



Employees Management: Evidence from Gamification Techniques

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ABSTRACT

The purpose of this paper is to find out the effect of Gamification on employee motivation, employee engagement, employee retention, employee loyalty and organizational commitment. We want to know this in order to check the viability of Gamification strategy for business development in Pakistan. Participants were 142 University students, who were working as well, we divided them into two groups, control group and Gamified group, we gave both groups pre-test and post-test questionnaire. ANOVA and t-test were applied to pre-test and post-test data to analyze group difference and multivariate GLM model was applied to analyze the influence of gender and gamification preferences on employee related variables. The Gamification strategy used in the Gamified group was expected to influence the participants and increase their motivation, engagement, retention, loyalty and organizational commitment. The Gamified group did show significance in employee engagement, employee retention and organizational commitment, whereby loyalty and motivation were not significant for both gamified and non-gamified environment. In addition GLM analysis indicates that if employees are given playful environment that will lead to higher motivation, engagement and retention. Gamification strategy can help business development in Pakistan, as employees prefer a Gamified workplace over a non-Gamified one. Game elements in a work environment are likely to be highly positive for an employee's mental health, and allow employees to lead a healthier life with less stress. This study specifies predictors for business development through Gamification and emphasizes the importance of Gamification on all the variables.

INTRODUCTION

Over the past two decades or so, there has been a substantial boost in the gaming industry because a majority of the population that were playing these video games had a firm belief that games do more good than harm. These ideals were contrary to the older generation (Generation X). After a while, all the people who enjoyed video games had grown up attached to the utility it provided and carried their ideals forward. Surveys found that the average age of a gamer is 31 years. The new generation, Generation Y, had been heavily influenced by games, even if they were not gamers because gaming had become a norm or even a subculture. This change in social acceptance and ideals has brought about a paradigm change in personal as well as professional approach (Raftopoulos, 2014).

This research expects to understand the implications of Gamification of a business in the local context. The idea is to see how a Gamified business is better than a non-Gamified business and how it contributes towards business development. Particularly, this research aims to check employee engagement levels (Robson, Plangger, Kietzmann, McCarthy and Pitt, 2016), employee motivation (Kamasheva, Valeev, Yagudin and Maksimova, 2015), organizational commitment (Sips, Bozzon, Smit and Houben, 2015), employee retention (Dorling & McCaffery, 2012), and social loyalty (DuVernet, Asquer and Krachkovskaya, 2016) of the employees in a Gamified environment. Gamification is the process of applying game elements and game design to a non-game environment (Dorling and McCaffery, 2012). By using game logic to improve the business's productivity and profitability, Gamification provides a method of business development (Fischer, 2017). The major findings, so far, have indicated that Gamification is a viable concept that shows promising results in many different contexts such as consumer marketing (Huotari and Hamari, 2017), branding (Gatautis, Banyte, Piligrimiene, Vitkauskaitė and Tarute, 2016), tourism (Xu, Buhalis and Weber, 2017), innovation adoption (Müller-Stewens, Schlager, Häubl, & Herrmann, 2017) academia (Taspinar, Schmidt and Schuhbauer, 2016), healthcare (Hammedi et al., 2017) and human-computer interaction (Hamari, 2017), e-banking (Rodrigues, Oliveira and Costa, 2016) etc. In many situations Gamification has provided a structure which has boosted employee morale and efficiency. The concept of Gamification has sprung out in the early 2008 but hit a road block soon after due to the majority not accepting it as a relevant subject (Currier, 2008). Soon, researchers and business started to look into the potency of Gamification as a tool to improve employee and customer involvement (Fischer, 2017).

1. PROBLEM STATEMENT

Through a Gamified structure an employee would be put in a setting where he/she can be rewarded and recognized for their efforts through a transparent reward management system (Werbach & Hunter, 2012). This design engages employees in experiencing their job in a more enjoyable setting. The business is creating a way to allow its employees to be creative and motivated to be more involved in the business processes. Gamification provides a transparent, exciting and fun environment which allows the employee to perform (or over perform) and see their progress as an individual and a group (Deterding, Dixon, Khaled and Nacke, 2011; Hamari, Koivisto and Sarsa, 2014; Harwood & Garry, 2015; Huotari and Hamari, 2017).

1.1 Objectives of the research

The basic objective of this research is to experiment the significance of the Gamification strategy in a local market context. Gauging the difference in the employee's **engagement, motivation, commitment, retention,** and **employee loyalty** levels in a Gamified environment. Overall, explaining the relevance of Gamification in business development. On the basis of previous literature we have

derived following research objectives:

- To understand the magnitude of Gamification on motivation levels.
- To understand how Gamification can help in employee retention.
- To determine the impact of Gamification on employee loyalty.
- To understand how Gamification can help in improving employee's commitment towards the organization.
- To analyze how Gamification can influence the engagement level of employees in the organization.

2. SUBSTANTIATION FROM PREVIOUS LITERATURE

Gamification is the term given to the concept of using game design elements and game logic in a non-game environment. By augmenting the environment to be more enjoyable and make work less monotonous, Gamification can control certain variables to enhance the work experience (Sarangi & Shah, 2015). The concept has been used for boosting employee morale by creating a transparent and fun environment helping them in problem solving (Hammedi et al., 2017). The same concept has been applied to show improvements by Gamifying intrinsic and extrinsic motivation making everyday tasks more exciting with special rewards behind them. The same idea has been used for ages but the method was unlabeled (Mekler, Brühlmann, Opwis, & Tuch, 2013). After enough material was circulating around, Gamification started getting recognition by corporates and academics alike. One of the first official classes taught for Gamification started online and the professor had also published a book on the same. The course explained the relevance of Gamification of businesses and how it can be done using a "Tool-Kit" defined by the authors. The acknowledgment of the subject and disseminating its intelligence makes the concept applicable to any business (Werbach and Hunter, 2012).

Keeping the definition of Gamification in mind, it is clear that the idea is to bolster positive stimulation, specifically to improve productivity. The concept has proven to bring improvements in many aspects of the business. The places which have adopted Gamification are enjoying healthy employee morale and increased productivity (Gears and Braun, 2013). Hammedi et al. (2017) further elaborates that with the understanding of the problems arising at a work place, Gamification can be used to create easier problem solving methods by introducing a more relaxed environment. This helps the business processes run smoothly and reduce the unwanted pressure from the employees looking for solutions. In retrospect, the Gamification theory states that all the different types of work places can be easily modified to be more fun and engaging (Fischer, 2017; Werbach and Hunter, 2012). These augmentations will allow the work to be more enjoyable, resulting in a boost in morale and employee commitment to the organization and the work. The overall cohesive bonding improved by this new environment will lead to better business development efforts with improved profitability and productivity (Hamari, 2017).

There have been relatively few studies on Gamification but there are some ground breaking ones Hamari et al. (2014) creates a context to examine the influence of Gamification and offers affirmative impacts. However, the influence is hugely dependent on the framework in which the Gamification is being applied, as well as on the consumers using it. Another key study is Gears and Braun (2013) the paper investigates "Gamification", and the historic roots of the terminology in connection to antecedents, alike perceptions and how Gamification is different from playfulness and suggested a Gamification technique improvement course, and role motivation interaction contextpremeditated to enhance a problem condition in business. Game design patterns were customized to offer employees a positive and engaging experience (Hamari, 2017; Hammedi et al., 2017). The operationalization of the concept was done by Gears and Braun (2013) explaining the concept of Gamification. The authors developed a leveling model including the pattern of game interface design, patterns of game and mechanics, game model, principles and heuristics of game, and de-

sign methods of game which helped in understanding that they are to be used for applying only the game related aspects to the real world rather than applying a full game.

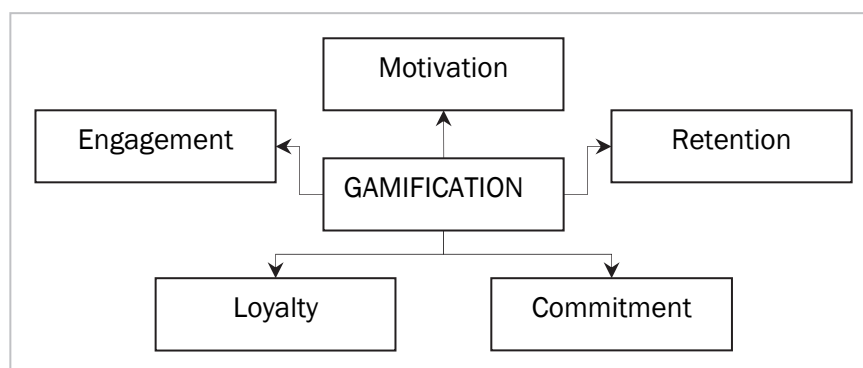
2.1 Theoretical Framework

In order to understand the relevance of Gamification on the business environment and the business development process, the effect of gamifying an environment must be measured. Gamification has been linked with improving productivity and profitability in many organizations across the globe that is adopting this strategy. To understand the improvement or change certain variables have been taken dependent to the application of the Gamification strategy (Landers and Armstrong, 2017).

The first variable chosen is 'Employee Motivation' due to the observable improvements mentioned and theorized in many studies. Taking a closer look at the work environment, it can easily be said that the employee motivation plays a vital role in the productivity levels (Kamasheva et al., 2015; Mekler et al., 2013; Suh, Cheung, Ahuja and Wagner, 2017). Subsequently, the next variable chosen is 'Employee Engagement' which defines how much an employee is vested in his job. The motive behind this is to understand if Gamification lowers boredom levels by making the job more interactive and appealing (Hammedi et al., 2017; Harwood and Garry, 2015; Suh et al., 2017). To judge Gamification's effect on an employee's perception and attitude towards the company and/or job, the variables 'Organizational Commitment'(Dorling and McCaffery, 2012) and 'Employee Loyalty' (Basten, 2017) were chosen. The former gauges the level of commitment and trust an employee has in the company and its goals while the latter measures the employees' active loyalty to the firm about staying and not actively looking for other opportunities. The last variable was chosen based on the previous one's ultimate effect, "Employee Retention" levels explains Gamification was completely successful in improving the work environment. All the dependent variables mentioned directly affect each individually and Gamification affects them (Baxter, Holderness and Wood, 2017).

Organizations in Pakistan have not yet fully grasped or even considered the approach of business development through Gamification, this is so because there is an implied formality in the majority of our business structures which leads to close-minded working environments and due to the fact that many workers who belong to generation x would not be able to adapt this concept as well as those of generation y, as there is a majority of generation x in decision making positions in organizations throughout Pakistan, the concept of Gamification would seem foreign to them and might not regard it with importance (Aziz, Mushtaq and Anwar, 2017).

Figure 1. Variable relationship diagram



Source: Dorling & McCaffery, 2012; Baxter, Holderness & Wood, 2017.

3. MATERIALS AND METHODS

The Purpose of this Research is to experiment the significance of the Gamification strategy for employee engagement, motivation, turnover, organizational commitment and social loyalty levels. This research was a controlled experiment, collecting quantitative data to find differences in the dependent variables: **employee motivation, engagement, turnover, organizational commitment and employee loyalty**. Participants for this research were invited through Facebook and university's notice board for registration, total 160 registered divided in equal control and experiment groups through simple random sampling method. Experiment was conducted in two days for six hours. On day 1 Control group was given professional tasks without gamification and was judged by panel of professional judges for the completion and execution of assigned task. On day 2 Experiment group was given same tasks in gamified environment with leaderboard scores, badges, giveaways, token of appreciations and achievement levels for each employee based on judges' evaluation for the completion and execution of assigned task. The data collection instrument adopted from developed scales including Motivation scale (Cerasoli, Nicklin and Ford, 2014), Engagement scale (Schaufeli, Bakker, & Salanova, 2006), Commitment (Mowday, Steers and Porter, 1979), retention (Bhatnagar, 2007) and Loyalty (Matzler and Renzl, 2006) were distributed to both groups before and after activities. The data was then coded in SPSS and analyzed through for MANOVA.

3.1 Hypotheses / Propositions

- A Gamified workplace has better motivational levels for employees than a non-Gamified workplace
- A Gamified workplace has better engagement levels for employees than a non-Gamified workplace
- A Gamified workplace has better organizational commitment levels for employees than a non-Gamified workplace
- A Gamified workplace has better employee loyalty levels for employees than a non-Gamified workplace
- A Gamified workplace has a better employee turnover rate than a non-Gamified workplace

4. ESTIMATIONS OF RESULTS AND DISCUSSIONS

The data from questionnaire is coded in SPSS for hypothesis testing and analysis. The questionnaire had no missing values. Following section represents demographics, validity and reliability measures and results of hypothesis. Almost 100% participants were 21 to 25 age group with 53% males and 47% females.

4.1 Validity and Reliability

Validity of the questionnaire was tested through face validity and convergent validity. Face validity was ensured by getting expert review on questionnaire and convergent validity was done through factor analysis. Statement with factor loading less than 0.4 were not considered for summated scales (Hair, Black, Babin and Anderson, 2009). Reliability was tested through Cronbach alpha, for both gamified and non-gamified group responses (Sekaran & Bougie, 2016). Overall and inter-item reliabilities were above 0.7.

4.2 Descriptive analysis

The mean values are all above 5.5 (neutral value) on a scale of 1 to 10, indicates that the constructs are positively contributing in this research as exhibited by Table 1. Standard deviation values are all above 1, therefore it represents that there are many variations in the respondent's given answers in the Gamification and non-Gamification experiments.

Table 1. Descriptive Statistics for all constructs

| | Control Group | | Experiment Group | |
|------------|---------------|---------|------------------|---------|
| | Mean | SD | Mean | SD |
| Motivation | 7.6250 | 1.64874 | 7.1500 | 1.03923 |
| Engagement | 7.3600 | 1.36146 | 7.0167 | 1.26280 |
| Retention | 7.5844 | 1.31745 | 6.6438 | 1.57401 |
| Commitment | 6.7075 | 1.39291 | 6.2042 | 1.68554 |
| Loyalty | 5.8125 | 1.71683 | 6.3500 | 1.79066 |

Source: Authors' estimations

4.3 MANOVA Assumptions

Assumptions were tested for the data as indicated by Hair et al. (2009):

- Independence of observations was achieved through simple random sampling method adopted for assigning participants in control group and experiment group respondents.
- Multivariate homoscedasticity was tested through Box's M test and univariate was tested through Levene's Test of Error Variances. Table 2 indicates no significant differences for equality of covariance in groups.
- Test of Multivariate outliers was performed through calculating Mahalanobies for the given data. Maximum Mahal distance according to residual analysis was 19.092, which is less than 20.52 upper limit of mahal distances for five variables.
- Normality was tested through Shapiro Wilk's test and constructs were found to be normally distributed in both groups.
- Multicollinearity was tested through correlation matrix and none of the correlations were found to be greater than 0.5.

Table 2. Homoscedasticity Assumption

| Control Group | Experiment Group |
|---|-----------------------------|
| Box's M 21.994 Sig (.155) | Box's M 19.717 sig (.244) |
| <i>Levene's Test of Equality of Error Variances</i> | |
| Engagement f-value (1.987) sig (.164) | f-value (.309) sig (.580) |
| Retention f-value (1.205) sig (.276) | f-value (2.241) sig (.132) |
| Commitment f-value (2.009) sig (.160) | f-value (2.842) sig (.096) |
| Loyalty f-value (2.735) sig (.102) | f-value (.145) sig (.704) |
| Motivation f-value (1.205) sig (.276) | f-value (1.795) sig (.184) |

Source: Authors' estimations

4.4 MANOVA estimations

4.4.1 Multivariate analysis

The data is satisfying sufficient number of assumptions for the application of MANOVA therefore GLM Multivariate technique was applied to the data of control group and experiment group as presented in Table 3.

Table 3. Multivariate Statistic

| <i>Effect</i> | | <i>Value</i> | <i>F</i> | <i>Sig.</i> | <i>PSquared</i> |
|---|--------------------|--------------|--------------------|-------------|-----------------|
| Control Non-Game Pre and Post test | Pillai's Trace | .183 | 3.320 ^b | .009 | .183 |
| | Wilks' Lambda | .817 | 3.320 ^b | .009 | .183 |
| | Hotelling's Trace | .224 | 3.320 ^b | .009 | .183 |
| | Roy's Largest Root | .224 | 3.320 ^b | .009 | .183 |
| Experiment Gamified Pre and Post test | Pillai's Trace | .170 | 3.028 ^b | .015 | .170 |
| | Wilks' Lambda | .830 | 3.028 ^b | .015 | .170 |
| | Hotelling's Trace | .205 | 3.028 ^b | .015 | .170 |
| | Roy's Largest Root | .205 | 3.028 ^b | .015 | .170 |

Source: Authors' estimations

4.4.2 Descriptive evaluation

Table 4 presents the mean of all variables in control and experiment group for pre and post-test. It is evident from the table that Motivation and Retention is reduced posttest non-gamified monotonous environment in contrast Motivation, engagement, commitment and loyalty is increased in posttest Gamified environment.

Table 4. Descriptive Statistics

| <i>Variable</i> | | <i>Mean</i> | <i>Std. Deviation</i> | | <i>Mean</i> | <i>Std. Deviation</i> | <i>N</i> |
|-----------------|-----------------------------|-------------|-----------------------|-------------------------|-------------|-----------------------|----------|
| Motivation | Pre Test. Non Gamification | 8.1667 | 1.46371 | Pre Test. Gamification | 6.9000 | .97770 | 40 |
| | Post Test. Non Gamification | 7.0833 | 1.66196 | Post Test. Gamification | 7.4000 | 1.05052 | 40 |
| Engagement | Pre Test. Non Gamification | 7.4750 | 1.22511 | Pre Test. Gamification | 6.5250 | 1.987 | 40 |
| | Post Test. Non Gamification | 7.2450 | 1.49219 | Post Test. Gamification | 7.4000 | 1.482 | 40 |
| Retention | Pre Test. Non Gamification | 8.0563 | 1.03231 | Pre Test. Gamification | 6.4063 | 1.74834 | 40 |

| | | | | | | | |
|------------|-----------------------------|--------|---------|-------------------------|--------|---------|----|
| | Post Test. Non Gamification | 7.1125 | 1.41189 | Post Test. Gamification | 6.8813 | 1.35872 | 40 |
| Commitment | Pre Test. Non Gamification | 6.9100 | 1.58451 | Pre Test. Gamification | 5.6042 | 1.71705 | 40 |
| | Post Test. Non Gamification | 6.5050 | 1.15558 | Post Test. Gamification | 6.8042 | 1.43813 | 40 |
| Loyalty | Pre Test. Non Gamification | 5.9083 | 1.91558 | Pre Test. Gamification | 5.8917 | 1.83723 | 40 |
| | Post Test. Non Gamification | 5.7167 | 1.51074 | Post Test. Gamification | 6.8083 | 1.63976 | 40 |

Source: Authors' estimations

4.4.3 Contrast analysis – K Matrix

Furthermore significant differences are indicated by K-Matric results in Table 5 for Control and Experiment Group. All the tests indicate that the dependent variables do have significant differences in pretests and posttests of Control group responses and experiment group responses.

Table 5. Contrast Results (K Matrix)

| Questionnaire Simple Contrast | | Control Group | | Experiment Group | | | | |
|-------------------------------|--|---------------|-----------|------------------|------------|---------|------------|--------|
| | | Motivation | Retention | Commitment | Motivation | Loyalty | Engagement | |
| Pre Test Vs Post Test | Contrast Estimate | 1.083 | .944 | -1.200 | -.500 | -.917 | -.875 | |
| | Sig. | .003 | .001 | .001 | .031 | .021 | .028 | |
| | 95% Confidence Interval for Difference | Lower Bound | .386 | .393 | -1.905 | -.952 | -1.692 | -16885 |
| | | Upper Bound | 1.780 | 1.494 | -.495 | -.048 | -.141 | -.095 |

Source: Authors' estimations

4.5 Discussions

The first dependent variable, Employee Motivation, shows significant difference in the non-Gamification/control group between pre and post-tests such that motivation is reduced significantly after eight hours of monotonous job and tasks. Whereas, the Gamification group showed significant increase in the average motivation levels of the participants (Cerasoli et al., 2014). Employee Engagement, the second dependent variable, has no significant changes in non-gamified environment in parallel gamification significantly increases Employee engagement (Hammedi et al., 2017) in line with prolific literature of gamification and employee engagement (Bhatnagar, 2007; Narayanan, 2014; Robson et al., 2016). Employee Retention, however indicates significant reduction in the non-Gamified group whereby the retention behaviors are insignificant in gamified environments; thus monotonous, boring and routine work environment forces an employee to search for new job. Researcher further tested if retention in gamified environment is predicted by other variables and it was evident that employee retention is strong and positive with loyalty and raised commitment towards the organization. A healthy increase in employee Loyalty level was seen for

the Gamified post-test indicating that employee feel loyal towards workplace that makes the work fun and engaging (Lamm and Meeks, 2009; Mollick and Rothbard, 2014). Similarly Organizational Commitment, indicated a significant improvement in the Gamified group thus employees feel positive and committed towards the organization as indicated by (Robson et al., 2016). This movement indicates that Gamification of the environment does influence four main dependent variables but with different magnitudes. It is also important to state that the motivation levels were seen to be quite low for both the groups from the start. After being subjected to the workshop the changes, even if minimal, were not perceived as significant enough to be relevant because if the same study was carried out with a more expensive setting the results would have been more significant.

With this in mind, the data gathered from the experiment was analyzed. The workplace simulated exercises/activities proved to be challenging and stimulating for the groups. The incentives given to the Gamified/experimental group resulted in better competition from all the groups as compared to the control group which had linear competition levels throughout, as observed during the workshop (Hamari et al., 2014). Making the work environment more fun and playful with changing the way work is done and introducing performance based reward system allows the employee to feel that the company is being just with them (Basten, 2017). Bottom line, Gamification brings a game changing model to the workplace and argues with the older generation that work should have a fun and playful feel to it rather than a stern seriousness which is generally offered (Werbach and Hunter, 2012).

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study seeks to create a stepping-stone for other research on the topic of the Gamification theory by conducting the first experiment in the country. The results of the entire experiment opened eyes to some key insights about the influence Gamification has over the dependent variables. The Gamification control experiment showed signs of relevance by being influential over the dependent variables; Employee Loyalty, Employee Motivation having a weaker connection and Employee Retention, Engagement and Organizational Commitment having the stronger link. Having established that the Gamification theory has some relevance in the improvement of productivity and profitability. Companies can add their own touches into creating a Gamified environment according to their specific structure as this tool can be generalized to affect a company in any industry. There is no hard and fast rule about how Gamification should be adopted; it is all based on the type of industry and the nature of the workplace. All the tools have been defined and the usage bear different fruits for each type of company. The significance has been defined now as well.

Recommendations & managerial implications

On the basis of derived results and conclusions, we have recommended following items to the organizations and individuals. Particularly, the management of an organization can implement our gamification business model by integrating: -

- **Leaderboard system:** This system would be used to measure individual or group based performance on both projects and overall monthly tasks.
- **Appraisals/Scoring system:** This system would work as judging criteria for individuals and groups, through assessing their performance and generating a score relative to its execution and affectivity on a periodic basis. This system can be performed through the line managers and bosses to evaluate the employees.
- **Leveling and progression system:** This system would create a model that would be directly proportional to the performance of the given group or individual on respective projects or tasks,

they would be allotted badges for their effective performance through which they would achieve higher ranks amongst their colleagues.

- **Rewards and compensation system:** This system enforces the redemption of badges earned by the respective employees and also had specific tiers that are unlocked by achieving certain ranks, badge redemption at each tier would give different unique benefits and rewards with higher rewards through badge redemption as employees pass along and succeed to the next tier.

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