Applying Game Design Elements in the Workplace

Research-in-Progress

Ayoung Suh
City University of Hong Kong
School of Creative Media and Dept. of Information Systems
18 Tat Chee Avenue, Kowloon Tong, Hong Kong
ahysuh@cityu.edu.hk

Abstract

Gamification, whereby users are engaged in pre-assigned activities induced by game elements, is gaining interest among researchers and practitioners. While it has been touted that enterprise gamified information systems (ISs) can successfully tempt users, ensuring sustainable user engagement has been identified as a major challenge for organizations that have adopted the gamification ideas. Despite the proliferation of enterprise social media with gamified applications, little research has empirically examined how gamification ideas generate practical values in the workplace. To fill this gap, drawing on cognitive evaluation theory and the theory of aesthetic experience, this study develops a theoretical model that explains how game dynamics influence an employee's work engagement within an enterprise gamified IS. On the basis of the results of model test, we can discuss how different game dynamics (i.e., reward-based and aesthetic-based dynamics) jointly influence users' intrinsic motivation (enjoyment) to engage in work-related activities.

Keywords: Gamification, game dynamics, needs satisfaction, aesthetic experience, work engagement
Introduction

Gamification is the use of game design elements, such as design techniques, game thinking, and systems of mechanics, in non-game contexts to solve problems and engage users (Deterding et al. 2011). As a new paradigm intended to change human behavior by adding playfulness and fun to existing information systems (ISs), gamification has been increasingly adopted for influencing and motivating people to participate in education (Richter et al. 2015), training (Burke 2014), marketing (Bunchball 2010), crowdsourcing (Dergousoff and Sakatachewan 2015), and health care (Vyas 2015; Kapp et al. 2013). Inspired by systems that have been gamified for commercial reasons, business organizations are increasingly recognizing the importance of fun and playfulness in workplace activities to promote employee engagement (von Ahn and Dabbish 2008; Liu et al. 2013).

Currently, many business organizations add game-like dynamics into their enterprise IS (Herzig et al. 2012), wherein employees are rewarded when they reach a milestone, track their records, set goals, join challenges, compete with others, and identify self-progress (Whitson 2013). Within an enterprise gamified IS, employees receive points, upgrade their levels, and achieve badges or trophies according to their work-related activities, such as knowledge sharing, idea competitions, and sales performances. In doing so, employees’ activities are quantified and visualized, for example, when they create new documents, respond to discussions, comment on any content, or vote for an idea. Leaderboards are used to facilitate competition among employees.

Despite great possible practical values, organizations often fail to sustain user engagement (Kapp et al. 2013). This is because the perceived beneficial effects of the game elements used can be short-lived (Kankanhalli et al. 2012). Researchers point out that when a gamified IS simply focuses on game mechanics, such as points, levels, badges (PLBs), and leaderboards, the perceived beneficial effects of the game elements to engage users may not last over time (Kankanhalli et al. 2012; Suh et al. 2015). In this sense, researchers claim that a gamified IS should not rely merely on reward-based game elements, but should, in addition, provide meaningful connections between game elements and users’ interests (Nicholson 2013). Here, the term, “meaningful” refers to the extent to which users’ game-like experience leads to their positive psychological states in which they feel they interact with a gamified IS in a meaningful way, which is referred as “meaningful gamification” (Nicholson 2015; Chen et al. 2015). However, few studies to date have theoretically explained the factors that make gamification meaningful or have systematically examined how gamification ideas can generate practical values in the workplace. To address these gaps in understanding, this study aims to develop a theoretical framework that can explain employees’ work engagement within an enterprise gamified IS with the following key question:

How do game design elements help to engage employees in work-related activities, such as training, knowledge sharing, idea competition, and sales performance?

The main purpose of this work-in-progress paper is to develop a theoretical model that explains employee work engagement within an enterprise gamified IS. In the next step, the model will be tested using a survey method. In doing so, we intend to suggest implications for both academia and industry. For academia, the study contributes to a richer understanding of the interplay among the different ideas and components involved in game design, employees’ motivations, and their engagement in work-related activities. For industry, the study can assist in designing appropriate game mechanisms and techniques to enhance employees’ engagement in organizations by identifying the factors that can harness the benefits of gamification in the workplace for both employees and employers.

Theory Development

Dynamics induced by game design elements

Studies focusing on how individuals are intrinsically motivated by reward mechanisms underlying games have used a psychological lens (e.g., Deci and Ryan 2000), whereas studies concentrating on the game mechanisms that captivate or continuously engaged have used an aesthetic lens (e.g., Nardi 2009). It has been observed that these two theoretical lenses are essential to explaining user engagement within a gamified IS because gamification involves a combination of game design elements, user motivation, and
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Applying the key idea behind gamification that game design elements will lead to positive behavioral functioning (Bunchball 2010), the main purpose of an enterprise gamified IS is to engage employees in work-related activities. The logic is that when users perceive game-like dynamics while using a gamified IS, they are more likely to reach positive states of mind, which will entice them to continue using it and which will in turn ultimately increase their level of work engagement.

Cognitive evaluation theory

Developed by Deci (1975), cognitive evaluation theory (CET) explains how individuals' intrinsic motivations are affected by external stimuli. The CET is a sub-theory of the self-determination theory (SDT), a widely studied macro-theory of human motivation suggesting that people are more likely to be engaged in an activity when they are intrinsically motivated (Deci 1971). Intrinsic motivation comes from inside an individual (e.g., enjoyment), as individuals have a strong desire to determine their own actions. CET's contribution is that it identifies the factors that make people intrinsically motivated (feeling that a certain activity is enjoyable). According to the CET, people have basic psychological needs—autonomy, competence, and relatedness—when they are engaged in a particular activity; these three factors are the main sources of intrinsic motivation. Autonomy refers to a sense of volition or willingness when doing a task (Deci and Ryan 2000), competence refers to feelings of effectance (van der Heijden 2004), and relatedness refers to a feeling of being connected to others (Gottschalg and Zollo 2007).

The CET further argues that, in a context where individuals feel they are controlled or forced to do something, any external motivation (e.g., monetary rewards) decreases intrinsic motivation. However, in a context where the conditions support individuals' basic psychological needs, external forces can increase intrinsic motivation (Gané and Deci 2005). Playing a game represents an autonomy-supportive context (Gané and Deci 2005); people volitionally choose to do it. Activities in playing games, such as accomplishing game tasks, defeating other players, and developing strategies to achieve goals with other players, help people to satisfy their basic needs, such as autonomy, competence, and relatedness (Deci and Ryan 1985a; Deci and Ryan 1985b). While playing games, players earn points, move to higher levels, and win badges or trophies as rewards, but these reward mechanisms do not decrease their intrinsic motivation. That is, rewards do not always decrease intrinsic motivation in the context where people can meet their basic psychological needs. In this sense, it has been suggested that providing game-like reward-based dynamics can stimulate people's intrinsic motivation to engage in particular activities (Kankanhalli et al. 2012; Kapp 2013). The question is whether the logic applied to the context of games still works in non-game contexts (e.g., in the workplace).

Theoretical chasm

According to the CET, it is predicted that a gamified IS enables employees to become engaged in work-related activities, providing game-like playfulness and dynamics and generating positive psychological states (needs satisfaction) that lead to continued engagement. However, the effects of the reward-based mechanisms of gamification on employee engagement in work-related activities are still theoretically controversial. On one hand, although gamification uses game-like reward structures that add fun and playfulness, those tangible rewards may reduce intrinsic motivation in work-related activities because the workplace is hardly a pure, autonomy-supportive context. On the other hand, rewards within a gamified IS can increase intrinsic motivation to engage employees in work-related activities in cases where it can successfully provide users with game-like playfulness (Deterding et al. 2011). Furthermore, it is still unclear whether intrinsic motivation decreases because of extrinsic rewards or because employees must repeatedly perform the same actions and achieve the same rewards. The relationship behind the effects of extrinsic rewards on intrinsic motivation is more complex when considering the levels of challenges involved in achieving the rewards. Rewards that are easy to obtain may hamper the intrinsic motivation of users who prefer challenges, whereas rewards that are hard to get can frustrate users within a gamified IS (Kankanhalli et al. 2012). The lack of a solid theoretical foundation and empirical evidence has raised concerns about how game dynamics sustain employee work engagement within a gamified IS. Hence,
answering the question of what makes gamification more meaningful to users is urgent and critical (Nicholson 2013). To complement the CET, a theoretical lens is identified that can explain users’ states of mind in which they feel they interact with an IS in a meaningful way. The theory of aesthetic experience (TAE) has added to the psychology literature, explaining why people are continuously engaged with particular activities, and therefore the TAE is enlisted to answer the research question.

**Theory of aesthetic experience**

Developed by Dewey (1934), the TAE suggests that an aesthetic experience is an avenue to finding meaningful connections between an individual’s own interests and desired behavior; it should not be confined to the experience of viewing the highly reverenced and distant art of museums (Bronowski 1978; Nardi 2009). Aesthetic experience can emerge in our ordinary lives and should be understood as more than a sensory experience, like visual beauty (Bronowski 1981). While the concept of aesthetic experience has been developed in the fields of arts and philosophy, currently, its scientific values are gaining scholarly attention in diverse disciplines, such as game studies (Nardi 2009), human-computer interactions (Jennings 2000), and marketing (Nuttavuthisit 2014). This is because the TAE provides a holistic theoretical ground to explain why people become captivated by and/or engaged with a particular activity. Sandelands and Buckner (1989) argue that work can have properties similar to art and that these properties can function similarly to encourage an aesthetic experience. Taylor (2002) argues that management practices in organizations should consider employees’ aesthetic experiences in a way that allows managers to create meaning to bring to employees’ personal lives through work-related activities.

McCarthy and Wright (2004), who bring the concept of aesthetic experience into the field of human-computer interaction, define it as an individual’s state of mind, in which he or she is strongly focused on and fascinated by the use of technology and through which his or her need for a sense of meaningfulness and wholeness of action is fulfilled. Kaptelinin and Nardi (2009) also argue that an aesthetic experience is a main driver to make people feel that their interactions with information technologies are integrated into their sense of self in a positive manner. In this vein, it is posited that the aesthetic experience is key to making users feel their activities within a gamified IS are more meaningful by integrating their behavior into their sense of self in a positive way. Furthermore, by explaining the role of the aesthetic experience in the use of IS, it is believed that the TAE can provide new insights applicable to explain user behaviors in IS literature.

Based on Beardsley’s (1982) and Jennings’ (2000) conceptualizations, we identify three cognitions that characterize AE; self-expansion, meaning, and active discovery. Self-expansion refers to the extent to which a user feels his or her sense of self has been expanded; active discovery refers to the extent to which a user exercises his or her powers to meet environmental changes; and meaning refers to the extent to which a user comes to understand the meaning of an activity in a richer or deeper way. The three dimensions are argued to combine additively to create the overall construct of aesthetic experience. In other words, the exclusion of any single dimension will deflate, though not completely eliminate, the overall extent to which a user feels an aesthetic experience while interacting with an IS. Some general assumptions regarding this definition of aesthetic experience should be made explicit. First, aesthetic experience is not an enduring personality trait generalizable across situations, but rather a set of cognitions shaped by technological features of an IS. Thus, aesthetic experience reflects different degrees of users’ perceptions of themselves in relation to there IS use. Second, aesthetic experience is a continuous variable; it emerges more or less while using an IS, rather than a dichotomous form of state. Third, aesthetic experience is not a global construct that is generalizable across different types of IS, but rather, it is specific to particular types of IS, because aesthetic experience typically emerges when people are involved with volitional and self-determining activities. Since the main notion of gamification is to stimulate volitional motivation to engage in task-related activities by adding game dynamics in the workplace, we posit that aesthetic experience might not be applicable in the other IS designed only for productivity and used in a compulsory manner.

**Research Model and Hypotheses**

Figure 1 presents the research model, within which we posit that the effects of game dynamics on needs satisfaction will be moderated by usage duration in a different manner across the two types of game dynamics. Given that the current study focuses on the patterns of users’ interaction with game design
elements, we include game dynamics in our research model; we do not address the relationships between particular game mechanics and dynamics (for this, see Hamari 2014, Hamari et al. 2015).

**Reward-based game dynamics**

Within an enterprise gamified IS, employees earn points according to the significance of the level challenge of their involvement. When they reach a certain point they can level up their status and achieve badges or trophies demonstrating their performance.

Getting PLBs constitutes the individual dynamics expected by gamification, which refers to the extent to which individuals try to get PLBs when they complete pre-designed tasks. Researchers have explained that receiving tangible rewards in game-like contexts is integral to users’ experience of needs satisfaction (Deci and Ryan 2000) because reaching milestones and getting rewards result in a repeated sense of accomplishment and boost self-worth (competence). In addition, getting PLBs also signifies provisions for choice because users can trade the earned points for other virtual items or gifts. In this way, users can choose what they want to do with PLBs (autonomy) and interact with other participants (relatedness) in a gamified IS (Werbach and Hunter 2012). Therefore, we propose the following hypothesis:

H1: Getting PLBs will lead to needs satisfaction within a gamified IS.

Competition constitutes the individual dynamics expected by gamification, which refers to the extent to which individuals compare their performance with that of others and try to accomplish better performance. PLBs and leaderboards are main mechanics that incur the competition dynamics. Leaderboards play a central role in inducing competition by displaying results and celebrating winners (Thiebes et al. 2014). In a gamified IS, competition enables people to challenge each other to achieve the highest score in an activity; a leaderboard is central to displaying the results and celebrating the winners (Thiebes et al. 2014). Users gain a certain amount of satisfaction from comparing their performance with those of others. First, users can make personal performance visible and present it to others through leaderboards, thus demonstrating their capabilities. Literature suggests that competition in a game context enables individuals to be motivated to achieve greater performance, thus feeling competence (Liu et al. 2013), feel that they interact with others through competition (connectedness), and develop their own strategy without external controlling (autonomy) (Ryan and Deci 2000).
Based on these assumptions, we formulate the hypothesis:

H2: Competition will lead to needs satisfaction within a gamified IS.

Self-expression is a dynamic expected by gamification, which refers to the extent to which individuals create unique identities (Dale 2014). All game mechanisms including PLBs, leaderboards, and virtual goods afford opportunities users to create their own sense of style and personal identities distinguished from others (Bunchball 2010; Hamari et al. 2014). Virtual goods, such as avatars or emptovpms can be used to support self-expression. Users can create their alter ego using avatars or virtual goods and customize their features to control how they are viewed by others. For example, a person’s avatar can often serve as a rich focal point for expression. Self-expression stimulates users’ sense of style and personality or reveals an affiliation with a group. By choosing their unique personalities, showing identities, and expressing emotions and feelings that are different from those of other users, people can exercise greater autonomy, competence, and relatedness (Thiebes et al. 2014).

H3: Self-expression will lead to needs satisfaction within a gamified IS.

Aesthetics-based game dynamics

As discussed above, in adopting an aesthetic lens, we posit that aesthetic experience is key to maintaining users’ intrinsic motivation (in this study, intrinsic motivation is operationalized as enjoyment) in a gamified IS. Aesthetic experience is defined as a state of mind wherein a person feels a sense of meaning and comes to understand the essence of experienced events in a deeper way (Bronowski 1978; Taylor 2002). Because aesthetic experience occurs when people perform a dynamic, self-sufficient, participatory activity that is organized in distinctive stages, in which every required action should end with a satisfying consummation, it leads to heightened enjoyment when people are involved in the activity (Dewey 1934).

H4: Aesthetic experience will lead to enjoyment within a gamified IS.

Aesthetic experience can hardly be induced by simple, regular, and ordinary stimuli (Nardi 2009). Drawing on Nardi’s aesthetic-based model (2009) with the TAE backdrop, we identify three aesthetic-based dynamics: goal alignment, skill-challenge congruence, and collective expression.

Goal alignment refers to the extent of fitness between the goal defined by gamified tasks and a user’s personal goals. Scholars suggest that the users’ personal interests or goals should be aligned with the goals of the gamified tasks so that people overcome short-term barriers on the path toward achieving the target performance (Kapp et al. 2013). For example, Foursquare, which creates short-term enjoyment by giving users credit for visiting new locations, did not align the gamified IS’s goal with users’ personal goals. While it may let users achieve the goal of the gamified tasks, user engagement fades over time due to users’ adaption. In this sense, the failure of gamification has been often attributed to misalignment between users’ personal goals and the gamified tasks’ goal (Kapp et al. 2013). Users who have connected an activity to their personal goals are more likely to have an aesthetic experience (Nardi 2009). The TAE suggests that a strong sense of self-growth, with a balance between the self and the object, leads to aesthetic experience (Sandelands and Buckner 1989). Accordingly, we can infer the following hypothesis:

H5: Goal alignment will lead to aesthetic experience within a gamified IS.

Skill-challenge congruence pertains to the extent of the balance between users’ ability and the level of task difficulty. Aesthetic experience occurs when the challenge facing a person is in almost perfect balance with his or her level of skills and abilities, in which he or she can accomplish the task that requires concentration and a high level of effort (Sweetser and Wyeth 2005). In games, players continuously increase their skills by progressive disclosure of both users’ knowledge and challenge, which will help ensure that the game’s challenges match a player’s skill levels. In this sense, a gamified IS should provide challenges whose degrees of difficulty automatically adjust to users’ individual capabilities in order to generate a positive state of mind, namely, aesthetic experience (Thiebes et al. 2014). When the skills significantly exceed the challenges, boredom will likely result, whereas an easy challenge that does not require much focus to beat is not as much fun. Research shows that an optimally challenging condition occurs when challenge and skill are balanced (Liu et al. 2013), which leads to aesthetic experience.

H6: Skill-challenge congruence will lead to aesthetic experience within a gamified IS.
Collective expression refers to the extent to which individual users can act together at the community level. It involves vigorous and participatory activities connecting users to others in relation to the community. Dewey’s understanding of an aesthetic experience (1934) is related to the sense of connectedness; people are more likely to have an aesthetic experience by observing how others explore a space and engage in an activity together. Scholars have highlighted that connecting an individual to a community exposes him or her to more diverse viewpoints, increasing the chance that he or she will find something meaningful within a gamified IS (Nicholson 2013). According to the TAE, aesthetic experience is possible when people feel that some parts are bigger than themselves. The Nike+ system is an example of how users can advance by getting together to perform participatory activities (e.g., charity, marathons, and campaigns), beyond personal achievement and toward collective activities, through sharing those user-created achievements (Simon 2010).

H7: Collective expression will lead to aesthetic experience within a gamified IS.

**Moderating effect of usage duration**

In Hypotheses 1-3, we argue that game-like experience creates an autonomy-supportive context, where the dynamics, getting PLBs, competition, and self-expression will satisfy individuals’ basic psychological needs. The question is whether the positive effects of reward-based dynamics can be sustainable. From the perspective of technology use, IS researchers have found that the positive effects of extrinsic rewards on the use of technology tend to decrease over time (Magni et al. 2010). As users repeatedly interact with others and become used to the reward-based mechanisms within a gamified IS, their sense of novelty and curiosity decreases, thus reducing the level of needs satisfaction (a main driver leading to intrinsic motivation). As time passes, users may develop a better understanding of the novelty, and the effects of reward-based mechanisms of gamification on needs satisfaction may diminish.

H8: The positive effects of reward-based dynamics—getting PLBs (H8a), competition (8b), and self-expression (8c)—on needs satisfaction will diminish as usage duration increases within a gamified IS.

In contrast, the effects of these aesthetic-based dynamics on aesthetic experience are reinforced over time because the aesthetic-based dynamics enable the users to be more attentive and vigilant and makes their mental activities dynamically tensed as they feel self-progression (Berlyne 1971). The reason why many game studies highlight the importance of aesthetic-based dynamics is because users are continuously captivated by the aesthetic-based dynamics over time, which provides meaningful connection between users and the gamified tasks. Thus, we formulate the following hypothesis:

H9: The effects of aesthetic-based dynamics—goal alignment (9a), skill-challenge congruence (9b), and collective-expression (9c)—on aesthetic experience will be positively moderated by usage duration in a gamified IS.

**Needs satisfaction, aesthetic experience, and enjoyment**

The main tenet of the CET is that when performing an activity satisfies an individual’s basic needs, he or she experiences greater enjoyment (Deci 1975). The TAE also suggests that one’s aesthetic experience leads to heightened enjoyment (Dewey 1934). Applying the general notions of the CET and the TAE to the context of using a gamified IS, we formulate the following hypotheses.

H10: Needs satisfaction will lead to enjoyment within a gamified IS.
H11: Aesthetic experience will lead to enjoyment within a gamified IS

**Enjoyment and work engagement**

The extent of the individual’s involvement and satisfaction with as well as enthusiasm for work (Harter 2000). An enterprise gamified system is designed for facilitating employees’ work-related activities, such as knowledge sharing, idea generation, and sales performance. Considering the nature of enterprise gamified IS that provides technological functions for self-tracking and self-monitoring, through which users are mainly involved in work-related activities, enjoyment in using the IS will lead to an increase in work engagement within a gamified IS.

H12: Enjoyment will lead to work engagement.

**Methods**
Data collection
The proposed research model will be tested by using empirical data to be collected via a series of surveys involving 200 employees from a global consulting company that has already adopted gamification ideas into its enterprise media platform, whereby employees receive points, levels, and badges according to their activities and contributions (e.g., posts, comments, replies, and votes). Leaderboards are used to visualize individual performance, which facilitates competition among employees.

Measurement
To test the proposed model, we adopt existing validated scales wherever possible. The sources of the survey instruments are shown in Table 1.

Table 1. Research Constructs, Operational Definitions, and Instrument Sources

<table>
<thead>
<tr>
<th>Operational-Level Constructs</th>
<th>Operational Definition &amp; Instrument Sources</th>
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<tbody>
<tr>
<td>Getting PLBs</td>
<td>The extent to which a user tries to get PLBs when they complete pre-designed tasks within a gamified IS; adapted from Kankanhalli et al. (2005)</td>
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<tr>
<td>Competition</td>
<td>The extent to which a user compares his or her performance with that of others and tries to accomplish better performance within a gamified IS; adapted from Lee and Yang (2011)</td>
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<tr>
<td>Self-expression</td>
<td>The extent to which a user creates unique identities within a gamified IS; adapted from Ma and Agarwal (2007).</td>
</tr>
<tr>
<td>Goal alignment</td>
<td>The extent to which a user feel that the goals defined by gamified tasks fit his or her personal goals; self-developed on the basis of Nardi's (2009) conceptualization</td>
</tr>
<tr>
<td>Skill-challenge congruence</td>
<td>The extent of the balance between users' ability and the level of task difficulty; self-developed on the basis of the Nardi's (2009) conceptualization</td>
</tr>
<tr>
<td>Collective expression</td>
<td>The extent to which individual users can act together at the community level; self-developed on the basis of the Nardi's (2009) conceptualization</td>
</tr>
<tr>
<td>Aesthetic experience</td>
<td>Self-expansion The extent to which a user feels her sense of self has been expanded; adapted from Mattingly and Lewandowski (2013)</td>
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<td></td>
<td>Active discovery The extent to which a user exercises his or her powers to meet environmental changes; self-developed based on Beardsley’s conceptualization (1982)</td>
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<td></td>
<td>Meaning The extent to which a user comes to understand the meaning of an activity in a richer or deeper way; self-developed based on Beardsley’s (1982) conceptualization</td>
</tr>
<tr>
<td>Needs satisfaction</td>
<td>Autonomy The extent of a user’s sense of volition or willingness when doing a task within a gamified IS; adapted from Sheldon et al. (2001)</td>
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<td></td>
<td>Competence The extent to which a user’s feelings of effectance within a gamified IS; adapted from Sheldon et al. (2001)</td>
</tr>
<tr>
<td></td>
<td>Relatedness The extent to which a user feels connected to others within a gamified IS; adapted from Sheldon et al. (2001)</td>
</tr>
<tr>
<td>Enjoyment</td>
<td>The extent to which individuals feel a sense of fun when using an IS; adapted from Qui and Benbasat (2010).</td>
</tr>
<tr>
<td>Work Engagement</td>
<td>The extent of an individual’s involvement, satisfaction with, and enthusiasm for work; adapted from Harter et al. (2002).</td>
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</table>

Conclusion, Limitations, and Next Steps
Despite the potential of gamification ideas (to make people enjoy using game design elements), some companies are struggling to sustain employee engagement with a gamified IS. Our work will contribute to determining where managerial pitfalls exist in gamifying work-related activities and how to overcome the potential challenges. The model we develop in this study can serve as a theoretical platform to examine, verify, and advance the practical values of gamification in the workplace. While we believe our findings can apply to a wide range of contexts, in which user engagement is considered critical (e.g., contexts ranging from social media platforms to corporate websites, and from education to entertainment), the current study does not identify the factors more specific to the workplace. Future study will benefit from identify factors that reflect unique characteristics of gamification in the workplace.
References


