



## Research Article

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### Exploring how gamification potentially motivates employees - A research in Vietnamese businesses

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#### Abstract

A recent trend in employee management reveals a new and modern tool for enhancing motivation at work. Gamification is the use of game elements in a non-game environment, not only to create a better experience for users, but also to better administer in that setting. Gamification elements could virtually satisfy employees' psychological need, hence – according to Self-Determination Theory (SDT), help with employee motivation. The research shows that gamification may be able to positively influence employees' sense of achievement, work affiliation, and recognition. Further research is needed to clarify and testify this notion.

**Keywords:** Gamification, employee motivation, Self-Determination Theory.

#### 1. Introduction

Employee motivation has always been a particular interest of organization managers because of its numerous benefits towards achieving organizational goals (Bushi, 2021). Approaches to employee motivation has been studied for decades, which reveals that employees who are motivated will enjoy their work better and provide better work performance (Dobre, 2013). It is suggested that motivated employees align their goals with those of the organization's and put their efforts in that direction (Kalimullah, 2010). Getting employee motivated will not only help them improve their work, but also will give them the strength to work under stressful conditions. Among different approaches to improving employee motivation, one of the latest concepts in managing motivation is gamification (Deterding et al., 2013).

Gamification is a conceptual design where playing, experiencing fun and enhancement of all game elements can be processed and practiced in different non-gaming intended applications contexts/services (Deterding et al., 2011). Gamification aims to make routine tasks more engaging by using fun game elements such as challenge,

competition, and rewards (Sarangi and Shah, 2015). In other words, gamification makes a boring task more entertaining. This means that gamification can play the role of a catalyst with which employee motivation can potentially increase. The concept of how gamification works is illustrated below (Figure 1.)

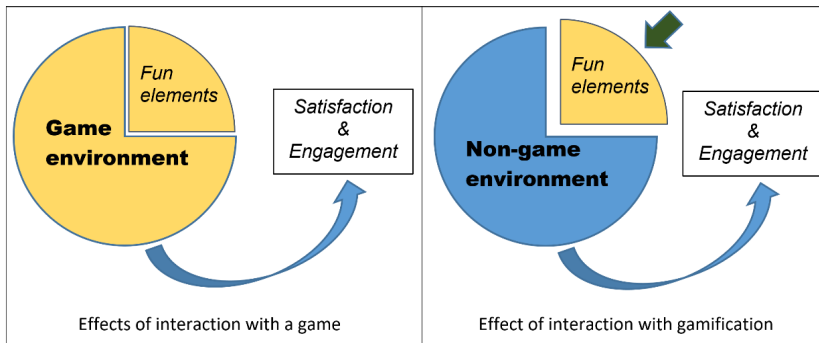


Figure 1: Effect of gamification in theory

Source: Author

What needs noticing about gamification, however, is that its influence is emphasized on users' motivation rather than on their behaviors (Deterding et al., 2011; Huotari & Hamari, 2012; Hamari & Koivisto, 2013). Deep understanding of human motivation is strongly required to foster the goal achievement of gamification (Rigby, 2015). Although several theories considered as the backbone of motivation studies related to gamification including the flow theory (Csikszentmihalyi, 2000) and the Self-Determination Theory (SDT) (Ryan & Deci, 2000) are important, yet the proof of their effectiveness requires selective implementation techniques (Li, 2018). In the current researches, many studies deal with gamification as a single concept based on the motivational effect generically, while in real time practice, diverse designs and environments exist (Sailer et al., 2017). This means that gamification can act as a catalyst to enhance employee motivation (Le & Nguyen, 2021).

However, while gamification research is gaining popularity in recent years, the level of attention in the business field remains sparse (Sailer et al., 2017). While the theory of gamification suggests that it can increase motivation, there are a lack of concrete evidence in the organizational environment. Also, as a result of a lack of designated framework for gamification in businesses, there is an exploratory nature in the study of this subject. This poses two research questions: (i) How does the mechanism of gamification impact on employee motivation? (ii) What gamification elements in practice provide different influence on employee motivation? This issue needs researching to understand the relationship between gamification and methods to advance employee motivation.

Using gamification to assist with employee motivation is a newly awarded trend in many countries in the world, including the US, China, Japan, and several European countries (Koivisto & Hamari, 2019; Seaborn & Fels, 2015). In the case of developing

countries such as Vietnam, fresh solution from this new approach could pose an important breakthrough to give it an advantage in development. Therefore, this research is needed to attempt answering the two-research questions above in Vietnam scenario.

## 2. Literature review

### 2.1. Gamification in theory

The main ingredients of gamification are the game elements. Kapp (2012) described game elements as goals, reward structures, cooperation, competition, conflict, storytelling, time, aesthetics, and curve of interest. It is argued that, however, gamification elements could be very different from game elements because of probable adaptability in the non-game environment of reality (Le Trung & Nguyen, 2021). Many game elements which could exist in the virtual world of the game environment may not be compatible in other scenarios; therefore, it is important for gamification designers to think about the goals and purpose of the gamified experience before creating it.

Gamification has been classified as one of the most innovative processes that induce motivation, based on the fact that during playing games, a similar player experience of a variable range of effects is perceived as holistic motivation relevant to the related context including frustration, happiness, enjoyment and disappointment (Huotari & Hamari, 2017; Landers et al., 2018; Rigby, 2015; McGonigal, 2011; Hamari & Keronen, 2017; Hassan, 2018; Morschheuser et al., 2017; Deterding et al., 2011; Liu, et al., 2013; Hassan et al., 2019). Self-determination is a human motivation theory stressing the reality that human actions can be intrinsically or extrinsically motivated (Deci & Ryan, 1985; Hamari & Koivisto, 2015). Gamification through its gameful actions in a non-gaming context invokes the user's intrinsic motivation (Deterding et al, 2011; Hamari et al., 2015; Huotari & Hamari, 2012; Hamari & Koivisto 2015).

Distinguishing between the three main elements of gamification is important: *Gamefulness*, implies living the intended experience, *gameful interaction*, relates to the tools, objects and contexts while, *gameful design* is the actual practice of creation of the gameful experience (Deterding et al., 2011). Zichermann and Linder (2011) defined gamification as enhancing tool branding initiatives, through the application of game elements and their mechanics. They assessed the motivation from the psychological aspect as intrinsic and extrinsic motivations. Zichermann and Linder in 2010, advocated they perceived that intrinsic motivation are not necessary or even possible since, they are variable and unreliable, they rather claim to adopt external motivators as intrinsic motivators through acting as external behavior controllers. Subsequently, in 2011 they suggested that designers should equally consider both intrinsic and extrinsic motivators reciprocally affecting each other, where common intrinsic motivation might produce greater enjoyment and be more effective than individually variable motivators (Deci et al., 1999; Ryan, 2012). Seaborn & Fels (2015) stated that the design objective of gamified systems is to benefit from the psychological effect of

the games on the users. They are considering gamification as an effective alternative to the traditional motivation and rewarding elements i.e. intrinsic motivation.

### 2.2. *Self-Determination Theory (SDT) and the impact of Gamification on human psychology*

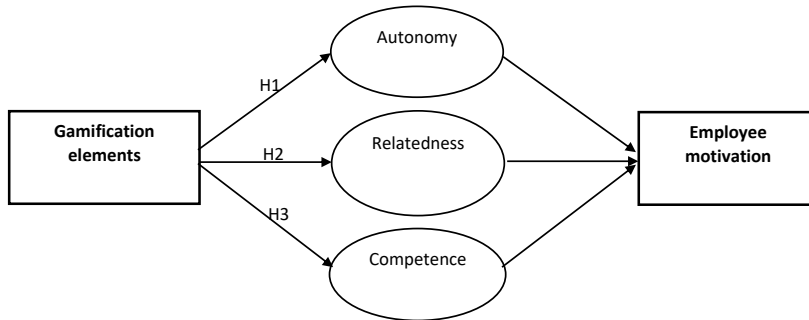
The base argument of this research is *Self-Determination Theory (SDT)*. This humanistic motivation theory is based on the innate psychological traits that captivate human needs, well-being and development; it also shows how environmental influence can have an impact on the individual's motivation (Deci & Ryan, 2008; Hill, 2011), which helps in projecting the individual's-oriented behaviors (Gears, 2012). SDT depicts three main human psychological needs that when fulfilled, can result in positive motivation (Hill, 2011; Gears, 2012): *Competence*, which refers to feeling a sense of ability, experienced while playing through increasing user's skills and proficiency during their progress; *Relatedness*, achieved when the player succeeds in socializing with peers fulfilling the need to exercise social interaction and peer connectivity; *Autonomy*, the inherent independence of choice should be reflected in allowing users to freely choose his preference through different provided paths, which will eventually lead him towards his personal achievements and outcomes. SDT classifies motivation into intrinsic and extrinsic motivation (Deci & Ryan, 2008; Gears, 2012; Merino de Paz, 2013).

The design of games and gamification tools is aligned with or based on the human psychology of motivation theories, which can provoke human subconscious drives to perform certain behaviors. Motivation (and engagement) theories are studied heavily in game design. Gamification, therefore, is closely related to the issue by similar logic. On these principles, researchers have used many motivation theories to explicate how Gamification motivates employees (Dalmina, Barbosa & Vianna, 2018). Combining motivational and psychological theories will eventually push users' intrinsic motivation toward positive participation and behavioral change (Merino de Paz, 2013). Arguably, since game elements can reflect or simulate elements of life (relaxation, achievement, sense of ownership, status, development, etc.), gamification can virtually fulfil human's basic needs psychologically, which elevates motivation. In reality, because blue-collar jobs are mostly unskilled labor, the motivation to perform and the meaning of work could be positively influenced through psychological needs from SDT (Saari et al., 2021). Workers yearn for feelings of recognition, respect and autonomy without strict supervision or guidance. Moreover, they also want to show their work skills to feel that their work has meaning.

The research suggests that gamification elements can create feelings of satisfaction for human needs, similar to what happens in real-life activities. For instance, employees need to get recognized for their work; if their results and skills are recognized by others, this will motivate them to continue to strive and work better. However, the complexity of reality can mean that employees' efforts sometimes go under the radar and they do not get as much recognition as they would like. A Gamification system can help track and provide immediate gratification for employees via a notification system, and give them credit exactly where credit is due. There are many other

satisfaction factors at work which gamification can be designed for, including 3 aspects of motivation in SDT, namely: autonomy, competence and relatedness. A proposed research model is displayed below (Figure 2.).

Figure 2: Proposed research model



### 1.1.1. Hypotheses

**H1:** Does partial satisfaction of employee’s need for autonomy through gamification positively affect employee motivation?

*Autonomy* is being able to make decisions without much hindrance. Autonomy is about being empowered and is recognized as a valuable asset of the organization. When the sense of autonomy is satisfied, employees are more motivated to work. Through quantification and visualization of employees’ efforts, gamification makes it easy for managers and colleagues to see who is working harder. This means that gamification helps employees gain recognition better, thus can improve motivation (Herzberg, 2003). Moreover, autonomy and the feeling of empowerment can also contribute to employee motivation (Desvik, 2010). The research studies two sub-elements of autonomy: empowerment and recognition.

**H1a:** Is there an influence from Gamification to employee need of recognition?

**H1b:** Is there an influence from Gamification to employee need of empowerment?

**H2:** Does partial satisfaction of employee’s need for relatedness through gamification positively affect employee motivation?

*Relatedness* is the need of social affiliation. In other words, employee need to feel belong, feel that they are a part of a group or a team that share similarities and differences. This is because a good relationship with peers including support and assistance are essential for employee motivation in any environment. Social influence considering the user’s perception of his behavior in the eyes of others affects his attitudes (Venkatesh & Davis, 2000). Implemented social interaction form gamification might foster a sense of recognition representing the social feedback on the player’s behavior during his interaction (Hernandez et al., 2011; Hsu & Lin, 2008; Cheung et al., 2011; Lin, 2008). The research studies two aspects of relatedness: social interaction

and peer relationship.

**H2a:** Is there an influence from Gamification to employee need of social interaction?

**H2b:** Is there an influence from Gamification to employee need of peer relationship?

**H3:** Does partial satisfaction of employee's need for competence through gamification positively affect employee motivation?

Competence is the ability of mastery and being proficient in coping with one's environment. When people feel that they have the skills needed to succeed, they will be more motivated to complete a task or work towards their goal. Competence sub-factors in a gamified environment can be the challenge of the task, or the unpredictability of rewards that gamification can randomly offer. Competence can have a significant and positive effect on employee motivation (Parashakti et al., 2019), which can be simulated through gamification. The research studies two sub-factors of competence: achievement and competition.

**H3a:** Is there an influence from Gamification to employee need of achievement?

**H3b:** Is there an influence from Gamification to employee need of competition?

In the model, gamification elements included are elements that can be applied in businesses from familiar game elements. It is noteworthy that the peculiarity of gamification is that the proper amount of information is delivered at the right time (Schönen, 2014); so, it is a psychological process rather than a technical approach, which serves as a real feedback enabler to the user. From over 20 gamification elements in the literature review (Le & Nguyen, 2021), the author further funneled the number down for research purposes, because of limitations in time and resources. Therefore, applicable gamification elements used in this research include: points, leaderboards, objectives & missions, instructions, RNG, rules, rewards, collection, collaboration, progression system, visual & sound effects, story, style & theme (Le & Nguyen, 2021). Note that this study will not go into detail about each gamification factor, and will only evaluate overall impact of these factors as a management tool, and as a systematic method to increase motivation. The list of gamification factors listed above is for reference only during the research survey process.

These will all be considered for research in this thesis to align with the nature of the blue-collar work environment, and reduce the complexity of the research model as the study cannot cover all contents of motivation theory. Giving the scope of this research, studying all motivation factors is highly difficult and might be unreliable because of an abundance of variables in the equation. Therefore, the study focuses on immediate impact that gamification elements may create in a working environment, which are also limited to a selected few (some elements may require too much resources to create, such as "visual & sound effects", while other elements are very close to existing concept in real life, like "challenge"). All elements and factors chosen are based on their popularity and regularity, and with observed reasoning by the author. Of course, terminologies are very general when depicting concepts of gamification, and real-life application might be very different from theory; but for the sake of a sound research, only certain elements are chosen in the hypotheses.

### **3. Methodology**

#### *3.1. Sample and data collection*

The survey participants were identified as managers and supervisors of industrial enterprises that utilize gamification methods in job design. The sample size for research using the PLS-SEM method was determined to be a minimum of 100; therefore, we established a minimum sample size of 150 for this study. To achieve this minimum sample size, we distributed 200 survey questionnaires to employees at enterprises in Thai Nguyen and Hanoi (Vietnam) using the snowball sampling method. A structured questionnaire was designed and sent to employees of the enterprises who agreed to participate in the research, through the authors' network of contacts. Those who agreed to participate in the study were asked about aspects related to the components of gamification and their intrinsic motivation. After conducting the survey, we obtained 151 valid survey responses, with a valid response rate of 76%.

#### *3.2. Measurement*

The items used to measure the constructs were referenced from previous studies. The questions were translated from English to Vietnamese and then underwent a back-translation process to ensure that their meanings were not altered during translation. Initially, the author translated the English questionnaire into Vietnamese. Subsequently, a language expert proficient in both English and Vietnamese languages performed the back-translation from the Vietnamese version to English. The author and the language expert then compared the back-translated version with the original English version to ensure the accuracy of the translation and maintain the intended meaning. Afterwards, the questions were further adjusted through the content evaluation of 10 potential survey participants who were targeted subjects of this survey, in order to refine the wording in the official questionnaire.

#### *3.3. Data analysis method*

We employed multivariate analysis methods to test the constructed research hypotheses. To assess the reliability and validity of the constructs used in the research model, we utilized confirmatory factor Analysis (CFA) for evaluation. The reliability of the constructs in the model was assessed through the Cronbach's alpha coefficient, composite reliability, and average variance extracted. The reliability criteria for constructs include Cronbach's alpha and composite reliability values greater than 0.7 for constructs with more than 3 items. Constructs with 2 items were evaluated based on the corrected  $r$ -items total correlation coefficient, which should exceed 0.3. To evaluate the convergent validity of the constructs, we utilized the factor loadings of the items within each construct, with a criterion of greater than 0.5. In order to assess the discriminant validity of the constructs in the model, we employed the criteria proposed by Fornell and Larcker (1981). If the square root of the average variance extracted (AVE) exceeds the correlation coefficients, it indicates that the constructs reach discriminant validity. To test the main hypotheses in the research model, we

used partial least squares structural equation modeling (PLS-SEM) analysis. The statistical significance level was set at 10%.

#### 4. Results

##### 4.1. Reliability and validity test

The analysis results indicated that the constructs used in the model have Cronbach's alpha coefficients exceeding 0.7, except for the REG construct, which is below 0.6. However, since the REG construct has 2 items and their corrected-item-total correlation coefficient is relatively high ( $r = 0.421 > 0.3$ ), it is still retained in the model. Additionally, the composite reliability coefficients of all constructs exceed 0.7, and the average variance extracted (AVE) values within each construct are greater than 0.5. This demonstrates that the items used to measure the constructs in the model exhibit satisfactory internal consistency and can be utilized in the research.

##### Reliability

Table 1. Reliability assessment results of constructs in the model

Constructs	N of items	Cronbach's Alpha	Composite Reliability	Average Variance Extracted
Recognition	6	0.896	0.920	0.660
Empowerment	2	0.523	0.766	0.635
Peer relationship	2	0.783	0.875	0.781
Social interaction	4	0.83	0.884	0.657
Achievements	2	0.767	0.894	0.808
Competition	2	0.701	0.863	.760
Motivation	4	0.788	0.864	0.615

##### Validity test

##### Convergent validity

Based on the analysis results, after removing the items ENG3, ENG4, AU3 and DEV3 due to their factor loadings below 0.5, the remaining items demonstrate substantial factor loadings ( $> 0.5$ ). This indicates that the items measuring the constructs in the model exhibit convergence, as shown in the table 2.

Table 2. Convergent validity assessment results of constructs in the model

Constructs/ Items	Statement	Mean (SD)	Factor loadings
<b>Recognition</b>			
REG1	Gamification makes employees feel recognized	3.689(0.73)	0.772



Constructs/ Items	Statement	Mean (SD)	Factor loadings
REG2	Gamification makes employees feel they want to get recognized more	3.497(0.68)	0.755
<b>Empowerment</b>			
ENG1	Gamification enables employees to make decisions	3.265(1.114)	0.578
ENG2	Gamification helps supervise work progress	3.411(0.783)	0.968
<b>Peer relationship</b>			
DEV1	Gamification shows employee relationship with colleagues	2.351(1.075)	0.984
DEV2	Gamification assists teamwork	3.046(1.088)	0.771
<b>Social interaction</b>			
EF2	Gamification makes communication easier	3.662(1.144)	0.844
EF3	Gamification increases peer interaction	3.967(1.013)	0.708
EF4	Gamification supports two-way feedback	3.695(1.139)	0.856
EF5	Gamification shows employee status at work	3.762(1.021)	0.827
<b>Achievement</b>			
AU1	Gamification visualizes achievements	4.066(1.084)	0.866
AU2	Gamification stimulates getting achievements	3.808(1.138)	0.930
<b>Competition</b>			
COM2	Gamification shows competition	3.066(1.001)	0.938
COM3	Gamification stimulates healthy competition	3.152(1.126)	0.800
<b>Motivation</b>			
MOTI1	Evaluate general employee motivation level	3.748(1.087)	0.813
MOTI2	Evaluate how interesting the work is	3.43(1.083)	0.683
MOTI3	Evaluate employee engagement level	3.126(1.057)	0.764

Constructs/ Items	Statement	Mean (SD)	Factor loadings
MOTI4	Evaluate employee satisfaction at work	3.139(1.145)	0.866

*Discriminant validity*

The analysis results also indicate that the square root of the average variance extracted (AVE) values is greater than the correlation coefficients between the constructs in the model. This demonstrates that the constructs in the model exhibit discriminant validity and are suitable for use in the research.

Table 3. Discriminant validity assessment results of constructs in the model

	AU	COM	DEV	EF	ENG	REG	MOT
AU	0.899						
COM	0.195	0.871					
DEV	-0.202	-0.667	0.884				
EF	0.148	0.559	-0.465	0.811			
ENG	0.688	0.205	-0.287	0.183	0.812		
REG	0.670	0.155	-0.138	0.126	0.889	0.784	
MOT	0.096	0.323	-0.293	0.243	0.121	0.103	0.797

Notes:

4.2. Structure model and hypothesis test

The analysis results using the partial least squares structural equation modeling (PLS-SEM) approach show that the variance inflation factor (VIF) values for the independent variables range from 1.136 to 2.164, indicating the absence of multi-collinearity issues in the model. The estimation results using the structural equation model are described in Table 4.

Table 4. Estimation of the relationship among constructs in the model

Hypothesis	Relationships	Std.Beta	T Statistics	P Values	Accept or not
<b>H1a</b>	REG -> MOT	0.851	15.489	< 0.001	<b>Accepted</b>
<b>H1b</b>	ENG -> MOT	0.019	0.369	<b>0.713</b>	<b>Rejected</b>
<b>H2a</b>	DEV -> MOT	0.182	2.335	0.020	Accepted
<b>H2b</b>	EF -> MOT	-0.010	0.208	<b>0.835</b>	<b>Rejected</b>
<b>H3a</b>	AU -> MOT	0.105	1.744	0.082	Accepted
<b>H3b</b>	COM -> MOT	0.079	1.141	<b>0.254</b>	<b>Rejected</b>

Notes:

The estimation results reveal that AU significantly influences MOT ( $\beta = 0.105$ , p-value < 0.1). DEVE has a direct impact on MOT ( $\beta = 0.182$ , p-value < 0.05), and ENG directly influences MOT ( $\beta = 0.851$ , p-value < 0.001). On the other hand, there is no evidence to support the influence of COM, EF, and REG on MOT (p-value > 0.1). In other words, the research findings support hypotheses H1a, H2a, H3a, and reject hypotheses H1b,

H2b, H3b. The relationships between the variables can be represented as shown in Figure 3.

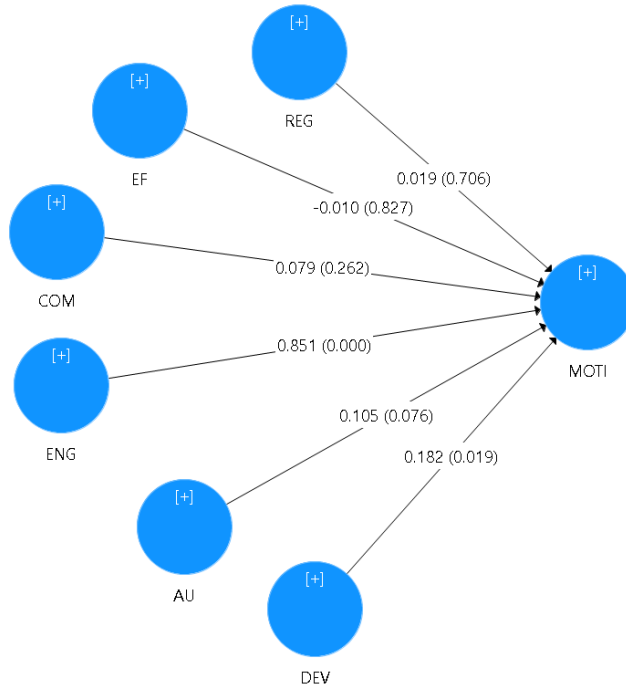


Figure 3. The relationships between the variables in research model

## 5. Discussion and implications

### 5.1. Discussion

As can be seen from the results, there are three sub-factors that stand out on the impact of gamification on employee motivation. First, the need for *achievement* is clearly demonstrated through gamification's score system and leaderboard. Employees want to perform well at work, which is reflected in their scores and the public leaderboard showing who is leading the chart, where everyone's position is, and how much effort one needs to increase his/her rank. This is a fairly simple system but very convenient and effective in evaluating employee productivity, while stimulating and motivating employees through healthy competition at workplace.

Second, good *peer relationships* that include both physical and spiritual support is a big factor for employee motivation in this case, as a feeling of relatedness. Via gamification, social influence considering the user's perception of his behavior in the eyes of others will influence his attitude (Ajzen, 1991; Venkatesh & Davis, 2000). Implemented social interaction can promote feelings of belonging, representing social feedback on the player's behavior during his interaction (Hernandez et al., 2011; Hsu & Lin, 2008; Cheung et al., 2011; Lin, 2008). Gamification creates an intermediary environment that helps users interact with each other more easily and

conveniently, while being able to share knowledge and experience with each other. Gamification also makes group work more efficient as progress can be tracked by everyone. Therefore, gamification potentially helps reduce problems in co-worker relationships at work, often seen when co-workers do not clearly understand each other's work progress.

Third, the need for *recognition* is also an important factor that gamification can utilize to increase work motivation. Instant gratification from notifications system can help employees know that their work results have been saved and tracked. This mechanism is what makes social networks so popular: when a user posts a content, other users will immediately interact by "like" or "heart react". Instant gratification is an important element of gamification which also serves as an indispensable factor in work motivation: a working employee will always want to be recognized, and conversely, an employee who does not recognized will become disengaged and demotivated.

### 5.2. Implications

The purpose and process of Gamification are different from regular games (Deterding, Dixon, Khaled & Nacke, 2011). Gamification is not intended as mere entertainment – it serves as a means to increase engagement and motivation. Gamification can help partially satisfy employees' needs in the workplace, and can create feelings of satisfaction similar to those of daily work. Therefore, gamification is a new tool that supports management and can help increase employee motivation at work. Gamification can be the key to future management, especially when digital transformation is a new trend in modern society during industrial revolution 4.0.

It is worth noting, however, that gamification itself does not increase motivation. Gamification can simulate and support feeling of satisfaction from real-life experience, and bring those feelings in a gamified environment. Gamification can only work with a unified system where all aspects are clear and fair. The result of this research shows several factors with low mean (<3) or negative beta, yet it does not necessarily mean that gamification does not support those aspects – it might just mean that the design of that area is not adequate for a good user experience. Any gamification elements should always accompany by any form of tangible or intangible rewards, whether it is bonus money, or the fun sound and visual effects, so that the interaction with gamification can prove to be meaningful and not time-wasting.

Moreover, individual differences are also very important in gamification design. Although anyone can participate in a game or video game, perceived benefits vary according to individual differences (Hamari & Koivisto, 2014) or play style (Lopez & Tucker, 2019). Therefore, although gamification can serve many purposes because of its impact on motivation in an organization, it needs to be carefully and purposefully designed. In addition, it should be noted that gamification does not increase employee work motivation, but gamification creates a new, more convenient, more intuitive working environment, and at the same time helps smooth work activities. More convenient and convenient, supporting common needs at work. gamification also

needs to come with a smart management system, with meaningful, fair rewards, and continuous updates. Daily job satisfaction is what creates employee motivation, and gamification can complement those factors well.

Another aspect that theories of motivation often ignore is the feeling of contribution - since workers are highly motivated to think that their work will help society develop, this is also related to the need to contribute. development needs - but a community perspective, not a simple egoistic one. This feeling stems from the need to satisfy one's need for responsibility as a motivating factor at work.

## 6. Limitation and future research

There are several limitations in this research. First, gamification is still a relatively new concept, especially in Vietnam. Gamification is not well-known and well understood among most businesses here, and therefore data collection can only bring a small sample. Further, the research limit some sub-factors relating to the Self-Determination Theory which can provide further results if tested. Moreover, specific gamification elements are not separated and distinguished during research because of time and resource limitation. Further research should follow up on gamification design and other factors in SDT in order to better understand the impact of gamification on employee motivation.

## References

- Ajzen, I. (1991). "The theory of planned behavior". *Organizational Behavior and Human Decision Processes*, 50(2), (pp. 179 – 211).
- Bushi, F. (2021). An overview of motivation theories: The impact of employee motivation on achieving organizational goals. *Calitatea*, 22(183), 8-12.
- Dalmina, L., Barbosa, J.L.V. & Vianna, H.D. (2018). "A systematic mapping study of gamification models oriented to motivational characteristics". *Behaviour & Information Technology*, 38(11): 1167-1184.
- Deci, E.L. & Ryan, R.M., (2000). "The 'what' and 'why' of goal pursuits: Human needs and the self-determination of behavior", *Psychological Inquiry*, 11 (4), pp. 227-268
- Deci, E. L., & Ryan, R. M., (2008). "Self-Determination Theory: A Macro theory of Human Motivation, Development, and Health". *Canadian Psychology*, vol. (49), no. (3), (pp. 182-185).
- Dobre, O. I. (2013). Employee motivation and organizational performance. *Review of applied socio-economic research*, 5(1).
- Deterding, S., Björk, S., Nacke, L., Dixon, D., & Lawley, E. (2013). *Designing gamification: Creating gameful and playful experiences*. Paper presented at the 3263-3266.
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). "From game design elements to gamefulness: Defining gamification". In *International academic MindTrek conference: Envisioning future media environments*, Tampere, Finland, 28–30 September, 2011.
- Gears, D. & Braun, K. (2013). "Gamification in Business: Designing Motivating Solutions to Problem Situations". *Chi-Conference on Human Factors in Computing Systems*, (pp. 5). doi: 10.1145/2468356.2479662.
- Hamari, J. & Koivisto, J. (2015). "Why do people use gamification services?". *International Journal of Information Management*. Elsevier Ltd, 35(4), (pp. 419 – 431). doi: 10.1016/j.

ijinfomgt.2015.04.006.

Hamari, J., & Keronen, L. (2017). "Why do people play games? A meta - analysis". *International Journal of Information Management*, 37(3), (pp. 125-141). <https://doi.org/10.1016/j.IJINFOMGT.2017.01.006>.

Hamari, J., & Koivisto, J., (2013). "Social motivations to use gamification: an empirical study of gamifying exercise". In *Proceedings of the 21st European Conference on Information Systems*, (pp. 5-8).

Hamari, J., Koivisto, J. & Sarsa, H., (2014). "Does gamification work? – A literature review of empirical studies on gamification", *Proceedings of the 47th Hawaii International Conference on System Sciences* (Hawaii, USA, JanUary 6–9, 2014), pp. 3025-3034

Hassan, L. (2018). "Means to gameful ends: How should gamification be designed?". Doctoral thesis. Finland: Hanken School of Economics.

Hassan, L., Dias, A., & Hamari, J. (2019). "How motivational feedback increases user's benefits and continued use: A study on gamification quantified- self and social networking". *International Journal of Information Management*, 46, (pp. 151 – 162). <https://doi.org/10.1016/j.ijinfomgt.2018.12.004>.

Hill, A. P. (2011). "A Brief Guide to Self-Determination Theory".

Hernandez, B., Montaner, T., Sese, F. J., & Urquizu, P. (2011). "The role of social motivations in e -learning: How do they affect usage and success of ICT interactive tools?". *Computers in Human Behavior*, 27(6), (pp. 2224 – 2232).

Hsu, C. L., & Chen, M. C. (2018). "How does gamification improve user experience? An empirical investigation on the antecedences and consequences of user experience and its mediating role". *Technological Forecasting and Social Change*, 132, (118 – 129). <https://doi.org/10.1016/j.techfore.2018.01.023>

Huotari, K., & Hamari, J. (2012). "Defining gamification: a service marketing perspective". In *Proceeding of the 16<sup>th</sup> international academic MindTrek conference*, MindTrek '12, (pp. 17-22), New York, USA, ACM.

Huotari, K. & J. Hamari, J., (2017). "A definition for gamification: Anchoring gamification in the service marketing literature", *Electronic Markets*, 27 (1), pp. 21-31

Kapp, K. M. (2012). "The Gamification of Learning and Instruction: Game -based Methods and Strategies for Training and Education". Pfeiffer, San Francisco.

Landers, R. N., Auer, E. M., Collmus, A. B., & Armstrong, M. B. (2018). "Gamification science, its history and future: Definitions and a research agenda". *Simulation & Gaming*, 49(3), (pp. 315– 337).

Le Trung, K. & Nguyen, D. N. (2021). "Gamification Elements and Their Potential Influence on Employee Motivation - A Literature Review of Models", *Proceedings of the International Conference on Emerging Challenges: Business Transformation and Circular Economy* (ICECH 2021). Doi: <https://doi.org/10.2991/aebmr.k.211119.016>

Lin, H.F. (2008). "Determinants of successful virtual communities: Contributions from system characteristics and social factors". *Information and Management*,45(8), (pp. 522 – 527).

Liu, M., Huang, Y. and Zhang, D. (2018). "Gamification's impact on manufacturing: Enhancing job motivation, satisfaction and operational performance with smartphone-based gamified job design". *Human Factors and Ergonomics in Manufacturing & Service Industries*, 28(1): 38–51.

Lopez, C. E., & Tucker, C. S. (2019). The effects of player type on performance: A gamification case study. *Computers in Human Behavior*, 91, 333-345.

McGonigal, J. (2011). "Reality is broken: Why Games Make Us Better and How They Can Change The World". 21th ed., vol. 22. New York: Penguin Books.

Merino de Paz, B. (2013). " Gamification: A tool to improve sustainability efforts". University

of Manchester, Manchester. Master's Thesis.

Morschheuser, B., Maedche, A., & Walter, D. (2017). "Designing cooperative gamification: Conceptualization and prototypical implementation". *Proceedings of the 2017 ACM conference on computer supported cooperative work and social computing – 'CSCW'*. 172410– 2421 ACM.

Rigby, C.S. (2015). "Gamification and motivation". In: Walz, P.S., Deterding, S. (eds.) *The Gameful World: Approaches, Issues, Applications*, pp. 113 – 138. MIT Press, Cambridge.

Ryan, R.M., (2012). "The Oxford Handbook of Human Motivation". Oxford University Press, Oxford, UK.

Saari, T., Leinonen, M. & Tapanila, K. (2021). "Sources of Meaningful Work for Blue-Collar Workers", *Social Sciences*, 11(1): 2.

Sarangi, S., & Shah, S. (2015). Individuals, teams and organizations score with gamification: Tool can help to motivate employees and boost performance. *Human Resource Management International Digest*, 23(4), 24-27.

Sailer, M., Hense, J.U., Mayr, S.K., Mandl, H. (2017). "How gamification motivates: an experimental study of the effects of specific game design elements on psychological need satisfaction". *Computer Human Behavior*. 69, (pp. 371 – 380). <https://doi.org/10.1016/j.chb.2016.12.033>.

Seaborn, K., & Fels, D. I. (2015). "Gamification in theory and action: A survey". *International Journal of Human-Computer Studies*, 74, 14e31. <http://dx.doi.org/10.1016/j.ijhcs.2014.09.006>.

Suh, A., Suh, A., Cheung, C. M. K., Ahuja, M., Wagner, C., & Wagner, C. (2017). "Gamification in the workplace: The central role of the aesthetic experience". *Journal of Management Information Systems*, 34(1), 268-305.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), 186-204.

Yu-kai Chou (2019). Yu-kai Chou: Gamification & Behavioral Design. Retrieved from: <https://yukaichou.com/gamification-examples/octalysis-complete-gamification-framework/>.

Zichermann, G. (2011). "Intrinsic and Extrinsic Motivation in Gamification". [Online]. Available: <http://www.gamification.co/2011/10/27/intrinsic-and-extrinsic-motivation-in-gamification/>. [Accessed 1 Aug 2022].