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ROLE OF REINFORCEMENTS IN GAMIFICATION

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ABSTRACT

Gamification is the use of game design elements in non-game contexts (Deterding, Dixon, Khaled & Nacke 2011), which uses the token method of reinforcement to modify individual behaviours (Kazdin, 1977). Gamification is considered as a solution for enhancing work motivation in employees. The present study is an attempt to find out the importance of reinforcement in the process of 'Insignio' gamification, a gaming frame work that brings in the gaming aspects for a large group of individuals at work. The sample included 50 teams in one multinational IT organisation. As per the findings, when reinforcement decreases in gamification, employee motivation towards work decreases and as a result work performance decreases. Regular and continued reinforcements play a critical role in employee motivation towards work and employee work performance. The study also gives an insight into the importance of praise, learning and continuous improvement.

Key words: Token, Reinforcement, Gamification, Work motivation, Employee performance

Role of Reinforcements in Gamification

Gamification is considered as a solution for enhancing work motivation and employee performance. The basic idea behind the application of gamification as a performance-enhancing intervention process is our love, as human beings, to play games. And, since time immemorial, gaming is a popular form of recreation (Nicholson 2013). As per the findings of Bright, Harvey and Wheeler (1985), people enjoy being involved in one or other forms of games. Games merge fun with challenges and sometimes include components that are difficult to learn, explore and master. There are games which challenge our cognition, and that will provide opportunities to persevere. Further, each game has the potential to give experiences of success and thereby to feel right about them.

A game board which can be dated back to approximately 5870 +/- 240 BC verifies that Neolithic people had leisure time to win or lose at games of chance or skill (Rollefson 1992). Puddephatt (2003) has explored on how people engage in strategic activity in the context of a chess game, where he posits that serious players often view, experience, and enact various aspects of the game in different ways than their casual counterparts. He argues that life is usually very much like a game, as the processes of strategic interaction often associated with gaming activity are adopted widely throughout everyday life.

People always strive to achieve their best, which keeps them motivated. Human motivation can be broadly classified as intrinsic and extrinsic motivation (Ryan 2000). Extrinsic motivation has been extensively studied and used in organisational settings which include monetary and non-monetary rewards. According to Sonawane (2008) functions of non-monetary rewards are promising in the corporate world. Non-monetary rewards are formal rewards, when a token reinforcement is given to employees, as a recognition of their efforts or/and achievements.

Research studies on token reinforcements reveal exciting findings in the fields of psychiatry, clinical psychology, education, and mental health (Kazdin, 1977). In token reinforcement systems, the concept of operant conditioning is employed to modify individual behaviours (Kazdin, 1977). The token reinforcements are awarded for each instance of demonstration of expected behaviour by the participants. The token can be presented before, alongside or immediately after the manifestation of the behaviour. By repeated instances of token presentation, the neutral token becomes the reinforcing entity (Doll 2013).

During Gamification, we will use game design elements in non-game contexts (Deterding, Dixon, Khaled & Nacke 2011). The concept of gamification has been popular since 2000's and currently being widely adopted in various areas including business, marketing, corporate management, and wellness and ecology initiatives (Dicheva 2015). Many researchers have worked extensively on gamification and documented them. The role of reinforcements has been extensively studied for more than a century now.

'Insignio' is a gamification framework that will add a new dimension for individuals to excel at the workplace. The term 'Insignio' is derived from the word insignia, denotatively, a badge or sign which shows that a person is a member of a particular group or has a specific rank. In ancient times, an insignia had been an emblem of a specific or general authority, a symbol or token of personal power, status or office, or of an official body of government or jurisdiction. There is documented evidence of an elaborate hierarchy of military rank and insignia developed and prominently used by the Aztecs which dates back to the thirteenth century. Noblemen rose through the ranks based on the number of captives they had taken in battle and were rewarded with ever more flamboyant uniforms to advertise their prowess (Rounds 1979, Harper & Duran 1964).

In the notes of Fredricksmeier (1997), we can see the arguments on the origin of the royal insignia of Alexander the Great, owing to its significance in history. Alexander the Great wanted to create something unique on his own, to showcase his conquests and sanction of his Graeco-Macedonian gods (Hammond 1989). Citing another instance, Priest (1936) talks about thirty-four small examples of Chinese textiles which are the insignia worn at court on official or special occasions. They consolidated a list of 9 civil ranks and nine military ranks. The history of insignia indicates the importance of tokens existed throughout history.

Insignio Gamification adopts similar tokens to improve the work motivation and to enhance employee performance. The implementation of such token reinforcements is quite typical in the interventions through gamification. However, there are limited studies which explored how they play a role in improving the work motivation-enhancing the employee performance. The present study is an attempt to find if token reinforcements in gamification influence work motivation and thereby control employee performance. In any organisation setting, consistency of employee work performance is the key. We claim that when reinforcement decreases in gamification, work motivation lessens and as a result employee performance decreases.

OBJECTIVES

The objective of this study was to find out the role of token reinforcement in gamification to enhance employee performance.

METHOD

The sample size included fifty teams where the team size varied between three members to twenty-two members. The intervention was conducted over a period of one year starting October 2016 and ending in September 2017. The total duration was divided into four quarters viz. quarter 1: October 2016 to December 2016, quarter 2: January 2017 to March 2017, quarter 3: April 2017 to June 2017, quarter 4: July 2017 to September 2017. The data from each team was collected on a weekly basis and used to derive performance index. The consolidated data was shared with all the employees for the complete duration of the intervention.

Procedure

Before the commencement of gamification intervention, in-person workshops were conducted for one hour with more than half the teams to help them understand the gamification approach and the intention. The objectives were stated, and guideline documents were shared with respective teams. The guideline document was available for the access of the team members during intervention.

Insignio gamification framework: The framework brings in the gaming aspects for a large group of individuals who are associated with a specific customer to achieve their business objectives (Chou 2016). The group has a hierarchical structure, where an individual is a part of the team and reports to a project manager. A project manager may be responsible for one or more teams and reports to a delivery manager. A delivery manager would be responsible for multiple projects (portfolio) and shall have multiple project managers reporting.

The gamification framework is defined to address two essential aspects as mentioned below,

1. A clear and streamlined path to raise the potential of every team member, defined as the 10x journey.
2. A mechanism to differentiate and reward each significant contribution from every team member.

The framework consists of the rewards defined across various stakeholders in the organisation structure and the levels to be achieved. Five different categories of rewarding mechanism shall be used.

1. Koins: Team members and teams accumulate koins, that shall be awarded to them based on the contributions concerning the value brought in.
2. Ribbon: Team members earn a ribbon on successful completion of an activity.
3. Badge: Each team earns a badge for every 133 koins accumulated or if every team member earns a ribbon. A team is defined as follows
4. Medal: Each project manager earns a medal for every 333 koins accumulated or if every team with the project manager earns a badge or there may be specific criteria's defined.
5. Capstone: Each delivery manager earns Capstone for every 3333 GoTkoins accumulated or if every project manager earns a medal.

The objective of the 10x journey is to achieve a black belt. A team, project manager or delivery manager must move through each level to reach 10x, which is the highest achievement. The 10x journey is broadly categorised into three levels viz beginner, intermediate and advanced. At each level, there are three belts to be achieved to move to the subsequent level. The complete duration of the intervention is planned for 12 months (starting 1st October 2016 and ending on 30th September 2017). The progress of each category is baselined every quarter.

Process: during quarter 1, there were awareness sessions as well as the regular distribution of various rewards; during quarter 2, awareness sessions were stopped. However the reward distribution continued; during quarter 3, the reward distribution was limited to few teams; during quarter 4 no rewards were distributed.

Statistical analysis

Shapiro Wilks normality test indicated that the data is not normally distributed. Hence, Kruskal Wallis H test was used to compare the trend of the performance of the teams in each quarter.

RESULTS

The result of the trend analysis using Kruskal Wallis H test is summarised in table 1

Table 1:

Kruskal Wallis H that shows the trend of performance of the employees in the four quarters

Terms	Performance		Teams participated	Mean Rank	H
	>Median	<Median			
Quarter 1	34	19	38	123.01	9.032*
Quarter 2	27	26	29	112.92	
Quarter 3	20	33	33	98.8	
Quarter 4	20	33	33	91.26	

The result of the trend analysis shows that the performance of each quarter differed ($H = 9.032$, $p < .05$) significantly. Comparing the mean rank of each quarter with the process of the deliverance of token reinforcement, the performance, which was high in the first quarter (Mean rank = 123.01, when there were detailed awareness sessions as well as the regular distribution of various rewards), got reduced in the second quarter (Mean rank = 112.92, when the awareness sessions were stopped, but the reward distribution continued), became weaker in the third quarter (Mean rank = 98.8, when the reward distribution was limited to few teams), and then the weakest in the fourth quarter (Mean rank = 91.26, when no rewards were distributed). Participation of the teams also gradually decreased from quarter 1 to quarter 3 but became stable after that. In quarter 1, performance of 34 teams went above the median. In quarter 2, performance of 27 teams went above the median. In quarter 3 and 4, only 20 teams went above the median in their performance. Results designate the importance of consistent token reinforcements in gamification.

DISCUSSION

Findings show that regular and continued reinforcements play a critical role in work motivation and employee performance. Hence, any gamification intervention needs not only to be planned carefully but strictly and rigorously followed up throughout the execution. The performance data shows a decreasing trend from quarter 1 to quarter 4. This observation can be related the importance and the role; regular reinforcements play to bringing in the desired behaviour change and sustaining it. During quarter 1, there were awareness sessions as well as the regular distribution of various rewards. This motivated team members and resulted in better performance outcomes. There was a healthy competition building up among the team members and various teams, which encouraged them to score more (Sonawane 2008, Boniecki 2003).

During quarter 2, awareness sessions were stopped. However, the reward distribution continued. The teams who received the rewards were motivated to contribute more to achieve better performance outcomes (Ryan 2000). During quarter 3, the reward distribution was limited to

few teams. This caused team members to lose focus and interest to continue the momentum since they did not see the value and recognition of accumulating credits. During quarter 4 no rewards were distributed. The performance outcomes of teams reduced further (Baron 2005). The variation during each of the four quarters gives an interesting insight into the importance of reinforcements in keeping up the motivation level high to achieve better performance outcomes. As the level of reinforcements is either decreased or discontinued, employees lose the motivation to achieve more performance outcomes (Baron 2005).

The performance data was shared with all team members every week through the mail. This was consistently done for the complete duration of the intervention, which served the purpose of the performance data being available to all team members. When team members saw their contributions to the performance data being shared, it encouraged them to either continue or improve their performance outcomes (Sonawane 2008, Droë 2012, Grant & Dweck 2003). Learning is one of the parameters considered for performance outcomes. Team members who attended regular training and shared knowledge among themselves had higher performance outcomes as measured during the intervention (Plass, Homer & Kinzer 2015). It was observed that teams who were consistent across the duration of the intervention had emphasised on training and sharing knowledge among the team members. The teams who contributed towards continuous improvements also had better performance outcomes when compared to other teams who did not score on performance outcomes. Hence, the detailed analysis of data shows the importance of praise, learning and continuous improvements to enable the teams to improve their performance outcomes.

CONCLUSIONS AND RECOMMENDATIONS

The study showed the role of reinforcements in gamification to improve work motivation employee performance. Trend analysis conducted over the data collected during the intervention which spanned over twelve months period provided a clear indication how critical reinforcements are to keep the workforce in an organisation motivated. The study gave an insight into the importance of praise, learning and continuous improvement for maintaining a motivated workforce who can provide better performance outcomes. For the organisations that attempt to introduce gamification to enhance work motivation employee performance, the findings are insightful.

It has to be noted that some probable extraneous factors also have influenced the results. Patterns and behaviours of the team leaders might have brought an impact on the team performance outcomes. Further, one of the parameters considered for measuring the performance outcome was recognition regarding praise provided by stakeholders when the employees contributed above and beyond their role (Droë 2012). Praise from stakeholders might have played a critical role in keeping the work motivation. A future study that controls these factors is recommended to derive a perfect relationship between reinforcements in gamification and employee performance.



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