The Gamified Effect: A Study of the Role of Gamification as a Training Method and the Mediation Influence of Green Organization Culture in Increasing Organizational Environmental Citizenship

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Abstract

Concern for the environment is becoming an integral component of a company's human resource management strategy, particularly when it comes to enhancing employee conduct on the job. As a result, the organisational citizenship behaviour towards the environment (OCBE) is attracting a growing number of management specialists. However, there are research gaps in published studies concerning the relationships between gamification training style, organisational culture, and OCBE, especially in Indian organisations. This study aims to evaluate the effects of green practises on OCBE and the mediating function of green organisational culture in connection to the effect of gamification training on OCBE. To evaluate these connections, a survey-based quantitative method is created and implemented. PLS-SEM 3.0 is utilised to analyse the data. The statistics suggest that gamification training has no direct influence on OCBE. Through the mediation of an organization's Green culture, gamification training has a good effect on OCBE. Our study finishes with a discussion of research limitations, suggestions for future research, and implications for Indian organisation techniques targeted at fostering voluntary eco-behavior among employees.

Keywords- Sustainable HR Tool, Green organization Culture, Gamification, Training, OCBE, Gamification Learning Theories.

Introduction

In recent years, gamification has received substantial attention. Businesses are beginning to recognize that gamifying certain procedures can make activities more interesting and engaging. As a result, a growing number of firms are investigating gamification as a means to motivate stakeholders and improve the user experience. There is evidence that gamification plays a unique function in making training more sustainable, which has its own effects on organizational development (Nacke & Deterding, 2017, p. 450-454). Gamified features are now more frequently used to engage stakeholders in corporate operations that are more ecologically friendly. To understand the potential of gamification in the context of sustainability, one must first understand the need for corporate sustainability, the required cultural shift to achieve it, and the mechanics and principles that make gamification a useful tool for assisting it (Robson et al., 2015, p. 411-420).

Sustainability is described in the Brundtland report as providing the needs of the present generation without making it more difficult for subsequent generations to do the same. Triple bottom line refers to the three pillars of sustainable development, which are environment, society, and economy. All three pillars should be evaluated and reflected in a company's decisions and actions. This implies that

businesses must consider not just their financial profit, but also their impact on organisations and society by actively promoting the common good (Elkington, 1998, p. 37-51).

For an environmental management strategy to be effective, human resource management must play a role. Since Renwick et al. (2012) and Jabbour and Santos (2008) defined "environmental" or "green" human resource management (GHRM), other academics have become interested in the subject (e.g., Ren et al., 2017; Nejati et al., 2017; Tang et al., 2017; Pham and Tuckova, 2017). According to Renwick et al. (2012), gamification training for the environment and fostering a green culture are crucial green practises for constructing a green development plan. A survey of the relevant literature reveals that green organisational culture has overlooked past research.

There are research gaps in the published papers currently available. First, in accordance with Emerson's (1976) social exchange theory, businesses concentrate on providing employees with training and development opportunities via organisational culture development, which can boost reciprocal employee behaviours (e.g, organisational citizenship behavior-OCB). Hence, environmental management scholars have proposed that employees can engage in environmental organisational citizenship behaviour (OCBE). To clarify the impact of both green practises on OCBE, however, has been the topic of very few studies conducted previously. Only the study by Pinzone et al. (2016) demonstrates that practises to improve green competence have a large and positive impact on OCBE.

Second, according to the "Ability, Motivation and oppoutunity" framework (Blumberg and Pringle, 1982), it is expected that the interplay of practises to provide opportunities for employees (e.g., organisational culture) and to develop employees' abilities (e.g., gamification training programme) will improve organisational performance and human resource management outcomes that organization citizenship behaviour. According to Bos-Nehles et al. (2014), businesses prioritise providing chances (e.g., developing organisational culture) for individuals, which is crucial for enhancing the impact of skill on the achievement of human resource management implementation through gamification training. Hence, a green corporate culture may reduce the effect of gamification training on OCBE in a green setting. Despite the fact that this is acknowledged, there is a dearth of published research investigating this constraint.

Concern for the environment is becoming an important part of an organization's human resource strategy, especially when it comes to improving how employees treat the environment at work. According to a previous study, gamification training and organisational citizenship behaviour for the environment (OCBE) in the service industry have a strong correlation (Pham et al., 2018, p. 1174-1189). It appears that no previous studies have considered the impact of gamification on OCBE, based on a review of the relevant literature. In the meantime, gamification has become a hot issue among human resource professionals in search of a Sustainable Strategy (Kumar et al., 2021). Neither of the aforementioned research, however, emphasises the function of gamification in training and development as an appropriate sustainable tool, nor the direct influence of gamification on green organisation culture with OCBE. The purpose of this study is to investigate how gamification and green organisational culture effect OCBE in order to fill a research vacuum. The following research enquiries have been conducted:

RQ1 - Does green organisational culture and gamification training have any effect on OCBE in companies that employ a gamification training system?

RQ2: Can a green company culture lessen the impact of gamification training on OCBE in firms that employ gamification training systems?

The findings are advantageous in the following ways. Initially, this study explores, via the lens of social exchange theory, the effect of two environmentally friendly behaviours on OCBE. In addition, the study considerably contributes to our understanding of the mediating effect of green organisational culture on the effect of gamification training on OCBE as measured by the AMO framework. Second, the

conclusion includes a study that shows how important it is for these green practises applications to assist employees be more eco-friendly through gamified training.

Literature Review

Definition of Green organization culture, Gamification training method, and organizational citizenship behavior for the environment.

Green organisation culture - Organizational culture is an important intangible asset that plays a critical role in the growth of its strength. Hatch (1993) says that most people think of corporate culture as a set of core values and beliefs.

Gamification Training: When it comes to training, "gamification" means using game-like elements, rules, and mechanics. Every training programme should try to establish a stimulating, entertaining, and effective learning environment. Training and development are more efficient when they are gamified.

Organizational citizenship behaviour for the environment - Organizational citizenship behaviour (OCB) refers to all the good and constructive employee activities and behaviours that extend beyond their formal job description.

Effect of green organizational culture and gamification training on organizational citizenship behavior for the environment

Isensee et al. (2022) claim that when an employee uses information technology, he or she is supposed to promote a sustainability orientation throughout all dimensions of company culture, as opposed to simply advocating sustainable behavior. Markopoulos et al. (2022) describe the same in their examination of corporate strategies in which environment, social, and governance have been established utilising gamification techniques for the efficacy of corporate cultural sustainability. As a result, we propose the following hypotheses:

H1: Gamification training has a positive impact on Green Organization Culture.
Similarly, Pham et al. (2018) suggest that the green message of top management should be delivered to employees in a manner that heightens their knowledge and focuses their attention on environmental conservation. As a result, individuals are likely to pay more attention and care to green activities, leading to an increase in eco-friendly behavior. In supply chain management research (Azam et al., 2022), It was shown that a green organizational environment at work can be created with the use of supply chain management approaches and that this has a positive impact on OCBE, thereby establishing the aforementioned thesis. Therefore, OCBE needs to foster a green corporate culture to succeed. This has led to the following speculation:

H2 Organizations with a green culture are more likely to exhibit environmental citizenship.

Since many research have examined the relationship between gamification and consumer environmental citizenship behavior, this study uses a unique approach to examine the relationship between gamification training and organizational environmental citizenship behavior. Thus, hypothesis: *H3: Gamification training improves environmental organization citizenship.*

The mediating role of Green organization culture

According to (Maurik & Hostettler, 2020), gamification helps to include and engage employees at all levels by giving them a voice and promoting bottom-up initiatives, thereby making employees feel heard by management. The literature emphasizes the need for employee participation when pursuing business sustainability (Baumgartner, 2009). As stated previously, there are numerous studies relating to green organizational culture and OCBE. However, there are also studies relating to gamification and consumer citizenship behavior. Therefore, the author is conducting new research to determine whether the green organizational culture will strengthen the relationship between gamification training and OCBE.

H4: Green organization culture positively mediates the connection between gamification training and environmental organizational citizenship behavior.
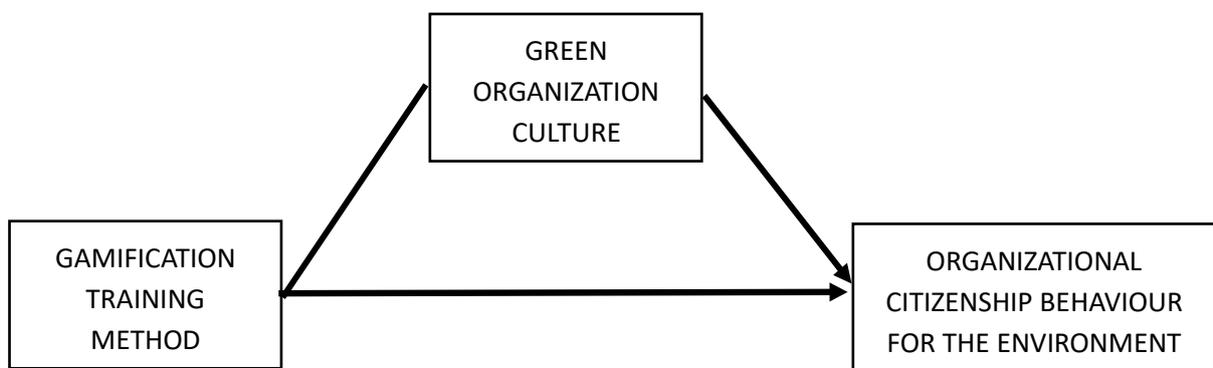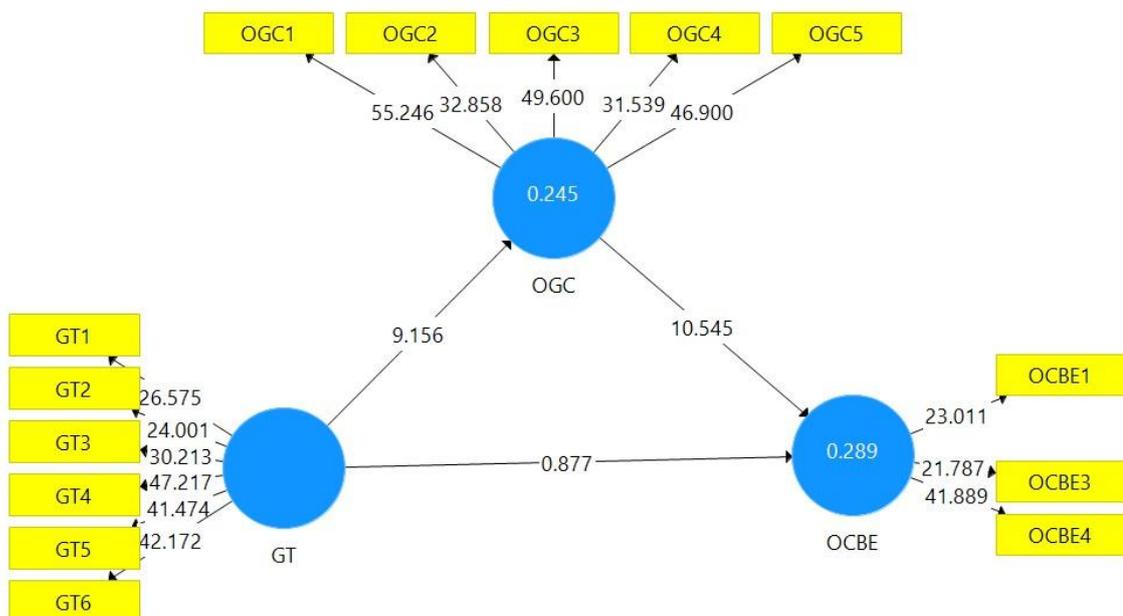

Figure 1 Conceptual Model

Figure 2 Path Model

Methodology

In the study, a questionnaire survey and the "convenience sample" method were used as parts of a quantitative approach. The survey was sent out over the Internet, and it was made clear that it was for people whose organizations use a gamification system. Based on the sample-toitem ratio given by (Memon et al., 2020), the sample size has been set at a minimum of 190 samples, but the data screen shows that 300 samples are eligible for data analysis. Smart Pls 3.0 has been used as software for looking at statistics. In order to measure the variables, the following scales were chosen and used:

1. OCBE- (Boiral and Paille 2012)
2. Culture of Green Organizations - (Jabbour et al., 2010) (Masri and Jaaron, 2017)
3. Gamification Method for Training Daily et al. (2012) and Jabbour (2015)

Data Analysis and Result

The data sets were studied by using SPSS version 20.0 and Smart-PLS version 3.3.3. The participants in this research are Indian employees who are employed in different organizations. The survey was circulated through a web-based application like LinkedIn and what's app group, from the above platform total of 300 sets of reliable data were received. After the screening of data, all the data are valid records.

According to Table I, demographic characteristics, 45 percent of respondents are women and 55 percent are men. The majority of respondents are in the 18–39 age range (47 *percent)*. 61.9 percent of respondents had postgraduate degrees as their highest level of education. 7.7 percent of respondents said they were trainees, 18.5 percent were in lower management, 43.5 percent were in middle management, 23.1 percent were in top management, and 7.3 percent were retired but part-time workers.

Table 1 Respondent Demographic Profile

	Demographic	Frequency	Percentage
Gender	Male	165	55
	Female	135	45
Age	18-39 (Young Adults)	140	47
	40-49 (Early Middle Aged Adults)	83	28
	50-64 (Late Middle-Aged Adults)	41	14
	65-Above (Old Adults)	36	12
Job Nature	Trainee	20	7.7
	Lower Management	48	18.5
	Middle Management	113	43.5
	Top Management	60	23.1

	Retired But Part Time worker	19	7.3

Factor Analysis

Kaiser Meyer Olkin (KMO) measures sampling adequacy, which determines if the replies provided with the sample are sufficient or not. For factor analysis to proceed satisfactorily, the KMO value should be close to 0.5. According to (Dziuban & Shirkey, 1974, p. 358-361), values for KMO should be at least 0.5 (just acceptable), between 0.7 and 0.8 (acceptable), and beyond 0.9 (excellent). Looking at table II below, the KMO score is 0.919, which is quite acceptable.

As per (Dziuban & Shirkey, 1974, p. 358-361), the significance level for Bartlett's test below .05 is suggested, looking at table 2 below, Bartlett's test is 0.000, and therefore by looking at factor analysis author concludes that there is a substantial co-relationship in the data.

Table 2 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.919
Bartlett's Test of Sphericity	Approx. Chi-Square	3256.320
	df	171
	Sig.	0.000

Spearman Correlation

The amount of agreement among respondents was measured using Spearman's rank correlation. Spearman's rank correlation is a non-parametric method that does not require the premise of population normality (Fadiya et al., 2012); therefore, it is acceptable for rating things. Table 3 presents the results of this SPSS study at a significance level of 0.01%. (two-tailed). The table presents the correlation coefficients for the three pairs of respondents: gamification training, organisation green culture, and organisation environmental citizenship behaviour. Significant loadings of 53.6%, 57.2%, and 61.1% were obtained from the statistical analysis, showing a substantial association between the variables.

Table 3 Spearman Correlation

	Gamification Training	OGC	OCBE
Gamification Training	1	.536**	.611**
OGC	.536**	1	.572**
OCBE	.611**	.572**	1
**. Correlation is significant at the 0.01 level (2-tailed).			

Outer loading of three reflective construct

In PLS-SEM, reflective and formative constructs are used, depending on how they are measured. This is affected by how the construct is thought of and what the research goals are (Hair et al., 2013). This study used a measuring method called "reflecting." All of the study's latent constructs must be reflective, according to the reflective model. To judge the reflecting measurement model, it must be tested for reliability and validity to see if it can be used for PLS-SEM research. (Hair et al., 2011). Before figuring

out how well all of the instruments work together, the outer measurement model is looked at. This is looked at using three parameters: "Factor loadings," "Composite Reliability," and "Average Variance Extracted" (AVE). So, the "factor loadings" of all three reflective constructs (Gamification training, Organization Green Culture, and OCBE) are looked at as the first step in evaluating the measurement model. Out of 19, 18 items' loadings were close to or even higher than the recommended cut-off value of 0.7 for a good outer measurement model, and the last one (OCBE2) was left out because its value was less than 0.7. (Chin et al., 2008 & Hair et al., 2013). So, after thinking about all of the outside loads, the authors come to the conclusion, shown in Table 4, that the outer model is of average quality. In the next table, you can see exactly which parts of the original instruments were used and how their outer loadings were calculated using PLS-SEM for the outer measurement model. After looking at the outer loadings of all the study's parts, the next step is to calculate the average variance from the data to figure out Composite Reliability (CR) and convergent validity (AVE). In this investigation, no items were taken out because there was no lower loading.

Table 4 Outer Loadings

Nos	Items	Gamification Training (GT)	OCBE	OGC
GT1	An adequate amount of gamification training in environmental issues is provided for employees.	0.735		
GT2	Employees can get opportunities to be trained on environmental issues through gamification method.	0.722		
GT3	Employees receive environmental gamification training frequently.	0.770		
GT4	Employees use their environmental gamification training effectively.	0.848		
GT5	Employees have opportunities to use their environmental gamification training.	0.831		
GT6	There is adequate evaluation of employee's performance after environmental gamification training.	0.837		
OCBE1	I voluntarily carry out environmental actions and initiatives in daily work activities		0.792	
OCBE3	I actively participate in environmental events organized in our organization		0.784	

OCBE4	I undertake environmental actions that contribute positively to the image of our organization		0.879	
OGC1	The environmental dimension is considered one of the organizational priorities			0.872
OGC2	Organizational vision/mission statements include environmental improvement			0.795
OGC3	Top management clarifies information and values of environmental management throughout the organization			0.877
OGC4	Top management develops punishment system and penalties for noncompliance in the environmental management			0.831
OGC5	Top management actively supports environmental practices			0.860

Reliability and Convergent Validity

Gefen et al. (2003) say that the buried structures' loading indicator should be greater than 0.70. Loading factor indicators with a value of less than 0.40, on the other hand, must be taken out. Table 5 shows that all of the reliability indices in this study, including Cronbach's alpha, are greater than 0.7. Gefen and his colleagues say that the composite dependability (CR) should be higher than 0.70. Table 5 shows the data that backs up the specific steadiness measurement model for composite reliability, which is more than 0.7. The goal of evaluating Average Variance Extracted (AVE) was to figure out how indicators and their hidden structures relate to each other. Hair et al. (2013) say that AVE shows how much an unknown idea is behind the indicator's inconsistent behaviour. To have good blended validity, each concept must explain more than half of the differences between the chosen indicators (AVE > 0.50). Table V shows that the AVE value for each building is more than 50%.

Table 5 Reliability and Convergent Validity

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
GT	0.877	0.879	0.911	0.671
OCBE	0.770	0.862	0.860	0.672
OGC	0.902	0.903	0.927	0.718

Discriminant Validity

By separating the relationships between levels of possibly covering them, discriminant validity reveals the number of indicators that are constrained across various constructs or measures of explicit considerations. HTMT was added to evaluate the discriminant validity further. In accordance with Hair

et al. (2013), the HTMT cut-off should be smaller than 0.900. In Table 6 are the findings of HTMT with values below 0.900, indicating that the constructs are acceptable.

Table 6 Heterotrait-Monotrait Ratio

	GT	OCBE	OGC
GT			
OCBE	0.296		
OGC	0.556	0.606	

Model Fit

Hair et al. (2013) say that the collinearity statistics, or Variance Inflated Factor (VIF), must be 5.0 or less for the model to be free of multicollinearity problems. It can be shown from Table 7 that the Variance Inflated Factor (VIF) is under 5.0. The result then illustrates that the various model fit files meet the recommended standardised criteria and proves that the examination model proposed in this inquiry or study provides the best fit to the gathered data. Where Items indicates the exact number of survey questions employed. Abbreviations include Gamification Training (GT), Organization Green Culture (OGC), Organization Citizenship Behaviour for Environment (OCBE), and Question Number (Numerical).

Table 7 Collinearity Statistics

	VIF
GT1	1.577
GT2	1.633
GT3	1.767
GT4	2.649
GT5	2.457
GT6	2.448
OCBE1	1.703
OCBE3	1.662
OCBE4	1.442
OGC1	2.663
OGC2	1.892
OGC3	2.870
OGC4	2.385
OGC5	2.446

Inner Model Fit Evaluation

The author used the Coefficient of Determination (R^2) and Predictive Relevance (Q^2) to test how well the inner model worked and decide whether to accept or reject the hypothesis (Kante, et al., 2018). According to (Kante et al., 2018), the values of Q square were categorised as Small (0.02), Medium (0.15), and Large (0.35). This study (Table 8) shows that the model has a large predictive relevance. R squared should be more than 0.100. (Ringle et al., 2018) Levels that are important are around 0.67, while normal levels are around 0.333 and weak levels are around 0.190. (Ringle et al., 2018) Table 8 shows that the measurements for the endogenous construct study are correct.

Table 8 R Square and Q Square

	R Square	Q Square
OCBE	0.289	0.177
OGC	0.248	0.175

Hypothesis Testing

In this study, the hypotheses have been accepted by assuming a Z Statistics value more than 1.6445 and, consequently, a probability value less than 0.05, which indicates that it is fairly significant. According to Hair et al. (2013), for the hypothesis to be accepted, the Z statistic must be more than 2.33 and the probability value must be lower than 0.01. The Z statistic has been computed by dividing the sample size () by the standard deviation (STDEV). Table 9 demonstrates that

Table 9 Hypothesis Testing

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision	F square	Effect Size
GT-OGC	0.498	0.494	0.056	8.887	0.000	Supported	0.329	Strong
OGC-OCBE	0.525	0.531	0.046	11.375	0.000	Supported	0.292	Strong
GT-OCBE	0.024	0.022	0.053	0.450	0.653	Not Supported	0.001	Very Weak
GT-OGCOCBE	0.261	0.261	0.031	8.539	0.000	Supported	NA	Full Mediation

Findings

Each one of the research constructs' factor loadings exceeds the 0.7 threshold. In addition, the AVE values for each construct exceed the criterion of 0.5 (Hair et al, 2011). Cronbach's alpha and CR values better than 0.7 indicate internal consistency for measurement model dependability across all constructs. The direct effect relationship and mediation effect were analysed using the bootstrapping method, and it was determined that hypotheses 1, 2, and 3 are supported and the effect size exceeds the threshold limit for a moderate effect. It has been demonstrated that the mediation effect of hypothesis 4 is complete.

Discussions

This study looks at the direct effects of gamification training and an organization's green culture on OCBE. Also, the importance of green organisational culture is made clear as a way to explain the effect of gamification training on OCBE. Two research problems (RQ1 and RQ2) were looked at using PLS-SEM methods.

According to the results, gamification training has its own positive effects on OCBE, and the OGC is in charge of balancing those effects. The result matches what Daily and Huang (2001) thought and what Pinzone et al (2016), found. For example, Pinzone et al. (2016) found that employees are more likely to take part in environmental activities at work when an effective training programme helps them become more green-competent.

According to the authors of this study, organization should utilise gamification to provide environmental training because it will raise workers' OCBE. By doing show it may increase employee environmental knowledge and skills which intern solves environmental problems.

This will ensure organization responsibility towards environment in long run (Teixeira et al., 2012; Jabbour et al., 2010; Vidal-Salazar et al., 2012; Jabbour, 2015).

Similar to what other research has found (e.g., Zientara and Zamojska, 2016; Chan et al., 2017), this study also founds there is a positive relation exist among organization green culture and OCBE, conclusion shows how important it is for an organisation to have a green atmosphere and for top management to support environmental policies that encourage employees to act in an eco-friendly way on their own. Also, the results suggest that organisations should have a clearly defined green strategy through their vision/mission and the green support of the executive level, as well as an emphasis on environment-focused goals, which are important for getting more employees involved in eco-activities at work.

Based on the aforesaid findings, even today's context social exchange theory can be employed in the research areas of gamification training, green organisational culture and OCBE. Likewise seeing the positive affect of organization culture on OCBE, researchers can make use of
"AMO" frame work in their research works (Blumberg and Pringle, 1982; Lepak et al., 2006).

Practical Implication for Organization

This study proposes the increasing relevance of environmental gamification training in firms today, promoting a green organizational culture in the workplace is an essential element of environmental organisational citizenship behaviour. Through green organisational culture, gamification training can be essential in boosting the OCBE of employees. This study has major practical consequences since it demonstrates that connecting the gamification training of the environment with green organisation culture and OCBE leads to successful implementation among employees. In addition, it underlines the importance that employee motivation from gamification training plays in promoting green workplace practises. Attempts to avoid conflicts with stakeholders and gaining support and a good attitude towards the implementation of environmental processes represent a significant obstacle for contemporary organisations. This study proposes the answer of implementing gamification training in environmental practises for the implementation of specific environmental measures in organisations by highlighting these issues. Particularly, this can be achieved through the use of gamification features such as points, badges, and leaderboards (Wang et al., 2022), which have been used in corporate training and fostering a sense of awareness of the importance of environmental issues among employees. For example, the world's largest gamification solution provider, The Octalysis Group, showed that gamification can be used to improve employee productivity, engagement, and satisfaction at work by making repetitive tasks into games, adding social features to tasks to make them feel more like a community, giving tasks a higher sense of purpose beyond their immediate purpose, and using gamification to train new employees in a fun way (Chou, 2022). Moreover, by implementing an internal gamification training programme for developing environmental practices to build a green mindset, organization can encourage employees to engage in green activities and maintain OCBE.

Limitation and Further Study

Standard Sample has been collected from organisations with a gamification training system; in future research, a bigger sample size can be used to provide a deeper understanding of the link between the dimensions. But non-gaming organisations are urged to embrace the gamification training system and investigate the influence of organisation citizenship behaviour on the environment. Secondly, using the study's findings as a foundation and considering the variables, the organization's green culture could be

used as an independent variable in future research to examine the behavioural impact of gamification training on employees' green performance management, green incentives, or green motivation, all of which lead to organisational citizenship behaviour for the environment.

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