Gamification Influence on the Quality of Employee Knowledge Contributions: Gender Disparity in Service Organizations Post Covid-19

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Abstract: Covid-19 has emerged with inevitable changes in societies around the world. Organizations face difficulties in both pandemic and post-pandemic situations, engaging people towards producing knowledge to remain competitive. Knowledge is deemed to be a crucial asset for organizations. Quality knowledge contribution among employees can provide a competitive advantage by enabling them to serve their clients in a more advanced and well-organized manner. Despite this, research on knowledge management activities in service organizations in South Asia, specifically in Bangladesh, is limited. This study is motivated to explore the post-pandemic scenario of a developing country based on the service sector. The study aims to understand the relationship between gamification and employee knowledge contribution with a diverse group response highlighting gender aspects in the context of Bangladesh. The study employs a quantitative method, gathering data from various service sector employees through a questionnaire survey. This study develops a research model relating organizational gamification activities (rewardability and competition) and quality knowledge contribution. The results confirm the impact of rewardability and competition on employee quality knowledge contribution, with the multi-group analysis based on gender showing disparities between male and female responses. Male responses found a significant relationship between gamification and quality knowledge contribution with both activities. In contrast, female responses are insignificant considering competition regarding quality knowledge contribution. The study result produces a unique context related to Bangladesh's service sector as the first initiative to the best of our knowledge. The study recommends modifications in service organizations to foster an environment that promotes quality knowledge contribution in day-to-day transactions. It will also enhance issues related to women's empowerment and the quest for new approaches the organization may rethink to remain competitive. Therefore, the study's findings can provide research pleas to the policymakers, academics, and practitioners and will explore diversity in similar economies related to the service sector.

Keywords: Gamification, Knowledge, SEM, Bangladesh

1. Introduction

The pandemic of COVID-19 has altered the manner in which businesses operate, introducing new opportunities and challenges. The pandemic has compelled many companies to modify their business models to survive. With an increased emphasis on innovation and competitiveness, the quality of employee knowledge contributions can assist organizations in generating new ideas, products, and services by leveraging their existing knowledge. By exchanging knowledge and expertise across departments, businesses can accelerate innovation processes and maintain a competitive advantage (Ram et al, 2021).

The post-COVID-19 environment is also linked to the fourth industrial revolution, characterized by rapid technological change, and requires organizations to adapt rapidly to remain relevant. This can result in a more agile and adaptable organization responding more effectively to shifting market conditions (Zieba et al, 2022). According to Riar et al. (2022) collaboration is essential as organizations increasingly rely on cross-functional teams to generate innovation and solve complex problems. Effective knowledge management systems can facilitate collaboration by dismantling silos and enabling employees to share their knowledge and expertise across departments and geographies (Chiu and Lin, 2022). Therefore, by encouraging employees to contribute their knowledge and expertise, organizations can better identify opportunities and develop new products and services to satisfy customers' evolving needs (Nguyen et al, 2022).

Prior research (e.g., Jalili 2020; Deterding et al. 2011; Davenport & Prusak 1998; O'Dell & Grayson 1998) also identified several reasons why employees might not be interested in making quality knowledge contributions,

such as a lack of motivation, engagement, or recognition for their efforts, fear of job loss or competition, or a lack of understanding of the benefits of knowledge sharing for the organization. To surmount these obstacles, organizations are increasingly employing gamification, applying game design principles to non-game contexts to increase engagement and motivation (Deterding et al, 2011). Gamification can be an effective instrument for promoting quality knowledge contributions in organizations, as it provides incentives and rewards for employees who make quality knowledge contributions, along with healthy competition (Hamari et al, 2014).

However, the relationship between gamification and employee quality knowledge contribution is crucial for today's businesses, particularly in the service sector. Service demand is changing, and organizations face a competitive challenge in developing new ideas to meet these demands. Given this context, it would be intriguing to investigate the Bangladesh service industry, as the country's economy is growing in tandem with the shift in consumer preferences.

2. Literature Review and Hypothesis Development

2.1 Quality of Knowledge Contribution

In recent years, organizations have substantially improved how they manage knowledge to help their businesses, but organizations still need to encourage employees to contribute more knowledge (Riar et al, 2022; Suh and Wagner, 2017). Gamification motivates and engages employees directly about their knowledge contribution. Organizations rely on their employees to provide data that can be used to develop in areas where they are deficient and to maintain success in areas where they excel (Bizzi, 2023). Knowledge contribution encompasses a wide range of activities, starting with contributing new ideas, refining old ideas, creating documents, assisting colleagues, and even teamwork (Suh and Wagner, 2017). Knowledge quality is regarded as a greater asset when making decisions than knowledge quantity. Knowledge quality is determined by the extent to which the knowledge is utilized and how it contributes to the organization's growth (Suh and Wagner, 2017). Suh and Wagner also discovered that gamification in the form of reward and competition encourages employees to acquire and contribute more knowledge to the organization (Lier and Breuer, 2020). Therefore, it is expected that the greater the use of gamification techniques in a business, the higher the quality of the knowledge contributed by its employees.

2.2 Gamification

Diverse industries have extensively implemented gamification to increase employee engagement. Gamification is used extensively in businesses to motivate employees because it makes many activities more enjoyable. Nevertheless, gamification needs to be more frequently understood. Gamification does not involve transforming a business or website into a game (Bizzi, 2023). According to Harris and O'Gorman (2014), gamification is "the presence or addition of game-like qualities to anything that is not traditionally considered a game." Gamification is not a game but an activity that employs game design principles (Riar et al, 2022). Gamification is a crucial concept that businesses should be familiar with. According to Harris and O'Gorman (2014), gamification is no longer merely a trendy business term. It has helped companies improve employee engagement, consumer loyalty, and revenue. The advantages of gamification are immense. Riar et al (2022) note that these include making monotonous tasks entertaining, making hard work pleasurable, increasing concentration on the job, enhancing employee contribution, assisting in maintaining motivation and satisfaction, and, most importantly, making employees more active in knowledge contribution. However, because gamification has been misconstrued, many strategies have failed to achieve their objectives. In late 2012, Gartner published a report predicting that, by 2014, the inadequate design would render 80 percent of gamified business strategies obsolete (Harris and O'Gorman 2014). Furthermore, critics have asserted that the increased visibility of employees' activities will create problems, resulting in unproductive employees and harming the organization's reputation (Suh and Wagner, 2017). Therefore, businesses must employ gamification with caution. Gamification implementations are as diverse as the businesses they serve and the business requirements they address (Harris and O'Gorman, 2014). This research paper examines the various approaches of gamification (e.g., rewardabilty, competition) to the service industry to explore the quality knowledge contribution of the employees.

2.2.1 Rewardability

Many gamification approaches focus on the reward system, where employees are given a material or non-material reward after accomplishing a particular task. Suh and Wagner provide one such example of rewardability: contribution of knowledge rewards the employees with points, and after reaching a certain

milestone, they are even given badges or trophies; they can also compete in challenges or set their own goals, which would reward more points (Riar et al., 2022; Suh and Wagner, 2017). Humans love positive feedback, and getting rewarded would encourage them to repeat even the most tedious tasks (Caton and Greenhill, 2014). Social media applications have already jumped in, and their reward systems which are more commonly found in the gaming world has kept more and more user enticed in their applications (Suh and Wagner, 2017). Gamification is tied closely to the reward system. Most computer games challenge players to complex tasks with rewards and penalties; therefore, even after repeated failures, the player stays engaged in the game (Caton and Greenhill, 2014). The quicker the feedback in terms of reward is given, the more focused the user stays on the activity, and this response has improved the hedonic value of performing required activities by quite a lot (Suh and Wagner, 2017). However, ensuring that the rewardability structure is sustainable and that the employees are not only doing the task to achieve rewards is important. Therefore, the study finds:

H1. The rewardabilty practice will increase the willingness of employees' quality knowledge contribution

2.2.2 Competition

Competition adds a new spark to gamification. Like the excitement of jumping to the top of the leaderboard in a game, competition makes employees' jobs more enjoyable. It incentivizes them to work harder to be ahead of their colleagues. Humans always have an innate desire to compete and be recognized for their achievements (Caton and Greenhill, 2014). Competition is, therefore, perfect for satisfying that desire as it helps them to compare their performances with everyone else, keeping them more motivated as they can challenge each other to achieve the best score in any given activity (Riar et al., 2022; Suh and Wagner, 2017). The effect of the competition is seen more in male employees, who are more motivated to stand out from the crowd (Lier and Breuer, 2020). The competition also helps people feel in control and allows them to introduce their ideas while working with others (Suh and Wagner, 2017). Gamification use has been proven beneficial in all workplace settings (Lier and Breuer, 2020). The friendly competition among employees has been successful because it induces teamwork at the end of the day and motivates employees to work positively on the project (Lier and Breuer, 2020). Despite all the positives of competition, this gamification approach must be carefully used. Employee motivation may be negatively affected as the pressure of competition may decrease creativity and limit the employees into a bubble, leading to less creation of new ideas (Suh and Wagner, 2017).

Thus, this study hypothesizes:

H2. The competition will increase the willingness of employees' quality knowledge contributions.

The impact of gender on the connection between gamification and quality knowledge generation is also a topic of debate. Males and females share some social and biological features used to classify gender. According to Hasan et al. (2022) and Kanter (1997), gender diversity in management practice is a demographic issue that is generally recognized. For instance, Hasan and Islam (2022); Eagly and Carli (2003) suggested that male staff members have knowledge sharpness and the ability to logically and analytically reason more than female staff members. On the other hand, female workers are preferable to male workers when establishing connections and maintaining positive relationships. More significantly, men and women behave differently in various social and cultural contexts. Therefore, this study also attempts to observe whether the male and female groups respond differently while considering gamification elements in their quality knowledge contribution.

3. Methodology

As the population of interest, this study concentrates on employees of service organizations, particularly those working in banks, telecom companies, hospitals, etc. This selection is based on the fact that these respondents are the largest contributors to the service sector in Bangladesh and are suitable for the study. Data were collected from respondents at various service organizations using a structured questionnaire. The questionnaire contained a measurement scale for rewardability, competition, and contribution of high-quality knowledge. The survey items were adapted from previous studies by Tang and Zhang (2019); Adornes, and Muniz (2019); Zeng, Tang and Wang (2017); Suh and Wagner (2017), with all items evaluated for internal consistency using Cronbach's alpha on a five-point Likert-type scale. PLS-based SEM was also used in this study. In this investigation, WarpPLS 8.0 was used to analyze the SEM. This study also introduces income and age as control variables to address the diverse thoughts. Questions regarding age and income are resented numbers with intervals.

4. Result

4.1 Sample Characteristics

A total of 170 samples were collected from various service organizations in Bangladesh, with 75 samples being male and 95 being female. The participants were from different age groups, with 28.2% belonging to the age group of 15-25 years, 39.4% falling in the age bracket of 26-35 years, 24.1% belonging to the age group of 36-45 years, and the remaining 8.2% of participants were aged above 46 years. In terms of income, 21.2% of the participants earned between 21000-30000, 23.5% earned between 31000-40000, 21.2% earned between 41000-50000, and the remaining 34.1% earned a salary of 50000 or above per month.

4.2 Validation and Measurement Model

This study confirms both convergent and discriminant validity. The factor loading presented in Table 1 shows adequate convergent validity since the loading range from 0.541 to 0.861, as approved by Hasan et al. (2022). In SEM analysis, latent variables are reliable if their Cronbach alpha is above 0.50. This analysis shows an acceptable range on Cronbach's alpha (0.563–0.592) and composite reliability (0.786–0.781). All variance inflation factors (VIF values) in Table 1 are less than 5, indicating no multicollinearity.

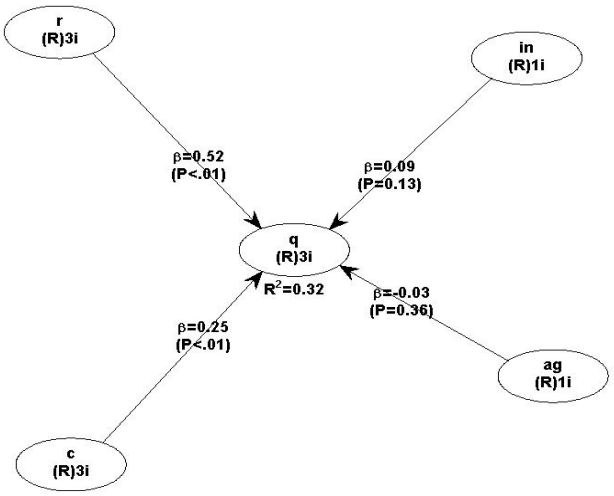
Table 1: Convergent and Discriminant Validity Measures

Latent Variable Items	Loadings	R-squared	Adjusted R-squared	Composite reliability	Cronbach's alpha	Average variances extracted	Full collinearity VIFs
Rewardabilty							
R1	0.800	0.320	0.311	0.774	0.563	0.539	1.313
R2	0.809						
R3	0.569						
Competition							
C1	0.742			0.786	0.592	0.550	1.054
C2	0.752						
C3	0.732						
Quality Knowledge Contribution							
Q1	0.861			0.781	0.576	0.551	1.348
Q2	0.541						
Q3	0.786						

The measurement model of the study also confirms the Discriminant validity as all square roots of average variances extracted in Table 2 are accepted, as Hasan et al. (2021) suggested.

Table 2: Correlations and Square Roots of AVES

	Rewardabilty	Competition	Quality Knowledge Contribution
Rewardabilty	0.734		
Competition	-0.053	0.742	
Quality Knowledge Contribution	0.469	0.17	0.742



Notes: r= Rewardability, c= Competition, q= Quality knowledge contribution, in= Income, ag= Age

Figure 1: Estimated Parameters in the Structural Equation

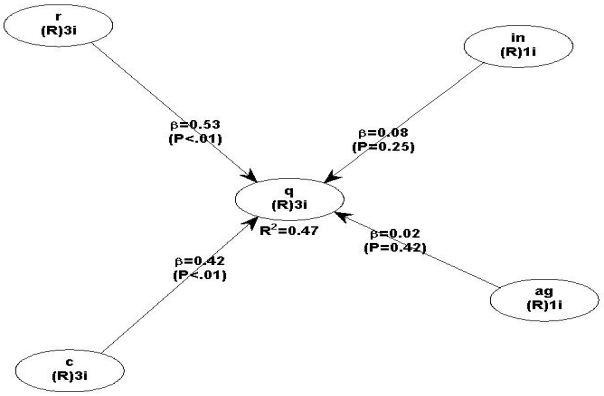


Figure 2: Estimated Parameters in the Structural Equation Model Based on Male Response

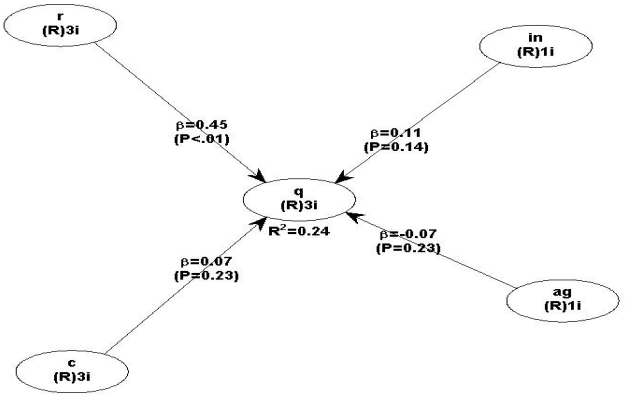


Figure 3: Estimated Parameters in the Structural Equation Model Based on Female Responses

The software utilized in this study measures three fit indices that are significant in variance-based Structural Equation Modeling (SEM) analysis, including average path coefficient (APC), average R-squared (ARS), and average inflation factor of variance (VIF) (Hasan and Islam 2022; Kock, 2011). The values obtained for the three indices are as follows: APC = 0.222, P = 0.011; ARS = 0.321, P < 0.001; and AVIF = 1.039. The results indicate a

good model fit with the data (statistically significant APC and ARS) and low overall collinearity (AVIF < 5) (for other indices, see Table 3).

Table 3: Model fit and Quality Indices

Measurement	Result	Remarks
Average path coefficient (APC)	0.222	P=0.011
Average R-squared (ARS)	0.321	P<0.001
Average adjusted R-squared (AARS)	0.305	P<0.001
Average block VIF (AVIF)	1.039	acceptable if <= 5, ideally <= 3.3
Average full collinearity VIF (AFVIF)	1.306	acceptable if <= 5, ideally <= 3.3
Tenenhaus GoF (GoF)	0.484	small >= 0.1, medium >= 0.25, large >= 0.36
Sympson's paradox ratio (SPR)	0.750	acceptable if >= 0.7, ideally = 1
R-squared contribution ratio (RSCR)	0.992	acceptable if >= 0.9, ideally = 1
Statistical suppression ratio (SSR)	0.750	acceptable if >= 0.7
Nonlinear bivariate causality direction ratio (NLBCDR)	0.875	acceptable if >= 0.7

The SEM analysis results are presented in Figures 1, 2, and 3, respectively, which depict a positive and significant relationship between rewardablity and quality knowledge contribution ($\beta = 0.52$, $P < 0.001$). Thus, we confirm Hypothesis 1, indicating that rewardablity confirms service organizations' quality knowledge contribution (QKC). The competition also impacted QKC positively (confirming Hypothesis 2, $\beta = 0.25$, $P < 0.001$). On the other hand, the study result shows some contrasting results while performing multi-group analysis where both the hypothesis for the male group was found significant with a better projection of H1 ($\beta = 0.53$, $P<0.001$) and H2 ($\beta =0.42$, $P <0.001$), respectively. Where female found H1 ($\beta = 0.45$, $P<0.001$) significant and H2 ($\beta = 0.07$, $P = 0.230$) found insignificant. Additionally, the effect of control variables, including Income ($P > 0.13$), age ($P > 0.36$) all-inclusive, male (Income ($P > 0.25$, age $P > 0.42$), female (Income $P > 0.14$, age $P > 0.23$) were also explained. The summary of the findings is also presented in Table 4.

Table 4: Path Coefficient and Significances

Path	Beta (*p*-value)	Supported or Not
H1: Rewardabilty → Quality Knowledge Contribution	0.52(<0.001)	Yes
H2: Competition → Quality Knowledge Contribution	0.25(<0.001)	Yes
Male Reflection		
H1: Rewardabilty → Quality Knowledge Contribution	0.53(<0.001)	Yes
H2: Competition → Quality Knowledge Contribution	0.42(<0.001)	Yes
Female reflection		
H1: Rewardabilty → Quality Knowledge Contribution	0.45(<0.001)	Yes
H2: Competition → Quality Knowledge Contribution	0.07(0.230)	No

5. Discussion

Gamification creates an environment that may make the work environment more pleasurable and vibrant for employees. Service organizations deem to be innovative for the customer preferences where quality knowledge contribution is fundamental to innovate new services for the customers. Therefore, gaining a competitive advantage and providing innovative service is challenging for organizations where engaging employees in contributing knowledge is a prerequisite. Different studies make various implications and highlight that the gamification approach attracts and engages employees in their work. The current study also finds these facts and wants to share the contemporary practices on post covid-19 to help the service organizations to develop their policies and strategies further to remain competitive in the market.

This study finds some interesting facts with its results exploring gamification in the Bangladesh context. This study explores rewardability and competition as gamification to assure quality knowledge contribution among service organization employees. The result of the study found that both rewardability and competition were related to the quality knowledge contribution behavior of the employees working in various organizations in Bangladesh. The result of the study also complies the prior studies of Riar et al. (2022), Jalili (2020), Suh and Wagner (2017), and Harris and O'Gorman (2014), where gamification is found to be an exciting concept of work which make the organization's monotonous tasks entertaining, making hard work pleasurable, increasing concentration on the job, enhancing employee contribution, assisting in maintaining motivation and satisfaction, and, most importantly, making employees more active in knowledge contribution.

Nevertheless, the study shares different results when comparing gender responses regarding gamification to quality knowledge contribution. Concentrating male group rewards and competition initiating gamification to sharing their knowledge was found significant, whereas, in the female group, it founds that females recognizing completion is a challenging issue in the Bangladesh context and makes insignificant relation to contributing their knowledge. According to Bizzi (2023), rewadabilty opens the opportunity for the employees to be appreciated for their jobs while gaining different points and recognition, which makes the monotonous or boring jobs interesting one where both groups agree to have this gamification mode in their jobs where competition makes different implication from the male and female perspectives. According to Caton and Greenhill (2014), competition sets the leaderboard in a game that excels the competition among colleagues to work harder and wants to be ahead of others. However, it will satisfy the individual's innate desire but create pressure in the jobs to reach this desire. In their study, Lier and Breuer (2020) found that male employees are more motivated to stand out from the crowd. The study results also comply with this fact for males, whereas females are not interested in this pressure game over their regular jobs in day-to-day transactions. Considering this finding, the service sector of Bangladesh is believed to be in quality knowledge contribution to their organizations through gamification. However, they are supposed to be certain of females' empowerment in policy and strategy-making to make the organization even more productive. The study result also could not find the impact of the control variables to share the diverse responses.

5.1 Implications and Future Research Suggestions

The significance of this research can be observed in several ways. Firstly, there need to be more studies on quality knowledge contribution in service organizations in Bangladesh, and this empirical research contributes to the advancement of theoretical knowledge on the subject. Secondly, this study stands out as the first initiative to our knowledge addressing gamification in the Bangladeshi context presenting service sector. The study tests a theoretical model and hypothesizes the relationship between gamification (rewardability and competition) and quality knowledge contribution. The results of this study also provide practical implications for the service organizations in Bangladesh, emphasizing the need to initiate gamification to enhance employee knowledge contribution to remain competitive in the market. Furthermore, Bangladeshi policymakers, academics, and industry experts can use this study's findings and future research to design a workplace practice or strategy that promotes viable quality knowledge contributions for service organizations.

In addition, the present study has identified various opportunities to conduct further research. It will examine the underlying causes for female participation in gamification to assure quality knowledge contribution in the current organizational setting in Bangladesh. Therefore, addressing the study's drawbacks, it would be beneficial to explore how other factors such as engagement, bullying, leadership, and workplace environment may be influential in exploring the knowledge contribution among the service sector employees in Bangladesh.

6. Conclusion

The present research has shed light on various literal constructs to emphasize the significance of quality knowledge contribution in service organizations in Bangladesh. Relating gamification with knowledge exercise is regarded as a crucial resource to enhance organizational performance and remain competitive in the market. Although the competition was found insignificant in knowledge contribution from the female group, it may not suffice to discourage the quality knowledge contribution in organizations. Therefore, to establish a successful practice in service organizations in Bangladesh, it is imperative to consider the overall impact of gamification to maximize its potential impact on employee quality knowledge contribution.

The present study has several limitations worth mentioning. Firstly, the sample size and sampling method employed may not be sufficient to confirm the generalizability of the findings. Secondly, the challenge of obtaining responses also poses limitations to the study. Lastly, it was not feasible to cover all service

organizations in Bangladesh. However, it is worth noting that this methodology is commonly utilized in empirical research (Hasan et al, 2022). Given these limitations, we recommend that future research endeavours consider other factors contributing to quality knowledge exploration in Bangladesh's service and manufacturing organizations.

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