GAMIFIED INFORMATION SYSTEMS: GAMEFUL EXPERIENCES, ACHIEVEMENT GOALS, AND PERFORMANCE

Liqiong Deng, University of West Georgia

ABSTRACT

Gamification, the use of game design elements in non-game contexts (Deterding, Dixon, Khaled & Nacke, 2011), is permeating various types of information systems (IS) and becoming a promising approach for motivating and engaging IS users. Despite the potential benefits of using gamification elements in information systems, there is still limited understanding of how gamification influences IS users' motivations and task performance. This paper focuses on the implications of gamified IS for task performance through its impacts on the goal adoption and achievement behaviors of IS users. Drawing on the Achievement Goal Theory, regulatory focus theory and gamified IS research, a theoretical framework is developed to investigate how gamification influences IS users' goal choices, goal striving behaviors and task performance. The model proposes that the motivational gameful experiences offered by a gamified IS affect IS users' goal orientations toward achievement, which in turn affect users' task performance, mediated by their self-regulatory goal-striving strategies. By providing an understanding of how various gameful experiences of gamified IS influence users' goal orientations and their task performance with an IS, this paper will offer guidelines on how to appropriately design and implement gamification to improve the task performance of IS users.

Keywords: gamification, goal orientation, regulatory focus, performance

INTRODUCTION

In recent years, the study of gamification, the use of game design elements in nongame contexts to engage users (Deterding, Dixon, Khaled & Nacke, 2011), has gained much attention in the IS field. Gamification is permeating many different types of information systems for existing business activities to make tasks more engaging for employees and consumers and to improve organizational outcomes (Kumar, 2013; Stanculescu, Bozzon, Sips & Houben, 2016). For instance, companies use various gamification elements, such as points, badges, levels, trophies and virtual goods, to reward employees when they reach milestones, take part in challenges, establish new goals, or win competitions in work-related activities, e.g., knowledge sharing, sales performance, idea competition, and training and education (Suh, Cheung, Ahuja & Wagner, 2017). Customers also receive rewards from companies for sharing on social media, purchasing from partners and engaging in other loyalty activities (Liu, Santhanam & Webster, 2017).

Gamified information systems (IS) incorporate game design elements into target information systems while retaining the target systems' instrumental functions (Liu et al., 2017). Gamification has been suggested as a promising approach to increase employee task performance in an organizational context (Koopmans, Bernaards, Hildebrandt, van Buuren, van der Beek & de Vet, 2012; Landers, Bauer & Callan, 2017). By improving employees' motivation and directing their

attention to particular focal tasks, gamification can improve employees' task performance (Landers, Bauer & Callan, 2017; Locke & Latham, 2002). Despite the widespread belief in the potential benefits of gamification, some researchers have pointed out that there is still limited understanding of how gamification influences IS users' motivations and task performance (Tang, Jia & Zhang, 2020). In an organizational context, the motivating effects of gamification on task performance is critical for the long-term viability and eventual success of gamified IS. In prior research, the Self-Determination Theory, Motivational Affordance Theory, and Goal-Setting Theory are often applied to guide research on the effects of gamification design on task performance. The Self-Determination Theory and Motivational Affordance Theory primarily guide the investigations of the relationships between gamification design and the satisfaction of basic human needs (Mekler, Brühlmann, Tuch & Opwis, 2017; Sailer, Hense, Mayr & Mandl, 2017; Xi & Hamari, 2019). The Goal-Setting Theory is often used to guide the gamification design for performance improvement based on the goal requirements (Landers, Bauer & Callan, 2017; Tondello, Premsukh & Nacke, 2018). However, limited research has been done to explain how gamification design could be applied to shape motivational and behavioral conditions for better outcomes, such as enhanced motivations or improved behaviors for instrumental purposes (Tang, Jia & Zhang, 2020).

The Achievement Goal Theory indicates that goals can be contextual and influenced by a purposely designed environment or induced by users' behavioral setting (Pintrich, 2000). The contextual view of achievement goals can provide a good theoretical lens for understanding how gamification design can be employed to construct an achievement setting to influence users' adoption of achievement goals and their goal striving behaviors and task performance. This study will adapt the Achievement Goal Theory to the gamification design context and focus on the implications of gamified IS for task performance through its impacts on the goal adoption and achievement behaviors of IS users.

THEORETICAL BACKGROUND

Gamification Affordances and Gameful Experiences

Many IS researchers suggest that a gamified IS should be designed in such a way that its technological features create certain affordances that can engage and motivate users, thereby leading to better performance (Tondello, Premsukh & Nacke, 2018; Tang, Jia & Zhang, 2020). The theory of affordance provides an analytical link between gamification features and user experiences (Van Vugt, Hoorn, Konijn & de Bie Dimitriadou, 2006; Suh et al., 2017). An affordance is a combination of actual and perceived properties of a thing, primarily those that determine how the thing can be used (Norman, 1998). The gamification affordance refers to the set of actionable properties between gamification and users (Gibson, 1977; Suh et al., 2017). The central tenet of affordance theory is that specific technological functions or features alone do not determine technological capabilities, which instead exist as part of the relationships between users and technological artifacts in specific situations (Leonardi, 2011). In other words, the usability of technological features lies in what a technology affords and whether the affordances allow individuals to perform specific actions that may satisfy certain needs (Norman, 1998).

Some commonly implemented gamification components in an IS include points, levels, leaderboards, badges, and trophies. According to affordance theory, different users can use a technological feature of an IS in different ways; and an individual may achieve the same objective using different IS features (Suh et al., 2017). One person may consider achieving a higher level as a challenge to accomplish increasingly difficult tasks, thereby stimulating a sense of progress and achievement. However, another individual may regard levels as a kind of reward for his/her activities. Leaderboards illustrate game results by displaying participants' names in a descending order based on the number of points obtained by each participant. Some users may regard leaderboards as an opportunity to compete with others, whereas others may use leaderboards for goal setting or progress tracking. Hence, the gamification components provide ways to implement certain affordances within a gamified IS.

Prior literature discusses a wide variety of gamification affordances. A gamified IS generally provide the following gamification affordances: achievement, challenges, rewards, competition, status, self-expression, choice/options, social interaction and cooperation (Weiser, Bucher, Cellina & De Luca, 2015; Suh et al., 2017; Wolf, Weiger & Hammerschmidt, 2018). Achievement provides the experience of reaching goals or achieving intended target behaviors within a gamified IS. A challenge is something (e.g., a task or problem) difficult to achieve within a gamified IS. Rewards are things given to users as a payoff because of what they have achieved within a gamified IS. Competition involves comparing one's performance with those of others within a gamified IS. Status allows users to improve their standing by achieving predefined goals or reaching specific milestones within a gamified IS. Self-expression enables users to create unique identities of themselves within a gamified IS. Choice/options allows users to doing things their own way. Social interaction involves communicating and interacting with one another. Cooperation is the collaborative process whereby several parties work together to achieve something (e.g., the solution of a problem) within a gamified IS (Weiser et al., 2015).

Table 1. Gamification Affordances and Gameful Experiences

Gamification Affordances	Gameful Experiences
● Challenges ● Rewards	Self-Development
● Competition ● Status Affordances	Social Comparison
● Cooperation ● Social Interaction	Social Connectedness
● Self-Expression ● Choice/Options	Expressive Freedom

Gamification affordances are critical for gameful experiences, which are true drivers of user behaviors (Huotari & Hamari, 2017). Wolf, Weiger, and Hammerschmidt (2018) identified four distinctive gameful experiences emerging from gamified service usage: self-development, social comparison, social connectedness, and expressive freedom. Self-development refers to

experiences of advancement in one's own capabilities and are related to the achievement, challenges and rewards affordances. Social comparison is the experience of rivaling with others when performing an activity. It is related to the competition and status affordances. The experience of social connectedness manifests through interacting and cooperating with one another and are associated with the cooperation and social interaction affordances. Expressive freedom is experienced when acting on one's own will and being able to demonstrate one's own personality. It is related to the self-expression and choice/options affordances. Table 1 summarizes the associations between gamification affordances and gameful experiences.

Motivation Theories in Gamification Research

Self-determination theory

One motivation theory widely applied in gamification research is the Self-Determination Theory, which suggests three basic intrinsic psychological needs of human being: the need for competence, the need for autonomy, and the need for social relatedness (Deci & Ryan, 1985; Ryan & Deci, 2002; Ryan, 1995). The need for competence refers to the desire to achieve efficiency and success while interacting with the environment (Rigby & Ryan, 2011; Vansteenkiste & Ryan, 2013; White, 1959). It is assumed that every human strives to feel competent, for example, to acquire the skills necessary to perform a task efficiently. The need for autonomy refers to the feeling of psychological freedom and the need to make self-determined choice in the initiation, regulation and performance of behavior on the basis of one's own values and interests without external pressure or enforcement (Deci & Ryan, 2002; Ryan & Deci, 2002; van den Broeck, Vansteenkiste, Witte, Soenens, & Lens, 2010; Vansteenkiste, Niemiec, & Soenens, 2010; Vansteenkiste, Williams, & Resnicow, 2012). The need for social relatedness refers to one's need to engage in interpersonal relationships and establish close emotional bonds, belonging and attachments with other people. It represents the basic desire of the individual to be emotionally connected and interpersonally integrated with the social environment (Baumeister & Leary, 1995; Deci & Ryan, 1985, 2000; Deci & Vansteenkiste, 2004). These three intrinsic psychological needs are motivational resources that can be developed by modifying the environment. In gamification research, various gamification affordances can be utilized to promote motivational behavior patterns by deliberately addressing the human need for competence, autonomy, and social relatedness (Vansteenkiste et al., 2010).

Goal-setting theory

The Goal-Setting Theory is a motivation theory aiming to explain the relationships between conscious goals and people's performances in work-related tasks (Locke & Latham, 2002; Locke & Latham, 2013). This theory suggests that performance is directly related to the pursuing goals set by individuals. It posits the mechanisms through which goals affect performance, such as choice or direction, effort, persistence, and knowledge or task strategy, and identifies the ways to improve task performance in organizational contexts by specifying goal requirements and setting up optimal difficulty levels for goals (Locke & Latham, 2002; Locke & Latham, 2013). In gamification research, studies have been conducted on how to implement goal-setting (such as goal difficulty and goal specificity) with gamification elements (Landers, Bauer & Callan, 2017; Tondello, Premsukh & Nacke, 2018). The focus is on the continuous monitoring of progress

toward the predetermined goals and orientation of users' attentions and efforts towards goal accomplishment, thus leading to better performance.

Achievement goal theory

These theories have certain limitations. The Self-Determination Theory focuses on human motivations by satisfying basic human needs at a generic level without considering specific goal setting. The Goal-Setting Theory focuses on setting up goals and monitoring progress toward goal achievement without regard to the connection between goal design and human motivation. The Achievement Goal Theory, which posits that distinct achievement goals can differentially influence individuals' achievement behaviors (Elliot & Trash, 2001; Roberts, 2012), can be adapted to the IS gamification context and guide an investigation of the motivational nature of goal design in gamification. The Achievement Goal Theory, originated from the field of educational psychology (Dweck, 1986), has been extended and applied to many other disciplines, such as organization science (Welsh, Bush, Thiel & Bonner, 2019), sports (Ntoumanis, 2001) and human resource management (Hirst, Van Knippenberg & Zhou, 2009), to provide understanding of individuals' achievement goals and motivational behaviors in settings beyond the academia.

Individuals have different goals when participating in an achievement activity (Dweck, 1986; Ames, 1992; Elliot & McGregor, 2001; Landers, 2014). Achievement goals are generally described as competence-based strivings used to guide behaviors (Elliot, 1999). Hulleman, Schrager, Bodmann and Harackiewicz (2010) specifically defined an achievement goal as "a future-focused cognitive representation that guides behavior to a competence-related end state that the individual is committed to either approach or avoid" (p. 423). Achievement goals may originate from one's personal traits or be purposely built into environmental conditions, such as classrooms or work settings or computerized environments (Tang, Jia & Zhang, 2020). Thus, an achievement goal can be a person's dispositional goal orientation or a contextual goal affected by a purposely designed environment (Pintrich, 2000). Gamification is inherently a goal-oriented activity (2011). The contextual view of achievement goals provides a theoretical lens for understanding why and how gamification can influence individuals' achievement goals and motivational behaviors (Tang, Jia & Zhang, 2020).

Dweck (1986) identified two major classes of achievement goal orientations: the learning goal orientation and the performance goal orientation. A learning goal orientation is mastery-oriented and refers to one's desire to develop competence by acquiring new skills, mastering new situations, and learning from experience; while a performance goal orientation is a desire to demonstrate and validate one's competence by seeking favorable judgements and avoiding negative judgements (Dweck, 1986; Dweck & Leggett, 1988). The learning goal orientation and the performance goal orientation differ in people's beliefs about ability and effort. An individual with a high learning goal orientation believes that ability can be developed and is subject to improvement through an incremental theory about ability, which suggests that future success can be achieved through effort and the development of skills and abilities (Dweck, 1986; Elliot & Dweck, 1988). In contrast, a performance goal orientation is associated with an entity theory, which views skills and abilities as fixed attributes that are difficult to develop (Brett &VandeWalle, 1999). Effort is not considered as a means for enhancing task performance and successful task performance is primarily based on the possession of necessary innate ability. Thus, the performance-focused individuals seek to

accomplish desired outcomes by demonstrating and validating competence (Dweck & Leggett, 1988; Elliot & Dweck, 1988).

Elliot and Harackiewicz (1996) later introduced the approach and avoidance motivations to the performance goal orientation, which resulted in the performance-prove goal orientation and the performance-avoid goal orientation. An individual with a high performance-prove orientation tends to approach the completion of current tasks in order to demonstrate his/her capabilities when compared to others. However, a high performance-avoid goal orientation is based on the goal of avoiding failure and negative judgements of one's ability and hence leads individuals to avoid performing difficult or challenging tasks to avert a display of incompetence when compared to others (Elliot & Harackiewicz, 1996). Similarly, VandeWalle (1997) proposed a three factor structure for goal orientation encompassing: (1) a learning goal orientation (a desire to develop competence through expanding one's abilities by mastering challenging situations), (2) a performance-prove goal orientation (a desire to demonstrate one's competence to gain favorable judgments), and (3) a performance-avoid goal orientation (a desire to avoid plausible negation of one's competence). Despite differences in their perspectives on the malleability of ability, both the learning goal orientation and the performance-prove goal orientation focus on attaining success by reducing the discrepancy between the current state and the goal state, and thus belong to the domain of approach motivation (Elliot & Thrash, 2002). In contrast, the performance-avoid goal orientation is associated with discrepancy amplifying and hence is in the avoidance motivation domain (Elliot & Thrash, 2002). An individual with performance-avoid goal orientation avoids the demonstration of incompetence relative to others, which often manifests as a lack of task engagement, thus averting discrepancy reduction (Elliot & Harackiewicz, 1996). Figure 1 outlines different types of achievement goal orientations.

Figure 1. Achievement Goal Orientations

Regulatory Focus Theory and Goal-Striving Strategies

Both the choices made about the goals to pursue and the adaptive behaviors chosen to enact the goal pursuit play important roles in determining people's performance (Johnson, Shull & Wallace, 2010). The work motivation research recognizes two main components through which individuals pursue their goals: goal choice and goal striving (Kanfer, 1990; Mitchell & Daniels, 2003). Goal choice involves the process of deciding where and how to allocate effort on a particular task, while goal striving consists of the engagement and persistence of effort in pursuit of the chosen goal. Achievement goals are a form of goal choice (Chen, Thomas, & Wallace, 2005) and represent how people perceive and respond to various achievement situations (Dweck & Leggett, 1988). Johnson, Shull and Wallace (2010) investigated how an individual proceeds from goal orientation toward achievement through the goal striving process from the perspective of regulatory focus theory and found that the self-regulatory goal striving strategies mediate the relationship between achievement goal and performance.

The regulatory focus theory suggests that people approach goals using two goal striving strategies respectively characterized by two distinct self-regulatory processes – prevention regulatory focus and promotion regulatory focus – to accomplish desired outcomes, such as job performance (Higgins, 1997; 1998; 2000). While both self-regulatory processes are grounded in the discrepancy-reducing approach motivation, the promotion regulatory focus and the prevention regulatory focus differ in the behavioral strategies enacted to reach the desired goal state (Higgins, 1997). The regulatory focus theory is essentially a hedonistic view of human behaviors whereby people approach pleasure and avoid pain. The promotion regulatory focus is driven by the need nurturance concerning an ideal self (i.e., the kind of person an individual would like to be) and thus are related to attainment of positive outcomes, such as advancement, accomplishment and aspirations. In contrast, the prevention regulatory focus is driven by the need for safety concerning an ought self (i.e., the kind of person an individual ought to be) and are related to avoidance of negative outcomes and fulfillment of responsibilities, duties, and obligations. Therefore, individuals with a promotion regulatory focus are sensitive to positive outcomes. They consider gains as success and nongain as failure and regulate their attentions, perceptions and behaviors toward maximization of gains. Individuals with a prevention regulatory focus are sensitive to negative outcomes. They regard non-loss as success and loss as failure and regulate their attentions, perceptions and behaviors toward security and minimization of losses (Higgins & Tykocinski 1992; Shah, Higgins & Friedman, 1998).

Individuals' self-regulatory foci guide their strategic inclinations, tactical preferences, information processing, and goal-striving behaviors (Dholakia, Gopinath, Bagozzi & Nataraajan, 2006; Pham & Avnet, 2004; Sengupta & Zhou, 2007; Vellido, Lisboa & Meehan, 2000). Individuals prefer to adopt strategies and engage in activities that are consistent with their self-regulatory foci. Specifically, individuals with a promotion regulatory focus are likely to utilize an eagerness strategic means to pursue a goal, while individuals with a prevention regulatory focus tend to adopt a vigilance strategic means to fulfill a goal (Crowe & Higgins, 1997). Let us consider a signal detection situation where individuals decide whether an action is worth pursuing (Tanner & Swets, 1954; Trope & Liberman, 1996). There are four possible outcomes of each signal-detection trial: 1) a hit – deciding to take a correct action, 2) a miss – deciding not to take a correct action, 3) a correct rejection – deciding not to take a wrong action, and 4) a false alarm – deciding to take a

wrong action. Since a promotion regulatory focus is concerned with the pursuit of gains and advancements, it entails the eagerness strategy to ensure hits and avoid misses (i.e., a loss of an opportunity for accomplishment). In contrast, since a prevention regulatory focus is concerned with safety and avoidance of failures, it involves the vigilance strategy to seek correct rejections and ensure against false alarms (i.e., making a mistake). It is important to note that both self-regulatory foci are based on the approach motivation and strive to reduce the gap between current state and end state (Johnson, Shull & Wallace, 2010). A promotion-focused person strategically approaches the desired end-state by maximizing his/her chance for a match between the goal and the actual outcome by making sure that he/she does not commit an error of omission. A prevention-focused person strategically approaches the desired end-state by minimizing his/her chance for a mismatch between the goal and the actual outcome by ensuring he/she does not commit an error of commission. In summary, a promotion-focused individual behaves in a manner that ensures goal achievement while accomplishing gains, while a prevention focused individual acts to ensure goal achievement while avoiding mistakes and losses (Higgins, 2000; Neubert et al., 2008; Wallace & Chen, 2006).

Although achievement goal and self-regulatory focus are related, they are two theoretically distinct constructs (Johnson, Shull & Wallace, 2010). The definition of the goal-choice – goal-striving process suggests that goal choice is an antecedent of goal-striving, which in turn leads to the accomplishment of desired outcomes (Locke & Latham, 1990; Kanfer, Chen, & Pritchard, 2008). Achievement goals, which are concerned with the type of goals that individuals choose to pursue, are supported as a form of goal choice in the literature (Brett & VandeWalle, 1999; Chen, Thomas & Wallace, 2005). While the achievement goals do not explicitly explain how individuals pursue the chosen goals, researchers believe that achievement goals can stimulate specific goal-striving behavioral strategies that mediate the relationship between goal-choice and performance (Kanfer & Heggestad, 1997; Chen, Thomas & Wallace, 2005).

THEORETICAL FRAMEWORK AND PROPOSITIONS

Drawing on the Achievement Goal Theory, regulatory focus theory, and gamification research in the IS field, I developed a theoretical framework to investigate how gamification influences IS users' goal choices, goal striving behaviors and task performance (Figure 2). The model proposes that the motivational gameful experiences offered by a gamified IS affect IS users' goal orientations toward achievement, which in turn affect users' task performance, mediated by their self-regulatory goal-striving strategies.

I draw on Wolf et al.'s work (2018) to capture a comprehensive spectrum of gameful experiences emerging from gamified IS usage: self-development, expressive freedom, social connectedness and social comparison. Self-development refers to mastering one's everyday life by continued improvement of abilities and valued skills (Bauer & McAdams, 2004; Ryff & Keyes, 1995). The gameful experience of self-development relates to being challenged, perceiving achievement, and making progress (Wolf, Weiger & Hammerschmidt, 2018). A gamified IS can foster the experience of self-development by delivering ongoing challenges and providing positive feedbacks to users (Ryan, Rigby & Przybylski, 2006; Wolf, Weiger & Hammerschmidt, 2020). Expressive freedom is the ability to act in one's own interest without restrictions (de Almeida, Dholakia, Hernandez & Mazzon, 2014). The gameful experience of express freedom is concerned

with the perceptions of choice and self-expression (Wolf, Weiger & Hammerschmidt, 2018). Experiencing expressive freedom corresponds a feeling of choice and freedom (Ryan & Deci, 2002). A gamified IS can promote the experience of expressive freedom by minimizing external restrictions and offering various personalization options (Deci, Koestner & Ryan, 1999; Peters, Calvo & Ryan, 2018). Social connectedness refers to forming interpersonal attachments (Baumeister & Leary, 1995) and it relates to the perceptions of social interaction and cooperation (Ryan & Deci, 2002; Wolf, Weiger & Hammerschmidt, 2018). A gamified IS can facilitate the experience of social connectedness by fostering a sense of belonging through features that allow users to interact or work together (Wolf, Weiger & Hammerschmidt, 2018). Social comparison involves comparing one's own abilities and accomplishments with those of other people (Festinger, 1954). It relates to the experiences of competition and gaining status (Wolf, Weiger & Hammerschmidt, 2018). A gamified IS can create the experience of social comparison through features comparing users with others or ranking users on the basis of performance (Reeve & Deci, 1996).

Figure 2. Theoretical Framework of Gameful Experiences, Achievement Goals and Task Performance

The gameful experiences of self-development, expressive freedom and social connectedness support task mastery, continued improvement of abilities and skills, autonomy, cooperation, and integrate IS users as an integral part of learning. Thus, these gameful experiences positively predict the adoption of learning goal orientation. Therefore, the following proposition is suggested.

Proposition 1: The gameful experiences of self-development, expressive freedom and social connectedness with a gamified IS positively relate to the learning goal orientation in IS users.

The experience of social comparison will foster normative comparisons, focus on interpersonal competition, and entail the punishment of mistakes. So, it will negatively predict the adoption of learning goal orientation, which emphasizes learning new skills and may involve errors as a result of learning process. This suggests the following proposition.

Proposition 2: The gameful experience of social comparison with a gamified IS negatively relates to the learning goal orientation in IS users.

According to the Self-Determination Theory, social comparison can lead to behaviors that seek to avoid feelings of shame for underperforming or to be admired for one's performance, both of which induce perceived pressure to perform (Deci & Ryan, 2000). So, social comparison will positively predict the adoption of performance-prove goal orientation or the adoption of performance-avoid goal orientation, both of which emphasize normative comparisons. In addition, self-efficacy may play a moderating role in these two relationships. Self-efficacy refers to an individual's belief about his/her ability to complete a task successfully (Bandura, 1997). Prior research suggests that this competence-related belief affects people's goal orientation (Hsieh, Sullivann & Guerra, 2007). Individuals with high self-efficacy who experience social comparison are likely to adopt performance-prove goal orientation, because their beliefs in being successful will invoke a desire to demonstrate competence and outperform others. In contrast, individuals with low self-efficacy who experience social comparison are likely to adopt performance-avoid goal orientation, because they have little confidence in performing successfully and tend to hide their incompetence from others. Therefore, I hypothesize that the following two propositions.

Proposition 3a: For IS users with high self-efficacy, the gameful experience of social comparison with a gamified IS positively relates to the performance-prove goal orientation in the users.

Proposition 3b: For IS users with low self-efficacy, the gameful experience of social comparison with a gamified IS positively relates to the performance-avoid goal orientation in the users.

The learning goal orientation places emphasis on gaining mastery of tasks and developing one's competence. An individual with a learning goal orientation tends to have a tolerance for errors while engaged in learning, and the end goal is to learn and master the task to become proficient and successful. So, the learning goal orientation is often associated with high levels of task performance (Button, Mathieu & Zajac, 1996; Phillips & Gully, 1997), as a result of the learning goal-induced behavioral strategies that encourage the undertaking of challenging tasks, a desire to learn, persistence despite failure, and a disposition toward task completion (Steele-Johnson, Beauregard, Hoover & Schmidt, 2000; Porath & Bateman, 2006). As the learning goal orientation involves mistakes as part of the learning process, the adoption of prevention-focused goal-striving strategy is unlikely because people understand that mistakes or failures are necessary to provide a context for gauging their progresses on their learning goals and that they can correct themselves

and continue to develop competence in a given area. Both the learning goal orientation and the promotion regulatory focus orient toward maximizing the probability of gaining task mastery resulting from individuals' efforts devoted to goal pursuits. When the learning goal orientation dominates with the ultimate goal of task mastery in mind, a promotion regulatory focus arises in which errors as part of the learning process are tolerated and in turn stimulate individuals to engage in further learning experiences for approaching the ultimate goal of task mastery. Therefore, I suggest that promotion regulatory focus mediates the positive relationship between learning goal orientation and task performance. This suggests the following proposition.

> Proposition 4: The learning goal orientation positively relates to task performance through the promotion-focused goal-striving strategy.

The performance-prove goal orientation is oriented toward high-level task performance in which an individual desires to demonstrate competence in order to obtain a positive evaluation of his/her ability in comparison to the competence of others. In order for an individual to be considered competent, there must be no or minimum errors experienced when engaging in a task. Thus, for an individual with a performance-prove goal orientation, a minimization or absence of error occurrence in the performance of his/her tasks is the goal for which he/she is striving. A prevention-focused behavioral strategy is goal-directed and concerned with the goal of mistake-free successful task performance. In addition, the performance-prove goal orientation also entails a preference for easier performance goals over more difficult goals, because a positive assessment of competence becomes more likely with an easier goal and an increased probability of successful task accomplishment. The prevention regulatory focus also favors easier tasks in order to avoid the occurrence of errors. The preferences for easier tasks and the orientation toward minimizing the probability of error occurrence in both the performance-prove goal choice and the prevention-focused goal-directed behavior seem to align. So, when the performance-prove goal orientation frames the goal, the individual is likely to evoke prevention-focused behavioral strategies to approach the goal. Thus, I hypothesize that prevention regulatory focus mediates the positive relationship between performance-prove goal orientation and task performance. The following proposition can be suggested.

> Proposition 5: The performance-prove goal orientation positively relates to task performance through the prevention-focused goal-striving strategy.

The performance-avoid goal orientation avoids the appearance of incompetence relative to others, which may entail a lack of engagement and persistence in the accomplishment of goals and make it incompatible with self-regulatory focus. The performance-avoid goal orientation is based on the avoidance domain of motivation while the self-regulatory foci belong to the approach domain of motivation. Both promotion and prevention regulatory foci are based on the approach motivation and strive to reduce the gap between the current state and the end state. The prevention regulatory focus involves behavioral strategies that avoid errors while still trying to achieve the associated goal. However, the performance-avoid goal orientation avoids the goal itself as a strategy to circumvent the demonstration of incompetence (Johnson, Shull & Wallace, 2010). So, although both the performance-avoid goal orientation and the prevention regulatory focus involve the avoidance of failures, they are based on the avoidance motivation and the approach motivation respectively. Thus, neither self-regulatory focus is expected to be employed in the relationship

between performance-avoid goal orientation and task performance. Because of their goal of avoiding the appearance of incompetence, people with a performance-avoid goal orientation are likely to use negative behavioral strategies and disengage from tasks, which will ultimately lead to poor task performance (Pintrich, 2000). Accordingly, I propose that performance-avoid goal orientation is negatively related to performance as follows.

> Proposition 6: The performance-avoid goal orientation negatively relates to task performance.

CONCLUSIONS AND FUTURE RESEARCH

This research proposes a theoretical framework of the effects of gameful experiences with a gamified IS on IS users' goal choices, goal-striving behaviors and task performance. Drawing on the Achievement Goal Theory, regulatory focus theory, and gamification research in the IS field, the framework suggests that the motivational gameful experiences offered by a gamified IS affect IS users' adoption of achievement goals, which in turn affect users' task performance, mediated by their self-regulatory goal-striving strategies. This research contributes to the theoretical advancement of IS gamification research by providing understanding of the mechanism whereby motivational gameful experiences influence user performance with a gamified IS.

For future research, an experimental study will be conducted to test the proposed theoretical framework and its associated propositions. First, the participants will engage in the simulation of performing tasks using various gamified IS components. Second, the participants will complete a survey that utilizes the existing valid and reliable scales to measure the participants' gameful experiences (Wolf, Weiger & Hammerschmidt, 2020), perceived self-efficacy (Maurer & Andrews, 2000), achievement goal orientations (VandeWalle, 1997), and self-regulatory foci (Lockwood, Jordan and Kunda, 2002). In addition, simulation scores will be used to assess the participants' task performances. Once the proposed theoretical framework is tested, design propositions can be further developed to provide guidelines on how to appropriately design and implement gameful experiences in a gamified IS to improve the task performance of IS users.

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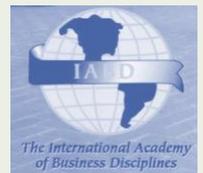
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