taking big share of the market and effective management of the company are counting for much, besides, how to make the employees work harder is another crux.

To make employees work harder, the employer has tried a lot of different methods. Among them, bonus incentives are a very popular way aiming at facilitating harder working employees. Some high-tech companies implement the bonus plan. The employees who worked harder and contributed more in the past year would get more bonus than who did not. At the meantime, some other high-tech companies do not execute bonus plan. Instead of assigning bonus, they pay their employees the same no matter how their performances are. Then should the high-tech company implement bonus plan? Will the bonus plan motivate employees and let them work harder? This is a question that deserves more discussion.

Firstly, let us take a look at how to measure how hard an employee work. This is a vague measurement. Since more than one aspects can define it. Like whether the employee focuses on his/her job, whether the employee tries his/her best to solve a difficult problem, whether the employee cooperates well when working with other colleague, how the employee's production efficient, how long the employee works per day. All those aspects are factors that when we define "hard working". And most of them are unable to do quantitative measurements. Besides, there is

no direct biological connection to measure "Hard working". No efficient medical function can be used to test it. Thirdly, making the employees take a survey is a possible option. By end of each day, an email or text will be sent out asking to fill out a quick survey consisting of how hard they work today.

- How hard you work today, rate it (5 is the hardest)?
  - 1
  - 2
  - 3
  - 4
  - 5

However, self-reporting data is not reliable as people tend to report that they work harder than they really do. To sum up, "Hard working" is a hard metric to measure.

As we all know, when the work efficiency is constant to an employee, the longer he/she works, the more outcome. So, in this essay, an assumption the work efficiency to each employee is constant in a certain time period is given. To enable the quantitative measurement of how hard an employee work, let's regard the hours of working as the only measurement of how hard an employee work. And in the high-tech company, software developer count on majority employees. So, the targeting subjects are software developers from high-tech company. Besides that, there are several different departments like data scientists, human resource, office managers, etc. Employees from all those different positions should participate into this experiment.

In this way, the problem can be refreshed as, if bonus plan would make a high-tech employee work longer.

To study this problem, an experiment should be taken. The ideal experiment might be as follow: firstly, randomly select employees out from all different positions at a high-tech company, let's say Microsoft. The total number of employees participating in this experiment is 500. Normally, different positions earn different salary and own different work efficiency. Among those employees who participate in, employees will be bucketed out by positions. The researchers will then randomly divide the participants from each bucket into treatment and control groups. For the group selected to be treatment, implement bonus plan on them. That is if they

contribute much or perform good, they will gain bonus valuing more than 10% of their base salary; if they don't, then the bonus would be less than 10% out of their base salary. Do not execute bonus plan on the control group that is their base salary would increase 10% equally. Make sure that all factors other than the bonus pay is identical to those participants and those participants won't interference each other when they are working. Then those people would be tracked for 2 months, and every day their work time would be recorded.

After collecting the data, we would need to do a statistical analysis to demonstrate the effect. Setup the sharp null hypothesis that is bonus pay does not affect whether employees work hard or not. Shuffle the treatment and control group subject to experiment for potential outcome "Bonus pay". Then conduct 10,000 simulated random assignments under the sharp null hypothesis to calculate out the p-value. Based on the p-value, decide whether reject the sharp null hypothesis. Such an analysis reveals that if there is a statistically significate effect of bonus plan.