

Where play become effective: The moderating effect of gamification on the relationship between work stress and employee performance

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Abstract

Gamification; use of games in the non-gaming contexts is satisfactorily tested for many contexts including education, training and performance. But the gamification was hardly tested for its moderating effect on established relationships. Hence, the aim of this research was to assess the moderating effect of the gamification in manipulating the association between work stress and employee performance. Using quantitative approach, a field survey of randomly selected 310 non-managerial employees from Sri Lankan commercial banks was conducted. Results confirmed the moderating effect of gamification towards work stress and employee performance relationship. Implications suggest to employ gaming elements in controlling the possible adverse effect of work stress on the employee performance.

Keywords: *Gamification, Moderator, Performance, Sri Lanka, Work Stress*

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INTRODUCTION

Mental and emotional pressure affect performance and productivity of a worker at the job. Work stress occurs when the requirements of the job do not match with the capabilities, resources aspiration or need of the worker. Consequently, it affects the overall job performances and branched in to lower performance, customer service problems, workplace conflicts, grievances and much more (Luthans, 2013).

The National Institute for Occupational Safety and Health (NIOSH) defines work stress as “harmful physical and emotional responses that occur when the requirements of the job do not match with the resources, capabilities or needs of the worker” (NIOSH, 1999, p.6). Furthermore, it states that the work stress leads to poor health and even injury (NIOSH, 1999). People those who undergo high level of work stress may not be satisfied with their job and therefore, they will not be contributing at their best towards organizational goal achievement. Frustration and burnout have been found to be the negative effects of extreme level of stress (Luthans, 2010, 2013; Premavathy & Rafiq, 2014). Further, Luthans (2010, 2013) has mentioned that too much stress from heavy demands, poorly defined priorities and little on the job flexibility may lead health issues. By leaving stress unaddressed, employers invite an increasing unscheduled time off, absence rates and health care costs result in lower performance. Stress is a situation where employee cannot cope with. Inconsistencies in employee’s knowledge, skills, abilities and attitudes as oppose to work demands and pressures in organizations found to be the lead cause of the stress (Jex & Bliese, 1999; Bliese & Jex, 2002; Ratnawat & Jha, 2014). It decreases the ability of employees to control and manage psychological pressures and cannot meet their job duties and responsibilities as a member of the organization.

Work stress is usually thought of negative terms. Stress builds negative work environment and create unsatisfied human behaviours. Stress can increase job dissatisfaction (Reilly, Dhingra and Boduszek, 2014). Job dissatisfaction may occur number of dysfunctional outcomes such as increasing employee absenteeism, employee turnover and decreasing employee performance (Kreitner and Kinicki, 2007). Consequently, work stress has greater impact on employee performance in an organization and very often reported to be negatively affecting the performance (Premavathy & Rafiq, 2014; Reilly, Dhingra and Boduszek, 2014; Kreitner and Kinicki, 2007). Yet, some authors emphasis the necessity of moderate level stress to achieve optimum level of performance (Luthans, 2010; Robbins, 2002). Once, the direction of the association is disregards there are ample empirical evidences to claim that the work stress is related with job performance.

In an ever changing, competitive economic setup, increasing the job performance of the employees and subsequently the performance of the organizations have become survival-critical. Consequently, any issue, direct or indirect, major or minor that is having an impact on performance is utter important for organizations. Based on previously

presented empirical evidences, work stress, among many factors predicts the employee job performance (either negatively or positively) to a greater extent (Maneze, 2005; French & Caplan, 1972; Arnold & Feldman, 1989; Palmer et al., 2004; Ahmed & Ramzan, 2013; Seibt, Spitzer, Blank & Scheuch, 2009; Garge, 2010; Fairbrother & Warn, 2003; Murphy, 2002; Behar & Newman, 1978; Ray, 1982). These individual level dysfunctional job outcomes are well-established to be affecting the job performance of individual employees. Additionally, they affect group/ organizational level outcomes too (Gabriele, et al., 2017). Hence, from the organizational stand point, the strength and the direction of the association between work stress and job performance has to be always manageable.

Gamification; use of games in the non-gaming contexts is satisfactorily tested for many contexts including education, training and performance (Deterding, Khaled, Nacke & Dixon, 2011). Many industrial bodies increasingly utilize the gaming principles for addressing numerous issues of organizational set ups (Aparicio, et al., 2012; Jaroslaw & Krzysztof, 2015). For instance, gamification is been applying in increasing the persistence of treatment plans of both kids and adults (Gerling & Masuch, 2011), raising the engagement of employees (Brewer, et al., 2011), involvement of e-business activities (Santhanam & Webster, 2017), improving student engagement in learning and educational environment (Dicheva, et al., 2015)...etc. Among the tested applications, educational and learning gamification applications were tested extensively. Importantly, gamification is found to be well work with non-attractive activities (Aparicio, et al., 2012; Deterding, Khaled, Nacke & Dixon, 2011; Hamari, et al, 2014). Further, it has been theoretically linked with several constructs, while empirical evidences for the same are prevalent frequently (Kim, 2008; Hamari, 2014; Huotari & Hamari, 2017). Importantly, it has been conceptualised in numerous areas those can be grouped in to three namely, motivational affordance, psychological outcomes, and behavioural outcomes (Hamari, 2014). Out of them behavioural outcomes so far received a greater attention by both scholars and practitioners (Santhanam & Webster, 2017). Surprisingly, as per Hamari et al (2017) only few studies have focused business or managerial- centred behavioural and psychological outcomes of gamification. Additionally, it was not tested for its intervening effect (neither mediation nor moderation). Meta-analysis review of Hamari et al. supported that no study yet used the gamification in controlling the effects of dysfunctional variables on the performance of a system. With the understanding of proven association between work stress and job performance, which is reportedly undesired in many contexts, this study attempted in investigating the role of gamification on the relationship between work stress and employee performance. Additionally, based on the reviewed sources, this is the first of this kind in the Sri Lankan organizational context, particularly in the banking industry of Sri Lanka is used in performing this scientific investigation. As such the main objective of the present study is to test the moderating effect of gamification on the relationship between work stress and employee performance.

Given the market competitiveness, and the burden on the organizational performance, work stress is a crucial issue for every industrial sector. Particularly, in Sri Lanka, employees of banking sector too are found to be undergo extreme level of work stress (Siyambalapitiya & Sachitra, 2019; Prabakaran & Panchanatham, 2014). This is due to the complexities and competitiveness of banking sector (Gabriele, Giulio, Milda, Chiara, Antonio, Javier, Annamaria and Nicola, 2017). Hence, the authors selected the employees of banking industry In Sri Lanka to perform the research study.

Next, the theoretical background of each key variable is reviewed.

THEORETICAL BACKGROUND

Employee performance

Employee performance is an individual level measure of work output. It is often known as performance or individual performance too. Job performance relates to the act of doing a job. On a very general level, job performance can be defined as “all the behaviours of employees engage in while at work” (Jex, 2002). It is true that a fair amount of employee’s behaviour displayed at work is not necessarily related to job specific aspects. Hence, job performance more commonly refers to how well someone performs at his or her work. Aguinis (2013) stated that “the definition of performance does not include the results of an employee’s behaviour, but only the behaviours themselves” (p.11). As to him, performance is about behaviour or what employees do, not about what employees produce or the outcomes of their work (Aguinis, 2009, 2013).

Job performance is a mean of reaching a goal or set of goals within a job, role, or organization (Campbell, 1990), but not the actual consequences of the acts performed within a job. Campbell (1990) affirmed that job performance is not a single action but rather a “complex activity”. Performance in a job is strictly a behaviour and a separate entity from the outcomes of a particular job which relate to success and productivity.

Individual performance is of high relevance for organizations and individuals alike. Showing high performance when accomplishing tasks results in satisfaction, feelings of self-efficacy and mastery (Bandura, 1997; Kanfer et al, 2005). Moreover, high performing individuals get promoted, awarded and honoured. Career opportunities for individuals who perform well are much better than those of moderate or low performing individuals (Van Scotter, Cross, & Motowidlo, 2000).

Every competitive organization need optimum employee performance, as successful organizational performance depends on employee’s creativity, innovation and commitment (Ramlall, 2008). Employee Performance is the successful completion of tasks by a selected individual or individuals, as set and measured by a supervisor or

organization, to pre-defined acceptable standards while efficiently and effectively utilizing available resource within a changing environment.

Performance is a multi-dimensional concept. On the most basic level, Borman and Motowidlo (1993) distinguish between task and contextual performance. Task performance refers to an individual's proficiency with which he or she performs activities which contribute to the organization's 'technical core'. This contribution can be both direct (e.g., in the case of production workers), or indirect (e.g., in the case of managers or staff personnel). Contextual performance refers to activities which do not contribute to the technical core but which support the organizational, social, and psychological environment in which organizational goals are pursued (Frese, Garst & Fay, 2000). It is too a multidimensional and not represent a single set of uniform behaviors (Van Dyne & LePine, 1998). On the other end, concept of adaptive performance is defined in general terms as an individual's ability to adapt to dynamic work situations (Hesketh & Neal, 1999). Employees demonstrate adaptive performance by adjusting their behaviours to the requirements of work situations and new events (Pulakos et al., 2000). Among many proponents, Pulakos et al. (2000) were the first to propose a global model of adaptive performance comprising of eight dimensions.

In recent years, researchers paid attention to specific aspects of task performance. For example, innovation and customer-oriented behaviour become increasingly important as organizations paid greater emphasis on customer service (Anderson & King, 1993; Bowen & Waldman, 2018).

Work Stress

Job stress or occupational stress differs from stress in general. Job stressors may refer to any characteristic of the workplace that poses a threat to the individual. These job stressors can relate to either job demands a person cannot meet or the lack of sufficient resources to meet job needs (French & Caplan, 1972).

Occupational stress has been variously described. French and Caplan (1972) have defined occupational stress as any characteristic of the job environment which poses a threat to the individual either excessive demand or influencing suppliers to meet his needs. Job stress is organizational in nature, and may occur when there is misfit between an employee's abilities and the skills required to perform the job effectively, Job stress is therefore an inevitable feature in almost all occupations, job stress is an awareness of feeling of personal dysfunction as a result of perceived conditions or happenings in the workplace, and individual's psychological and physiological reactions to these uncomfortable, undesirable or threatening workplace conditions.

People with varied individual's characteristics react to events in deferent ways. When job stress disturbs one's equilibrium, people frequently deviate from their normal behaviour that would affect their work outcomes. It is a condition arising from the interaction people and their job characterized by changes within people that force them to deviate from their normal functioning (Behar & Newman, 1978). Behar and Newman (1978) defined job stress as the interaction of work condition with worker's traits that changes normal psychological functions. This confirms that work stress affects the performance. Murphy (2002) defined job stress as work demands that exceed the worker's coping ability. It is often referred as an adaptive response to an external situation that results in Physical, psychological and/or behavioural deviation for organizational participants/employees. Stress is also viewed as the reaction of individuals to new threatening factors in their environment (Fairbrother, Warn: 2003).

As to Karasek (1979) this is important for both industry & employees. It is recognized world-wide as major challenge to individual mental and physical health, and organizational health (ILO, 1986). According to Arnold & Feldman (1989) stressed workers are also more likely to be unhealthy, poorly motivated, less productive and less safe at work and their organizations are less likely to succeed in a competitive market. Job stress is generally identified as a result of excessive pressure or demands placed on employees at work. In other words, work related variables (job stressors), when interpreted by the individual (cognitive interpretation), may lead to stress. As such, work stress meant to the harmful physical and emotional responses that occur when job requirements do not match the worker's capabilities, resources, and needs. This is may lead in reluctance to come to work and a feeling of constant pressure accompanied by the general physiological, psychological and behavioural stress symptoms (NIOSH, 1999). As per Larson (2004), people experience job stress when they have little or no control over their jobs or when work demands exceed their abilities. By some estimates work-related stress costs, the national economy a staggering amount in sick pay, lost productivity and health care and litigation costs (Palmer et al., 2004).

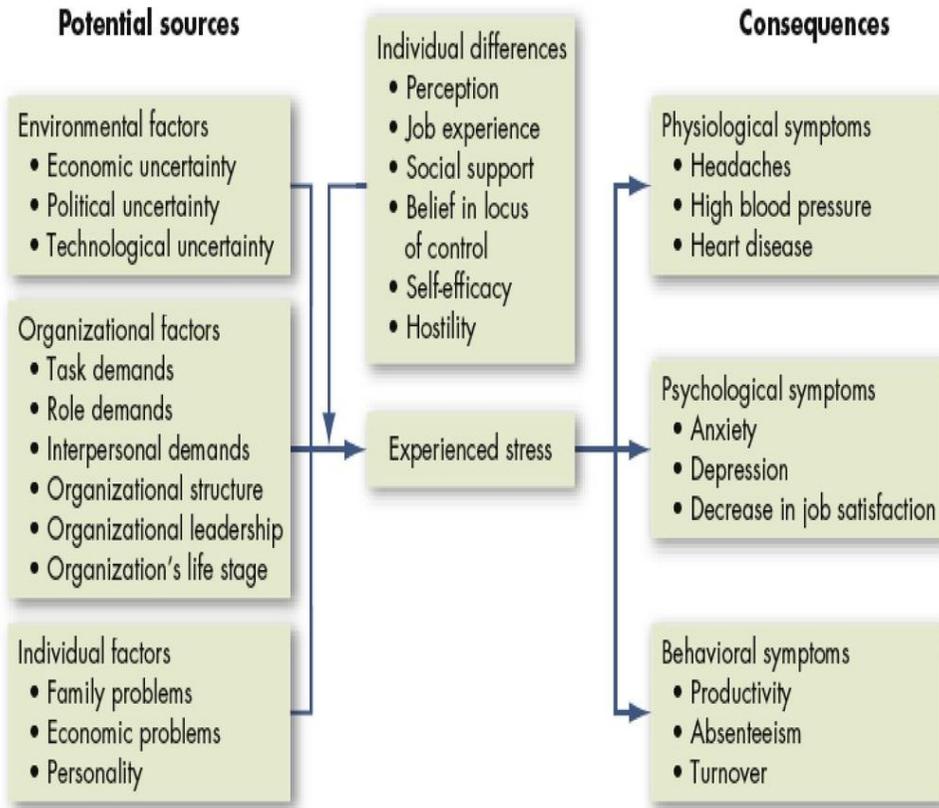
Kreitner and Kinicki (1998, 2004)) proposed two variables in job stress; stressors and outcomes. Stressors lead to job stress and provide variety of outcome. The individual differences tend to moderate the stressor stress-outcome relationship (Kreitner and Kinicki (1998, 2004). Luthans (2010) suggests absenteeism, escaping from work responsibilities, arriving late, leaving early, deterioration in work performance, more of error prone work, memory loss, cribbing, over-reacting, arguing, getting irritated, anxiety, deteriorating health, more of accidents, improper eating habits (over-eating or under-eating), excessive smoking and drinking, sleeplessness, etc. Healthy work and family life could be achieved through effective stress management strategies in an organization. Otherwise, the detrimental repercussions of stress on the employees as well as their performance would be inevitable and uncontrolled.

Stress is a multidimensional construct. Beeh and Newman (1978) pointed out that stress is a function of uncertainty that may occur at individual, group and organizational level. Robbins (2007) too reported two conditions under which the potential stress may lead to actual stress. They are uncertainty over the outcome and the importance of the outcome (Robbins, 2007). He (2007) concluded that the stress is highest for those individuals who perceive that they are uncertain as to whether they will win or lose and the lowest for those individuals who think that winning or losing is a certainty. Similarly, when the winning is an important outcome the stress tends to be high while it will be low for unimportant outcomes. Ray (1982) viewed stress as a result of discrepancy between actual and desired state where the stress is too high for greater discrepancies.

Selye (1974) mentioned that any kind of normal activity can produce considerable stress without causing any harmful effects. Robbins (2007) too emphasised that moderate level of stress is required for optimum level of performance while ill-stress and distress both lead to poor performance. Luthans (2010) in advising the management of stress noted that the stress should be managed rather than weeding off. As oppose to this idea, Chaplain and Van Harrison (1982) perceived stress as only in negative contents, to refer to any of the objective misfit, a variable in the objective environment which is presumed to pose a threat to the person, a variable in the subjective environment which the person perceives as threatening.

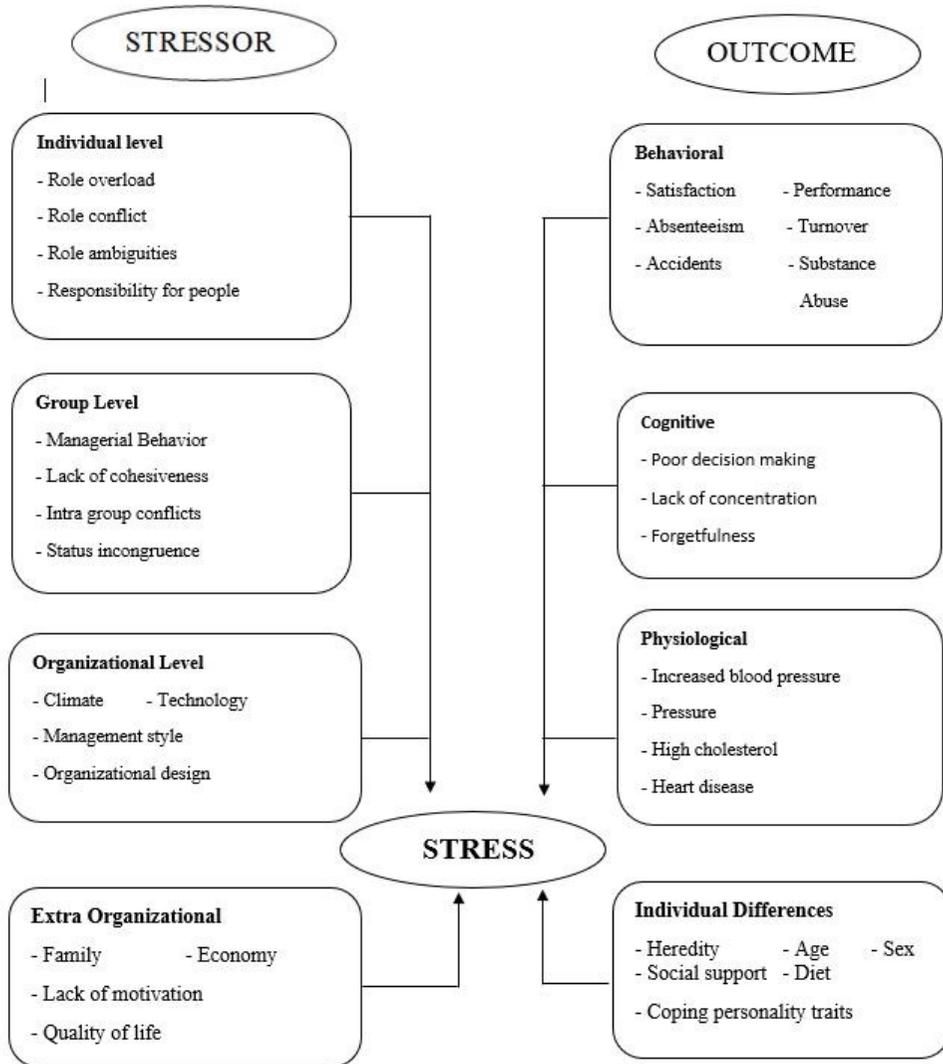
Stress found to be resulted by many factors, such as external environment, organizational structure and culture, job characteristics, personal factors, work relationship and domestic/social situation have been reported as the causes of stress (Linden, 2004; Robbin, 2002). Figure 1 and Figure 2 exhibit the models of stress by Robbins (2002) and Linden (2004) respectively. Both explain the potential sources and consequences of stress.

Figure 1 Model of Stress



Source: Stephen P. Robbins, Organizational Behaviour (2002). (10 Ed), Prentice Hall.

Figure 2. Model of Stress



Source: W Linden, Stress Management: From Basic Science to Better Practice. (2004). Sage Publications, Inc

Both models presented relatively identical groups of influencers affecting and resulting the stress. Much of the studies of stress based on the model proposed by the Robbins (2002). Work stress; the independent variable of the present study was operationalized based on the Robbin’s model of stress considering the relevance of the key dimension of stress applicable to the chosen sample of the study; the bank employees.

Gamification

The term gamification originated in the digital media sector which was first documented in 2008 (Deterding, Khaled, Nacke & Dixon, 2011). Later from 2010 onward rapid adoption of the concept led popularized it among researchers and practitioners.

In recent past, gamification has increased interest both in industry and academia (Kim, 2008; Hamari, 2014). Gamification can be defined as the approach of using game design elements into a non-game context (Deterding, Khaled, Nacke & Dixon, 2011). Gamification is a trending topic as a mean of supporting user engagement and raising positive aspects of performance such as increasing quality and productivity of activities, social interaction and user activities (Hamari, 2013). Gamification has become a tool of motivating people towards targeted behaviours. Considering the widespread use of the concept, Robertson (2010) suggested that the gamification would sooner available at the banks, gyms, jobs, government and healthcare.

Huotari and Hamari (2012:2017) has mentioned that gamification is a process of enhancing services for game-full experiences in order to support users overall value creation while Liu, Santhanam and Webster (2017) say that gamification is the incorporation of game design elements into a target system while retaining the target system's instrumental functions.

Many companies have realized that the concept of gamification has a power to change human behaviour. On the other hand, Jaroslaw & Krzysztof (2015) have stated that "Gamification is widely perceived as a magic bullet – a universal solution to a variety of contemporary problems, not only efficient and cheap, but also infusing our world with lots of fun" (p.6). Furthermore, they stated that the term gamification presents a critical approach. The approach usually put on the fun-factor doesn't explain anything; in fact, it includes the social, political and cultural consequences of gamifying all circumstances of our lives.

Gamification is the use of game play mechanics for non-game applications (also known as 'funware'), particularly consumer-oriented web and mobile sites, in order to encourage people to adopt the applications. It also strives to encourage users to engage in desired behaviours in connection with the applications. Gamification works by making technology more engaging, and by encouraging desired behaviours, taking advantage of humans' psychological predisposition to engage in gaming. The technique can encourage people to perform chores that they ordinarily consider boring, such as completing surveys, shopping, or reading websites.

Implementing of gamification gives many advantages and benefits. Most of the companies are choosing to implement gamification to improve productivity and competitiveness. Those advantages are improving productivity, increasing motivation, encouraging creativity, strengthening communication process, favouring employee's engagement, introducing innovative dynamics, developing specific skills and transmitting corporate images.

Gamification can be used as a tool to improve employee engagement by implementing a tracking and rewarding system. Points can be tracked by attending events such as education talks, working overtime, winning awards or new business, completing tasks ahead of time and filling in time sheets (Levon, 2016). It can also be used in the human resource management. Hackertrail has used gamification to recruiting employees by pitting two developers against each other in online coding challenges, with main prize being a job interview (O'Connell, 2015). Furthermore, Deloitte has used the concept in training with transparency in scoring so players can compare their performances against others during a training program (O'Connell, 2015).

Gamification allows users to get more out of their real lives compared to the games they play as a form of escapism (Kim, 2015; Osheim, 2013). Gamification can give the fun of playing games into the real world, and is exciting because it helps to make the hard stuff in funny life (Smith, 2015).

With gamification integrated into the workplace the job itself becomes a fun and enjoyable experience. Team members can compete with one another to achieve higher customer service ranking which leads to an increase in engagement through friendly competition. By adopting gamification into the workplace, companies are more likely to see lower turnover, improved productivity (Hamari, Koivisto, & Sarsa, 2014). Therefore, it is clear that the concept of gamification has much importance for engaging with many processes of the challenging world of work.

Work Stress, Job Performance and Gamification

Job stress has become a frequent problem across occupations as many organizations nowadays pressurize their employees with higher performance target to outrun their competitors. Additionally, transformed patterns of work-life balance create complexities in delivering the demands of both parties. Taken together, numerous stressors drive individuals in to challenging and stressful situations. The work stress and job performance relationship has extensively investigated by different scholars in diverse contexts. Some reported that it is positively affecting (Maneze, 2005; French & Caplan, 1972; Arnold & Feldman, 1989; Palmer et al., 2004) while some argued it to be negative association (Ahmed & Ramzan, 2013; Seibt, Spitzer, Blank & Scheuch, 2009; Garge, 2010; Fairbrother & Warn, 2003; Murphy, 2002; Behar & Newman, 1978; Ray, 1982). Yet,

considerable number of studies evidenced the mixed results too (Robbins, 2007; Luthans, 2010; Kreitner and Kinicki, 1998) Hence, many believe it can either be helpful or harmful to job performance.

Job related stress according to Maneze (2005) has been interpreted by most companies as a low alarming situation but it poses a very high impact on individual's health that also affect directly his/her performance. When its absent, job challenge is limited, and performance become low. But as stress gradually increases, job performance trends to increase because stress helps the employee to gather and use resources to meet the job requirements. Garge (2010) has mentioned that job or occupational job stress is an outcome of mismatch between the individual capabilities and organizational demand. Work stress is always present among employees and it can be reduced by improving the working conditions and quality of benefits in the companies (Seibt, Spitzer, Blank and Scheuch, 2009). Rising job has become a challenge for the employers and higher level of job stress result in a low productivity, increasing absenteeism and collection to other employee problems like alcoholism, drug abuse, hypertension and host of cardiovascular problems (Meneze, 2005).

In contrast, several other studies concluded that job stress negatively affect employee performance considering the various factors involved and especially employee job satisfaction (Ahmed & Ramzan, 2013). Regardless of the nature if the association, the two concepts are comely theorised to be connected.

Despite the freshness of gamification as a concept, games have been played since the cave men wandered the earth (Bunchball, 2010). But it is not only humans who enjoy games. When watching nature shows one often sees cubs playing with each other as a way to learn skills for their adult life. More sophisticated animals, such as dolphins, are known for playing even when they are older. It seems, as Aaron Dignan concludes, like games are nature's own reward system and that we are hard wired to find them engaging, a conclusion that naturally includes humans as well (Dignan, 2011). The places which have applied gamification characterized by healthy working setup and with high employee morale & increased productivity (Gears and Braun, 2013). Gamification can be used to create easier problem-solving methods by introducing at working environment with understanding of the problems arising at a work place (Hammedi et al., 2017). This helps the business activities run smoothly and decrease unwanted pressures from employees (Saima, Sara, Rizwan, Dalia & Lolita, 2018). Though unwanted pressure directly influences for the stressful mind the term gamification is helpful for avoiding it.

Hamari et al. (2014), Seaborn & Fels (2015) has concluded that gamification in general seems to provide somewhat positive effects on user performance. An author, one of the most meaningful psychological models of work engagement has stated that engaged

employees felt energetically and emotionally connected with their job tasks (Maslach, 2011; Maslach, Schaufeli & Leiter, 2001).

Gamification has already established for its positive effect in motivating people for unattractive activities (Hamari et al., 2014 Huotari & Hamari, 2017 Jaroslaw & Krzysztof, 2015). Nevertheless, no study has tested it as a controller of uninvited associations at work. In the world of work, performance is the uppermost target. Improving performance demands controlling ill-effect factors while nourishing the driving factors. The association between work stress is already generalized to be negative in many contexts (Premavathy & Rafiq, 2014; Reilly, Dhingra & Boduszek, 2014; Kreitner & Kinicki, 2007). Based on this knowledge, the present study conceptualized gamification as a moderator on the association between work stress and job performance. More specifically, the objective of the study was to assess the moderating effect of the gamification on the association between work stress and job performance. Accordingly, the hypotheses of the study were;

H1 – Work stress impact the job performance of non-managerial employees of banks in Sri Lanka.

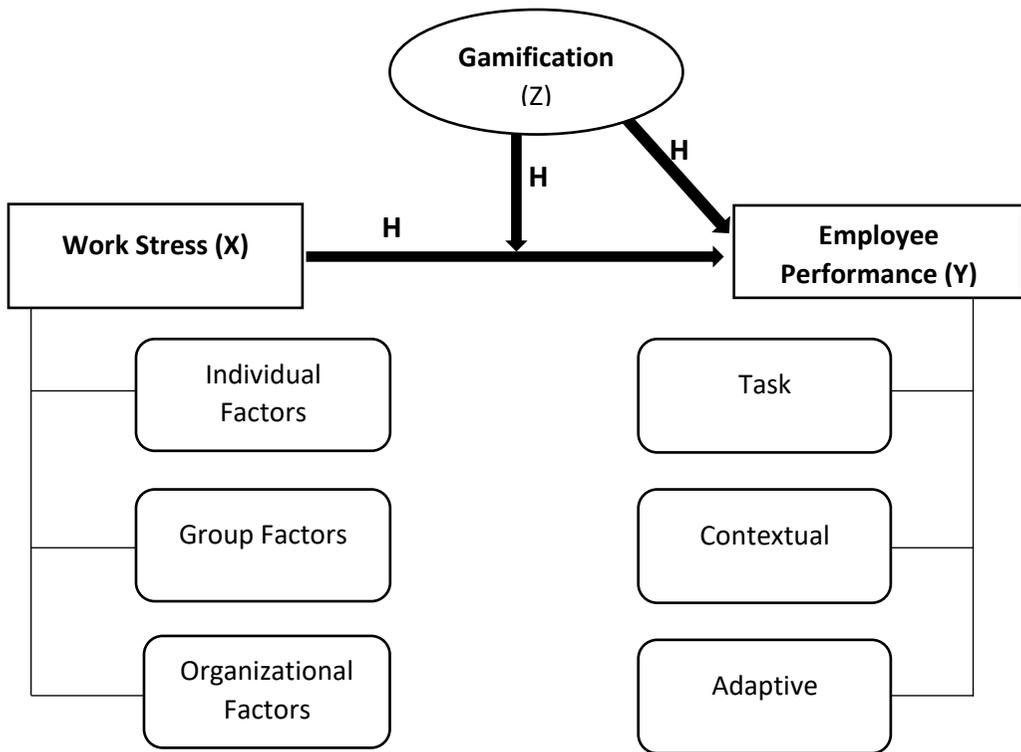
H2 – Gamification impact the job performance of non-managerial employees of banks in Sri Lanka.

H3 – Gamification moderates the relationship between work stress and employee performance.

RESEARCH MODEL

Figure 3 illustrates the research model of the study.

Figure 3. Research Model



METHODOLOGY

The reasoning approach of the study was deductive and followed a quantitative perspective. The present survey study used a cross-sectional study as it provides a snapshot of result at a given point in time. This type of study seemed appropriate as it can be used within a short space of time and data can be summarized statistically. Filed study was used in collecting data for the identified variables of the research model. A self-administered questionnaire collected the data. The instrument consisted of 30 items out of which 5 items assessed demographic factors, 10 items measured the work stress of respondents, 10 items assessed respondents’ attitude relating to their job performance and 5 items assessed the degree of gamification that the respondents are exposed to. Dichotomous and multiple-choice questions ranked the responses of the demographic factors while a 5-point Likert scale was used in scaling the responses for study variables. The response scale ranged from 1 to 5 in which 1 denoted “strongly disagree” and 5 denoted for “strongly agree”. The instrument was tested for its measurement properties and ensured for its validity and reliability. The respondents represented the commercial banking sector of Sri Lanka. The banking sector is characterised by high level of work stress, due to its complexity and competitiveness (Gabriele, Giulio, Milda, Chiara,

Antonio, Javier, Annamaria and Nicola, 2017). Similarly, in Sri Lankan banking sector, employees found to be undergone extreme level of work stress (Siyambalapitiya & Sachitra, 2019; Prabakaran & Panchanatham, 2014). Hence, the research site it believed to be pertinent for testing the theorized assumptions. The study was primarily based on the Kurunegala district of Sri Lanka where there are 13 domestic licensed commercial banks with 156 branches. Total non-managerial work population of these branches is reaching 1800. Based on Morgan's (1970) recommendation on sample size, 325 non-managerial employees were chosen based on systematic random sampling technique. Total of 310 questionnaires were received resulting a 95% response rate. Data analysis was performed using the path analysis with the aid of SMART PLS 3 application.

RESULTS AND DISCUSSION

Table 1 illustrates the demographic profile of respondents.

Table 1. Demographic profile of respondents

Characteristic		Number of employees	Total	Percentage
Gender	Male	133	310	43%
	Female	177		57%
Age (in years)	20-35	237	310	76%
	36-45	61		20%
	46-55	12		04%
Educational qualifications	A/L	100	310	32%
	Diploma	180		58%
	Graduate	30		10%
Working experience (in years)	01-05	145	310	47%
	06-09	156		50%
	09-15	09		03%

Majority (57%) of respondents were female bank employees. Employees of age range 20-35 years dominated the sample (76%). Common education qualification of the sample was diploma qualification. A part from that, there were advanced level qualified respondents and graduate employees too. With respect to working experience, almost all the employees (97%) found to be having less than 10 years of experience. It implies

majority of the respondents are in their early career stage which may be challenging them to balance their capacity and job-related demand. On the other hand, it is an alarming fact of potential work stress. Many of them are in the age range of 20-35 years. Again, an indication of excessive demands from family/personal life too. These factors ensured the relevance of the sample for testing the assumed relationship.

Table 2. Descriptive statistics of the key variables

Variable	N	Mean	Std. Deviation	Skewness
Work Stress				
Individual factors	310	3.3753	.69210	-.285
Group factors	310	3.6398	.80295	.099
Organizational factors	310	3.0468	.74623	-.019
Gamification	310	3.2168	.61857	.260
Employee Performance	310	3.1629	.49790	.662

Work stress was at moderate level and appeared relatively identical among three main dimensions of it. Gamification and employee performance too showed a moderate level as per the response scale. None of the variable's standard deviation was greater than one; an indication of relatively identical behaviour of key variable across sample elements.

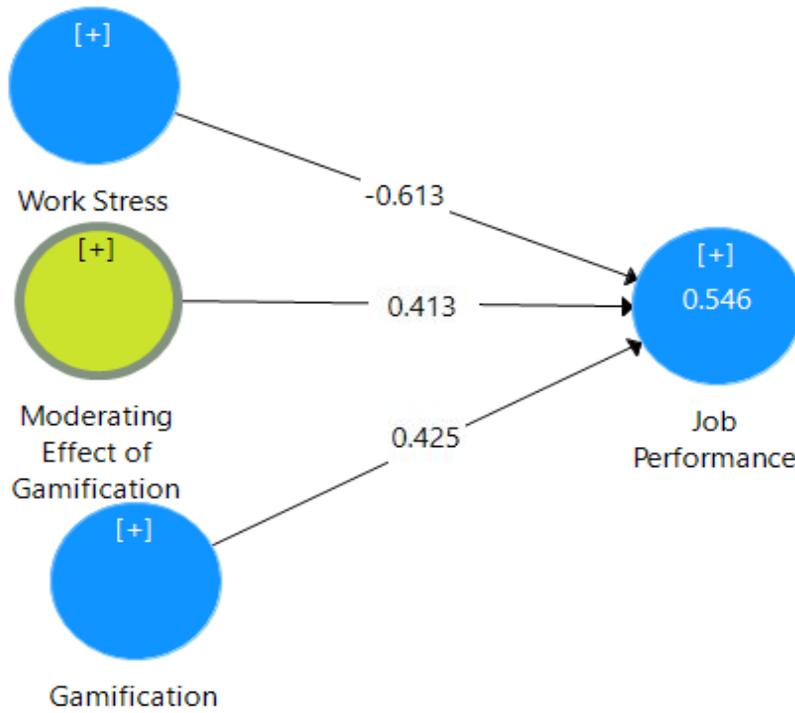
Direct and indirect paths towards the endogenous variable were assess to identify the possible direct and indirect effects by the independent and moderator variable on the dependent variable. The initial model was developed using all the indicators of three variables. As per the operationalization, ten indicators for each were used in assessing the independent variable, work stress and the dependent variable, job performance. Five indicators were adopted for measuring the moderator variable, gamification (Figure 4).

Figure 4: Initial Path Diagram



Based on the factor loadings, the refined model only included seven indicators for work stress, six indicators for job performance and four indicators for gamification. Results of the path analysis indicated that the two direct effect and the moderator effect are statistically significant at 95% confidence level. Together the work stress and gamification were capable of predicting the behaviour of job performance at a statistically significance level. As such the $R^2 = 0.546$, $p = 0.000$. Work stress negatively and significantly associated with the job performance. Further, the main focus of this study, the moderating effect of gamification is too significant (Figure 5).

Figure 5. Path Diagram with Significant Path Coefficients



The bootstrapping process evidenced the statistical significance of the overall model, and the three effects (work stress = -0.613 , $p = 0.001$, moderation effect of gamification = 0.413 , $p = 0.000$, and gamification = 0.425 , $p = 0.000$). All the properties of the model comply with the standard values and are exhibited by table 3.

Table 3. Measures of the Model

Variable	Cronbach Alpha	rho A	Composite Reliability	AVE
Job Performance	0.875	0.889	0.923	0.800
Moderator	0.797	0.800	0.881	0.711
Work Stress	0.818	0.822	0.891	0.732

The model is evidenced to be statistically significant and powerful as all the measures of reliability and validity comply with the standards figures.

All the hypotheses are supported by the results and confirmed by the p-value of path coefficients (figure 5). The H1 assumed an association between work stress and job performance. The results confirm the existing generalized negative association between work stress and job performance (-.613, $p = 0.001$). Robbins (2007) alarmed that the potential stress may lead to actual work stress and is often associated with job performance negatively. Many others researchers too have already generated similar outcomes (Ahmed & Ramzan, 2013; Seibt, Spitzer, Blank & Scheuch, 2009; Garge, 2010; Fairbrother & Warn, 2003; Murphy, 2002; Behar & Newman, 1978; Ray, 1982). The strength of the relationship demonstrated to be moderated. Previous studies have investigated the same association from moderate to very strong based on varied research setups. Thus, the finding of the study complies with the negative moderate level association between work stress and job performance.

Work stress is multi-dimensional. It may possess diverse effect on individual, group and organizational levels. Thus, the impact of work stress might lead to undesired results not only at individual level, but also as a collective effect on group and/or organizational level too. Hence, the work stress at individual level should not be under-looked. In particular, the sample represents the non-managerial employees of Sri Lanka banking sector. Extensive number of studies evidenced for the high level of work stress at Sri Lankan banking industries (Siyambalapitiya & Sachitra, 2019; Prabakaran & Panchanatham, 2014). Banking industry, in general is characterized by the high level of competition. Further, they operate in highly volatile markets: financial/ investment. These market pressures, at the operational level create over-boarded individual targets, which the employees often unable to cope with. The findings of the present study in that line established the existing empirical evidences pertaining to work stress and job performance relationship with respect to non-managerial employees of Sri Lankan banking sector.

The H2 assumed an association between gamification and job performance. The direct path of gamification on the job performance is found positive and statistically significant (0.425, $p = 0.000$). The strength of the relationship appears to be moderated. Gamification, a fairly new way of raising the motivation and driving the individual attention, motivation and engagement researched to be generating many positive results in the world of work. Nevertheless, the studies reported low to high level of impact, the effect found to be positive across almost all the reviewed studies (Bunchball, 2010; Dignan, 2011; Gears and Braun, 2013; Hamari et al., 2014, 2017; Seaborn & Fels, 2015). Accordingly, the finding of the present study confirms the existing state of relationship between gamification and job performance. Yet, the present study is the first of this kind which tested the application of gamification in the Sri Lankan working set up, specifically, the banking sector.

Thirdly, it was hypothesized that the gamification can moderate the established relationship between work stress and job performance. The work stress is negatively correlate to job performance. Gamification, which is already established to be sharing a positive association with job performance (Bunchball, 2010; Dignan, 2011; Gears and Braun, 2013; Hamari et al., 2014, 2017; Seaborn & Fels, 2015) was tested for its moderating effect on manipulating the established negative association. The moderating path of the tested model is positive and significant (0.413, $p = 0.000$). Path coefficient, 0.413 is moderate in its strength. Thus, the present study succeeds in establishing the theoretical support for the moderating effect of gamification in the organizational context. Addressing the moderating effect is considered the originality of the present study whereas existing studies so far focused only on the direct effect of it on several endogenous constructs.

Gamification, where gaming principles are used in non-gaming contexts proven to be established for its positive effect on performance. Hence, it is theoretically rational enough to be tested for its moderation effect on a negative association connected with job performance. Findings of the present study supported the said claim theoretically and empirically.

CONCLUSION

Empirical evidences by many researchers held that the relationship between work stress and employee performance is negative. Gamification is too has been confirmed to be positively affecting the job performance. The present study was aimed at testing the gamification as a moderator on to the relationship between work stress and employee performance. The results disclosed a significant moderating effect of gamification on the main effect. Accordingly, the study concludes gamification as a significant moderator of the relationship between work stress and employee performance. The implications of the study are two forth; theoretical and managerial/ practical. First, the study unearths the theoretical implication of moderating effect of gamification to affect the negative association between work stress and job performance. This novel theoretical contribution is ahead of the prevailing theoretical linkages of gamification in non-gaming contexts. Second, it holds the practical implication of utilizing gaming elements to raise the desired outcomes at the work place. Specially, when the jobs are too bored and tiring and less-attractive, managers are invited to merge work with gaming elements for better results. Hence, it is suggested to use gaming concept in work settings where work stress is inherent and inevitable due to individual, group and/or organizational determinants. Researchers acknowledged the methodological limitation of the study those may undermine the scientific merit of the findings and suggested future studies to incorporate potential mediators with sound methodological arrangements.

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