Original Research

Gamification in Dutch Businesses: An Explorative Case Study

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Abstract

An in-depth case study approach was followed and data were collected by means of nine semi-structured interviews with experts from six case organizations. Our findings indicate that gamification of work can be a promising path for working organizations and can be beneficial to both employers and employees. The success of gamification at the workplace is dependent on whether its implementation is able to fulfill employees' psychological needs for competence, autonomy, and relatedness. To make the most out of gamification at the workplace, employers, supervisors, and employees themselves should pay ample attention to its conditions (i.e., personal preferences of the employees, their demographic characteristics, their need for psychological safety, and the purposefulness of the game). In addition, seven psychological mechanisms underlying successful performance were found in our empirical work (i.e., competition, intrinsic incentives, extrinsic incentives, choice, social interaction, feedback, and ownership). The properties of gamification schemes that also have to be dealt with by the parties involved comprise their duration and intensity, the inclusion of a facilitator, the type of equipment, and scale referring to the size of the gamification scheme. Finally, our study has provided more insight into the possible effects of gamification schemes (i.e., increased insight in the workflow and, through this, a better understanding of both the employees' own contributions and of their employers' contributions to the work processes, the transfer of game elements into work processes, team building enhancement, learning effects, and negative emotions).

Keywords

gamification, working organizations, evidence-based, case study, self-determination theory

Introduction

For most people, playing a game is enjoyable, be it a sports game, a jigsaw puzzle, a board game, a card game, or a video game. Although games are mainly played for recreational purposes, such as personal entertainment and social bonding (Hromek & Roffey, 2009; Lee & Lee, 2018), embedding game elements in work settings is a promising method to increase motivation and engagement of employees (Doherty et al., 2017; Neeli, 2015; Newcomb et al., 2019). Game experiences generate positive energy and fun (Prouty, 2000); broaden people's capacity to learn (Fredrickson & Joiner, 2002); stimulate experimentation, perseverance, alertness, and attention (Richter et al., 2015); and can stimulate the development of new skills, strategic thinking, and new ways of perceiving the world around them (McGonical, 2011). Furthermore, playing games can stimulate new ways of cooperation, competition, and out-of-the-box thinking (Romero et al., 2015).

Games are typically designed to be motivating (Felicia, 2012). They are either externally rewarding, for example, through levels, points, or badges to be earned when performance is successful, or intrinsically motivating, by raising feelings of competency and a sense of belonging (Richter et al., 2015). Either way, once people start playing, it is often hard for them to stop (Johansson & Götestam, 2004). Wouldn't it be great if employees can experience the same

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positive effects in their work as they can experience while playing a game in a recreational setting?

Embedding game design elements in a non-game setting is known as *gamification* (Deterding et al., 2011). Gamification has been defined as the use of "game-based mechanics, aesthetics, and game thinking to engage people, motivate action, promote learning, and solve problems" (Kapp, 2012, p. 125). Kapp's definition incorporates important pedagogical components (Alsawaier, 2018). First, in contrast to business applications, the pedagogical application of gamification to promote learning is emphasized. Second, digital game mechanics, such as avatars, badges, leaderboards, virtual rewards, and so on, are highlighted. Third, Kapp (2012) refers to game dynamics, which are focused on game elements that enable social interaction between players. Fourth, critical thinking skills that are essential in learning and that can be partially promoted through gamification are emphasized in the definition.

Gamification has previously been applied in health care (e.g., McKeown et al., 2016), education (e.g., Hamari et al., 2014; Landers, 2014; Sailer et al., 2014), business (e.g., Kappen & Nacke, 2013), manual labor (e.g., Korn et al., 2015), and crowdsourcing (e.g., Zeng et al., 2017). What these initiatives share is that they are all aimed at increasing the intrinsic motivation and positive work experience of employees. However, previous research has shown that gamification can also induce negative effects, especially in learning environments (Toda et al., 2018). It is estimated that about 80% of gamification activities fail to meet business objectives due to poor game design (Pettey & Van der Meulen, 2012). In addition, up until now, a clear consensus on what constitutes gamification in workplace settings is missing in earlier scholarly work in this field.

More specifically, although gamification has been widely used in workplace settings, the scholarly literature in this field indicates that the application of gamification does not systematically yield positive results (Leclercq et al., 2020). In addition, as regards embedding game design elements in a work setting, only limited empirical research has been conducted studying the effects of gamification (Ferreira et al., 2017). In particular, the possible impact of factors related to the context or the specific participants of the game are currently understudied (Hamari et al., 2014). Nacke and Deterding (2017) already posited that empirical work on the use of gamification aimed at explaining its underlying processes and potential boundaries is of utmost importance to move the field forward. Analogously, we argue that research on the application of gamification as an integrated part of work processes is urgently needed, and that we need to focus on a better understanding of the psychological mechanisms behind gamification (Nacke & Deterding, 2017). In particular, the objective of this research is to investigate whether gamification is a useful strategy for shaping intrinsic motivation, over and above enhancing one's external motivation through rewards or by means of the fun factor. To do so, self-determination theory (SDT; Ryan & Deci, 2000), which states that when an individual's psychological needs of competence, autonomy, and relatedness are fulfilled they will be intrinsically motivated, is used as a guiding framework for our study. By studying in depth whether game design elements can be used in a purposeful way to increase user's intrinsic motivation, we will be able to better understand the possible added value of gamification at the workplace. We posit that studying gamification from a user perspective will shed more light on the subjective nature of the experience of gamification and will further develop our knowledge on the topic (see also Landers, 2014). Therefore, this contribution focuses on how and why gamification does or does not result in beneficial outcomes for its users.

As such, building upon SDT theory (Ryan & Deci, 2000), the overarching aim of our contribution is to provide scholars and practitioners alike with an evidence-based conceptual model on the use of gamification in work settings.

To structure our study approach, we formulated the following research question:

> **Research Question 1 (RQ1):** How do businesses use game elements in their work settings and what are the theoretical and empirical implications that can be derived from their experiences?

We contend that more elaborate case examples of how gamification is embedded in actual work settings can provide evidence-based insights into how to achieve motivational effects and workplace learning through gamification (Neeli, 2015). Therefore, we conducted an in-depth explorative case study of practical gamification applications in several business cases in the Netherlands. The empirical observations in our case study were analyzed in an iterative process to achieve saturation in our analysis of factors involved in gamification.

In the next paragraph, we provide an account of the existing literature related to gamification in work settings. Second, we present our research design and explain our methodological approach. Third, we provide an overview of our main findings collected from the nine cases included in this study. Finally, we discuss the value and implications of these findings and provide propositions that can be used in future empirical work in this scholarly field.

Theoretical Framework

Gamification in the workplace setting is a business strategy aimed at keeping individuals motivated intrinsically. It is commonly defined as "the use of game design elements in a non-game context" (Deterding et al., 2011, p. 10). Since its introduction in the early 2000s, gamification has become a very popular practice in workplace settings (Werbach & Hunter, 2012). Despite the relatively short history of using game design elements in workplace settings, the number of managerial books and webinars that pay attention to this topic is considerable (Zichermann & Linder, 2013). More and more, working organizations invest time and energy in

developing or recruiting efficient gamification practices and, since 2011, investigations into gamification in workplace settings have exponentially increased (see, for example, Armstrong & Landers, 2017; Hammedi et al., 2017; Kim, 2018).

Game design elements are components of games that may be detached from their recreational game environment and that are to be applied in so-called *serious games*: games that function as a learning tool (Michael & Chen, 2005). For example, future pilots use a flight simulator in flight skills training. Simulations are typically characterized by their accurate representation of a specific part of a real-life work situation (Wilson et al., 2009). Gamification distinguishes itself from these types of simulative applications of games by its embedded (integral and continuous) application of game design elements in real-life, day-to-day activities in the workplace. This embedded application of game design elements is an integral part of the regular work process and involves the implementation of elements that are commonly found in games into the actual work-related tasks performed on a daily basis (e.g., in work or school; Robson et al., 2014). As such, gamification implies a rethinking and restructuring of the work processes involved to promote learning (Dale, 2014).

The uses of customized applications in gamification are already quite common. Prior research suggests that gamification is being implemented in approximately 70% of the world's largest public companies (Robson et al., 2015). Most gamification-related research focused on the usage of entire (serious) games in non-game contexts (Bedwell et al., 2012; Wilson et al., 2009) or merely on its application in relation to education and learning. However, other applications of gamification have received significantly less attention (Hamari et al., 2014). In addition, knowledge on the inner mechanisms underlying the effects of gamification is lacking. In particular, earlier work dealt with the elements that comprise a game or a gamification project and on what the effects of those elements are on human behavior (Hamari et al., 2014). A frequently used framework is the MDE-framework, which categorizes the elements of games into Mechanics (basic settings of a game, for example, points, levels, and leaderboards), Dynamics (motives, for example, rewards and achievement), and Aesthetics or Emotions (effects, for example, emotions and feelings; Robson et al., 2015; Zeng et al., 2017). Notwithstanding its value in research on gamification, the MDE-framework fails to include the psychological elements explaining why gamification may be an effective motivational strategy in a workplace setting.

Felin et al. (2015), in their microfoundational approach, came up with four foundational propositions to explain how gamification design shapes the intrinsic motivations of users to participate in gameplay (i.e., a form of cognitive, emotional, and behavioral engagement that is usually associated with gaming; see also Leclercq et al., 2020). Microfoundational framing implies that the explanatory primacy of lower level constructs, such as employees and their social interaction, is used to explain the relationships between higher level concepts, such as organizational routines and capabilities (Felin et al., 2015). As such, the effects of gamification, in terms of employees' skills and practices, are assumed to affect the overall performance of the organization (see, for instance, Bogers et al., 2018; Martin et al., 2019).

Building upon Felin and associates (2015), we posit that the success of gamification in workplace settings relies on the abilities of games to arouse motivations (Salen & Zimmerman, 2004). SDT by American psychologists Ryan and Deci (2000) can serve to explain how gamification enhances motivation in a workplace setting. SDT is a framework on human motivation, personality development, and well-being. It argues that human motivation is either composed of intrinsic motivation, stemming from an internal want or desire, or extrinsic motivation, induced by an external reward. According to SDT, only intrinsic motivation ultimately results in lasting and sustainable behavior. Prior research showed that an increase in intrinsic motivation results in a healthier mental state of mind compared with the effects of an increase in extrinsic motivation (Kohn, 1999). Extrinsic motivation is expected to undermine the sustainability of motivation in work. The motivational effects of extrinsic rewards cease at the moment the extrinsic rewards stop (Zichermann & Cunningham, 2011).

Fortunately, the positive message in the SDT literature is that there is ample evidence that extrinsic motivation of people can be altered toward a more durable intrinsic motivational state through redesigning the performance conditions in ways that fulfill the three following fundamental psychological needs:

- Competence: the feeling that the difficulty of a task matches one's skills (i.e., not too easy and not too difficult);
- Autonomy: the feeling of self-regulation and being able to choose what to do or not to do (i.e., freedom to act);
- Relatedness: the feeling that a task relates to oneself and one's social environment (i.e., being relevant, meaningful).

When these three psychological needs are fulfilled, an individual will feel intrinsically and lastingly motivated (Rigby & Ryan, 2018; see also Bauer & Mulder, 2006; Gagné & Deci, 2005). For gamification, aimed at keeping individuals intrinsically motivated, the fulfillment of these three basic needs is also crucial (Garris et al., 2002). Nicholson (2015) puts it as follows:

> Instead of using game design elements to increase external motivation through rewards, designers can use game design elements to increase intrinsic motivation. Getting a good score is just one reason that people play games; players engage with games for an exploration of narrative, to make interesting decisions, and to play with other people. There are other game design elements that are available to the gamification designer that can bring about an increase in intrinsic motivation. (p. 4)

Table 1. Interview Details.

Interview	Interviewee	Type of organization
Interview 1	Social innovation director	Multinational technology company
Interview 2	Two business and management consultants	Consultancy firm specialized in business simulations and serious games
Interview 3	Support engineer	Multinational technology company
Interview 4	Program manager and game developer/ consultant	Gamification development company
Interview 5	HR business director	Public utilities company
Interview 6	Two program managers	Public transportation company
Interview 7	Online media specialist	The directorate-general for public works and water management
Interview 8	Change advisor	The directorate-general for public works and water management
Interview 9	Government administrator	The directorate-general for public works and water management

Building upon SDT, we argue that gamification can keep employees intrinsically motivated. Central is the fulfillment of employees' need for competence, autonomy, and relatedness. As such, we aim not only to gain insight into which elements and effects comprise a gamification project, but also into how these relate to the underlying psychological needs and motivational processes involved.

Method

As this study aims to provide insights for both scholars and practitioners, a case study approach was chosen. According to Gerring (2007), "A case study may be understood as the intensive study of a single case where the purpose of that study is—at least in part—to shed light on a larger class of cases" (p. 7). More specifically, the study follows an exploratory case study design as existing literature on the link between gamification theory and real-life cases is limited. Fitting the inductive nature of this study, qualitative methods were used to collect data on the cases. In this study, the cases are Dutch businesses that apply gamification in business or work processes.

Cases were selected and approached through network contacts, several orientation visits to businesses, and contacts established during a congress on the impact of robotization in the Netherlands in 2015 (NRC Live, 2015). The cases that were included matched the following inclusion criteria:

- The organization applies gamification, either embedded or as a stand-alone activity, in its own or another organization's work process(es);
- The organization self-reports this as a form of gamification;
- The organization applies its gamification scheme to a work process involving multiple employees;
- The organization applies its gamification scheme at the time of research.

The data were collected by means of interviews with representatives from the six included case study organizations. The representatives were selected based on their involvement in, or expertise with, game elements in work processes. To get a thorough understanding of how gamification is applied in a workplace setting, and of the effects of gamification for its participants, a total of nine semi-structured interviews with 12 representatives of the six gamification-applying organizations in the Netherlands were conducted. Two organizations in our sample applied gamification to other firms through consultancy or development. The other four participating organizations applied gamification themselves and consisted of private, public, and governmental organizations. The diversity of the participating organizations fits with the explorative design of our study as it does not limit our outcomes to a single sector of business. The population details are presented in Table 1.

During the interviews, six topics regarding gamification were addressed: (a) the definition of gamification of work, (b) the conditions under which gamification could be successful, (c) the game mechanisms, (d) the game properties, and (e) the effects of the gamification on work-related outcomes, such as performance and motivation, to mention but a few.

Data Analysis

Based on a thorough literature review, we developed an initial coding protocol that included (a) definitions and varieties of gamification, (b) possible game conditions, (c) game properties, (d) effects, and (e) follow-up after the game. However, conducting our qualitative approach, the identification of new gamification elements, mechanisms, or effects was only possible in case iterative improvements to the coding book could be made (Garrison et al., 2006; Strauss & Corbin, 1990). Therefore, we first transcribed all interviews verbatim. Next, multiple coders studied all verbatim reports individually and coded all interviews independently. Open coding and axial coding were used to compose a second version of the codebook, which was developed during several coding sessions in which the independently coded transcripts of the multiple coders were cross-validated. Conflicting codes were discussed thoroughly until full consensus was reached before final labeling (Garrison et al., 2006; Strauss & Corbin, 1990).

Data Validity

The validity of the findings was examined in two expert meetings in which five of the interviewees and all researchers in the study participated. In addition, four experts, two with a managerial and two with an academic background, attended these meetings as well. Participants were invited because of their experience and knowledge in the field of gamification or in the domain of work and organizational psychology, being a field wherein a focus on psychological mechanisms underlying work behavior is highly prevalent (Kanfer et al., 2017). During these sessions, the preliminary findings of the research were presented and discussed. No substantive problems were encountered and, therefore, no substantive alterations were to be made as a result of these sessions. A description of the cases and the various forms of gamification that were established in these cases is presented in Table 2. The interview details, interview protocol, and coding book can be requested from the corresponding author.

Results

In this section, we present the definition of the gamification of work processes, the conditions under which gamification may be implemented successfully, the game design mechanisms through which the players interact with the game, the game properties used to shape the gamification experience, and the effects of gamification according to the interviewees.

Gamification in a Workplace Setting

Based on the interviews and the discussions during the face-validity sessions, a new definition of the gamification of work was formulated. Interviewees were asked how they would define gamification in a work setting. We formulated an initial definition based on their answers and presented this back to them. This interactive process resulted in the following definition:

> The embedded implementation of game design elements into workplace settings in order to achieve specific predetermined organizational goals.

The use of "embedded implementation" is an important addition to the existing literature (e.g., "the use of game design elements in a non-game context"; Deterding et al., 2011, p. 10). We argue that gamification in workplace settings is more than the superficial application of game design element in work processes, and rather implies the structural integration of game elements in a workplace setting.

The Conditions for Successful Gamification

The interviews provided empirical evidence on 13 prerequisite conditions that were assumed necessary for the successful implementation of gamification in work processes. These prerequisites have to be taken into account from the very start of the design process. The four most frequently cited conditions are the awareness of *personal preferences*, the *demographic characteristics* of individual employees, the need for *individual psychological safety*, and the *purposefulness* of the game.

Interviewees argued that managers have to be aware of the *personal preferences*, and possible different psychological needs, of the employees who are to be involved in the game. The communication skills of managers to perceive and react to these needs influence how employees respond to the game. Managers influence employees' sense of relevance and purpose in the game, employees' autonomy to choose, perceived competence, and the alignment of employees' individual goals with organizational objectives. For example, employees' motivation to implement gamification-based behavioral changes can vary depending on the duration of the individual's employment: "They [employees] will say: 'I have worked here already for 20 years, and now they say that I have to change the way I do my work?' They will put their foot down" (Interview 6), if the desired change is not skillfully addressed and introduced. Also, the game should match the image of the workplace itself: "We made sure the game wasn't too fancy: we are still an old public utilities company so the game shouldn't be too spectacular" (Interview 5).

Managers' awareness of personal preferences and psychological needs ultimately determine employees' willingness to participate. "The game should match the need of the employee. When I give a very difficult game to someone with a low level of education, it does not match his needs" (Interview 3). Similarly, employers indicated that employees' participation in gamification was influenced by *demographic characteristics* such as age, gender, nationality, profession, and ethnicity. In addition, interviewees stressed that game elements could fail to produce the desired effects when gamification threatens employees' sense of security: their *individual psychological safety* (Eilam & Shamir, 2005). These interviewees advocated that managers should emphasize that individual employees' job performance will not be evaluated based on their gamification-related performance. As one interviewee mentioned, "Fear can arise when an individual does not score well in the game. Then there is no freedom to experiment and to show natural behaviour" (Interview 2). This is further confirmed by another interviewee who stated that a game "can only be played if a certain learning environment is created" (Interview 9). An environment should be created, both in and around the gamification experience, which is as safe as possible (e.g., Baer & Frese, 2003). Finally, a number of interviewees pointed out that the *purposefulness* of the gamification activity is an important element to its success. That is to say, in order for gamification to be effective, it should serve a meaningful purpose: "The game should serve a goal" (Interview 7).

Table 2. Summary Case Descriptions.

Company A
Main pursuits: Upkeep and maintenance of the energy infrastructure in the Netherlands.
Form of gamification: Serious game.
Operation of the gamification: The company developed a serious game to familiarize its employees with the company's core organizational values (sensitive, together, and smart). Groups of approximately 10 employees were invited to creatively engage with the company's values. Participation was voluntary; the most creative projects were rewarded with a cake (awarded by management, published on the company's intranet). For 6 weeks, employees participated in a weekly assignment, culminating in a Lean Simulation at the end. In total, around 2,000 of the company's 7,000 employees participated.
Company B
Main pursuits: Public transportation.
Form of gamification: Embedded.
Operation of the gamification: The company developed a gamification program to raise driving behavior awareness among bus drivers. The program focuses on reducing fuel consumption, environmental impact, and passenger comfort. Drivers received real-life feedback on their driving behavior through a dashboard-mounted interface on a number of performance indicators (fuel consumption, break intensity, optimal speed, and comfort), which allows them to adapt the most optimal style of driving. Every month, a district-based ranking is published internally, allowing drivers to compare driving behavior with colleagues. The information is also used in the drivers' annual performance appraisal. Each driver is rewarded an annual bonus of up to 25% of the values saved in fuel consumption.
Company C
Main pursuits: Consultancy, develop and facilitate business simulations.
Form of gamification: Simulation.
Operation of the gamification: Using elements of play and direct feedback, the business simulations developed by this company grow behavioral insight and awareness, aimed at developing new skills and facilitating behavioral change. These simulations also use real-life feedback mechanisms to facilitate the simulations' objectives.
Company D
Main pursuits: Production of consumer electrics.
Form of gamification: Serious game.
Operation of the gamification: The company develops employee-based personal development course maps (Koerskaarten). These course maps are developed to generate insight into individuals' employment situation and its effects on work–life balance and career perspectives. A course map invites participants to discuss the course map's seven employment-related subjects in groups of eight people. Participants use personal and shared experiences to interactively work their way through the course map.
Company E
Main pursuits: Production of health sector electronics.
Form of gamification: Serious game.
Operation of the gamification: The company produced a gamification program to facilitate the socialization and workplace learning of new employees. The gamification program was designed around four separate missions that introduced a new employee into the work environment and culture of the company. Every mission contained exercises that gave the employee direct feedback on progress. A facilitator with extensive experience provided an introductory presentation and could address questions.
Company F
Main pursuits: Design, construction, management, and maintenance infrastructure facilities.
Form of gamification: Serious game.
Operation of the gamification: The company has developed a serious game to reduce the response time of its calamity road inspectors by increasing their awareness and knowledge of local routes and traffic situations. The game helps road inspectors to learn the names of the roads and traffic nodes with detailed information and in competition with other game users.
Company G
Main pursuits: Development and facilitation of gamification activities in agri- and horticulture.
Form of gamification: Serious game.
Operation of the gamification: The gamification activities developed by the company are aimed at improving performance and output. The activity starts out by collecting work experiences and possible job-related improvements. These stories are written down and analyzed within a group of approximately eight to 10 employees. The interactive process allows employees to learn from each other, introduce work process improvements, and facilitate interactive learning.

The Psychological Mechanisms Underlying Successful Gamification

The interviewees named various mechanisms through which they thought practical examples and cases of gamification of work could achieve its objectives. These mechanisms can be seen as the "cogs and wheels" of the gamification scheme and provide the extrinsic or intrinsic motivation to perform. Depending on the objectives and the design of the game, the use of specific mechanisms, in terms of number and in specific form or combinations, can differ. We discuss the seven basic mechanisms that were cited most often by the interviewees and we stress here that the reader should keep in mind that these mechanisms are closely related to one another.

The most frequently mentioned mechanism was *competition*. Interviewees reported that competition could facilitate interpersonal comparisons based on the results achieved in the gamification process. As such, competition provides a strong, externally driven, incentive for employees to improve their performance. One of the interviewees stated,

> What you see is that nobody wants to have the lowest score. Participants who aren't doing so well on the game unconsciously think that they are the worst performer [. . .], and think about what they need to do to get higher in the rankings. (Interview 6)

As such, competition triggers interpersonal comparison and provides either a positive reinforcement of game performance (in case of high scores) or a negative reinforcement (in case of low scores—motivation to escape a low ranking).

A second psychological mechanism mentioned by the interviewees is that of *intrinsic incentives*. The most important types of intrinsic incentives according to the interviewees were *fun, surprise*, and *story line*. Fun means that participants experience pleasure through their participation. Surprise makes the gamification activity challenging and increases its attractiveness. Both mechanisms fulfill the need for competence as tasks are challenging and spur the learning of new skills. The presence of a story line in gamification stimulates participants' fantasy and experienced (social) relevance by positioning participants' actions in a network of social activities with their colleagues, thereby fulfilling the need for relatedness. Furthermore, *opportunities for personal development* were mentioned as an important intrinsically rewarding mechanism as well: "A good game has new challenges each time. You almost found the solution, but you nearly failed. Then you want to do it again, because people want to win. They want to challenge themselves" (Interview 1). This intrinsically rewarding mechanism, that is, opportunities for development, can be further enhanced by adding positive and motivating consequences of game performance, in terms of possibilities to perform new work activities and carry new responsibilities, and as a result fulfill the need for competence. These new tasks and responsibilities imply that the user experiences job enrichment which stimulates motivation and commitment to the organizational goals (Hackman & Oldham, 1976).

Third, the interviewees mentioned performance-related *extrinsic incentives* as an important mechanism as well. In one of the studied cases, the public transportation company, participants were financially rewarded by earning up to 25% of the fuel savings that were achieved in the gamification process as an end of year bonus. Other extrinsic rewards have also been observed, ranging from small material rewards for participation in general, such as a cake for the entire team, to performance-based ranking on a leader board. "It is very simple, the winning team gets a cake. It couldn't be more simple, but the effect is huge. When I call the winner on Tuesday, then they jump for joy" (Interview 5). One participant noted, "A cup, a stuffed toy, all sorts of stupid things motivate people, or just standing on top of the leader board [. . .] you just try to get on that scoreboard" (Interview 2).

Fourth, *choice*, the possibility to regulate the autonomy of participants during and alongside the gamification activity. Two variants of choice were discerned: the freedom to participate and the discretion to act and deviate from the predetermined rules. This mechanism is closely related to the psychological need for autonomy. "It should make people so enthusiastic that they want to participate as well. You don't get that kind of reaction if participation would be compulsory" (Interview 5).

Fifth, *social interaction* with colleagues was mentioned as a mechanism for interpersonal learning and for gaining workplace sensitivity. The interviewees indicated that social interaction bring people from the same or from different departments together. "Everyone is talking about the competition. Teams have their own WhatsApp groups in which people are flooded with ideas for the competition and what they will send in" (Interview 5). This kind of interaction is closely related to the psychological need for relatedness; the feeling that a task relates to one's own competence and goals (relevance), and that it involves a meaningful contribution to one's relevant social environment. Fulfillment of this need for relatedness contributes to the intrinsic motivation to invest effort and perseverance to a task, to be part of the relevant peer group or to experience a purposeful, sensemaking contribution to society.

Sixth, *feedback*, both from the game progress, from ongoing achievements, and from others participating the game, was mentioned as a mechanism that provides constantly actuated information on the participants' performances and behaviors. It stimulates self-awareness (competence, being the third psychological need that is essential for intrinsic motivation), self-management, and self-improvement (Ryan & Deci, 2000). "At the end of each chapter, they can see their score: 'Oh, I don't have 100%, how is that possible?' then they return and correct themselves" (Interview 3). Furthermore, the interviewees argued that feedback might also serve as a mechanism through which competition can be built into the gamification design. "Someone can see his own improvement when he rises in the ranking from place 200 to 20. And he can also see 'how did I do in January, how in February, how in March?' and so on" (Interview 6).

Finally, *ownership* which is intended to make a participant the sole responsible for a task and its related processes in the gamification scheme, thereby stimulating the inner drive to be successful in the task. The interviewees mentioned that the more the participants feel that they are in control of the choices to be made in the game, and the competence to the related actions involved, the more likely they experience a sense of ownership.

The mechanisms that have been dealt with in this outline do not constitute an exhaustive list of all possible mechanisms applicable to the design of a gamification scheme. The interviewees recommended that gamification be designed in a tailor-made way to meet the needs of the participants. From the cases and interviews studied, several examples of disadvantageous designs of game schemes were found, in which the specific combination of mechanisms in the game design contradicted or impaired each other's impact on motivation and performance, herewith resulting in less successful gamification efforts. An example of this was found in a case in which the main purpose of the game was to stimulate creativity. In this specific case, fun and surprise elements were combined with the mechanisms of competition and extrinsic rewards. As predicted in psychological literature, the desired creativity effects decreased when competition among members of the group increased (Byron et al., 2010) as well as when external rewards are anticipated (Eisenberger & Cameron, 1996).

Properties of Gamification Schemes

The properties of a gamification scheme are the descriptive characteristics that distinguish one gamification scheme from another. Gamification scheme properties serve the objectives of the game and can be inserted directly into the design and application of the game. Properties differ from mechanisms in that they do not serve to fulfill the psychological needs that form the foundation of gamification. We observed four different kind of gamification properties in our case study analysis.

The first property comprised the *duration and intensity*. The duration is the time spent on a gamification activity; intensity is the frequency with which the activity is undertaken in the work process. It was mentioned that the gamification activity should not cost the employees too much time. "One of our criteria was that it should be done during work, employees shouldn't have to take extra time besides their regular working hours" (Interview 5). In fully embedded games, those in which the gamification is a continuous part of the daily work activities, duration is continuous. Second, the inclusion of a *facilitator* (or referee) can help to guide employees to the objectives of the gamification scheme by providing an introduction to the game and support during the activity. As one of the interviewees mentioned, "The added value of a facilitator in a game is to clarify what is expected from the game participants" (Interview 3). In contrast to a facilitator-trainer in a stand-alone simulation game, in a fully embedded game the facilitator is by definition part of the regular work team, be it a human facilitator, or a machine-based facilitator (help-function and instructions). Third, interviewees mentioned the type of *equipment*, which refers to the medium and the tools used to support the gamification activity, such as sheets of paper, television screens, apps, and web pages. The equipment used in a gamification scheme is dependent on the goal and design of the specific gamification scheme, and on the possibilities offered by the type of machine equipment used in the work setting (e.g., fuel consumption feedback for bus drivers by a monitoring-control on the dashboard). Fourth, *scale*, the size of the gamification scheme in terms of the number of teams and/or individuals that participate, comprises a type of property of gamification schemes. A wide variety of scales were mentioned in the interviews, ranging from games that take place with just one individual at the time, to games that are played with over 4,000 individual players simultaneously, as well as games that are played individually or in groups.

Effects of Gamification Schemes

Finally, gamification is implemented with certain objectives in mind. These objectives are realized when gamification is implemented successfully. The mentioned effects can differ for employees and employers. We report six of the most frequently mentioned gamification effects.

The most frequently mentioned effect was an *increased insight in the workflow* for employees. One interviewee indicated, "If you pack products all day and you don't know where it will end up, and why this product is relevant, that results in a different mind-set than knowing that something ends up in that woman's kitchen" (Interview 7). This type of effect of gamification schemes includes insight in employees' own individual contributions to the work process. One interviewee mentioned a gamification case in which

> . . . the employees from the sales department had no idea what the people in the greenhouse were doing and vice versa. However, during the gamification experience the sales staff expressed that they finally know why they are working with this machine there. (Interview 4)

Moreover, the interviewees indicated that this effect was not limited to employees. *Employers also increase their insight in the workflow* through the application of gamification. Increased insight in the workflow was thought to stimulate further development and innovation of the work processes with which the interviewees were involved.

Another effect of gamification schemes was the *transfer of game elements* into work processes. In one case, employees were disinclined to help temporary workers with their tasks when they were engaged in their own work. In a non-embedded stand-alone activity, these employees came up with the idea to introduce a "questioning cap." In particular, temporary workers were requested to direct their questions to the person with the "cap" so that other employees could continue their work (Interview 7). The transfer of game elements refers to all the changes of work processes (outside the gamification scheme) that may occur as a result of employees having (inadvertently) transferred properties or elements of

the gamification scheme to other work processes. These effects were assumed to take place at the level of employers as well.

In addition, gamification can also affect a group of employees, for example when team building is increased. *Team building* comprises all activities that improve mutual teamwork between employees, such as better communication or increased insight in the perspective of others.

> What we saw is that someone who normally works as an electrician, was sitting with a headset to see what this person from customer service does to call him when something goes wrong. And the other way around as well. (. . .) They found out that small things they agreed about caused irritation, like "that person doesn't understand" which led to irritation. Now they talk about it and say that they actually mean the same. (Interview 5)

Furthermore, interviewees indicated that the gamification activity could have *learning effects* for the employees. These effects include the skills and knowledge employees acquire during a gamification activity.

Though the interviewees emphasized positive effects, gamification could also have adverse effects in their opinion. Negative effects are most likely to occur when conditions, mechanisms, and properties are not implemented correctly. For example, during the gamification activity, participants can experience feelings of frustration, powerlessness, and loss, and may express so-called *negative emotions*.

> We created a game in which the new company's strategy was set. (. . .) So within 5 minutes they were working on their iPad and those 200 people didn't feel safe enough to start experimenting with their behaviour and to see how to influence the feedback meters. So some people threw away their iPad and walked away. (Interview 2)

A more serious negative effect can be that employees neglect certain other organizational values or objectives as a result of pursuing "gamification" objectives. Such instances of goal displacement may, in turn, seriously harm the performance of the organization.

Discussion

Reflecting on the Outcomes

In this particular study, we have examined how stakeholders in Dutch working organizations use and implement gamification elements in their work settings. Building upon the basic notions from the SDT framework (Ryan & Deci, 2000), the central aim of this study was to explore whether gamification is a useful strategy for shaping intrinsic motivation, over and above enhancing one's external motivation through rewards or by means of the fun factor. By doing so, we managed to come up with an evidence-based conceptual model on the use of gamification in workplace settings. In this section, we will deal with the theoretical and empirical implications of our scholarly contribution. First, we will go into a discussion of our findings, followed by some reflections on the limitations of our study and recommendations for future research.

First, the *conditions for successful gamification* that were most apparent in our results comprise the awareness of personal preferences, the demographic characteristics of individual employees, the need for individual psychological safety, and the purposefulness of the game. Second, the interviewees referred to seven *psychological mechanisms underlying successful gamification*: competition, intrinsic incentives, extrinsic incentives, choice, social interaction, feedback, and ownership. Third, as regards the *properties of gamification schemes* that distinguish schemes from one another, four kinds of properties came up from our research: duration and intensity, the inclusion of a facilitator, the type of equipment, and scale referring to the size of the gamification scheme. Fourth, our research findings provide us with more knowledge on the *effects of gamification schemes*, which can be divided into six categories: an increased insight in the workflow, and through this a better understanding of both the employees' own contributions and of their employers' contributions to the work processes, the transfer of game elements into work processes, team building enhancement, learning effects, and negative emotions.

The theoretical reasoning underlying this contribution to the scholarly work in this domain was that gamification in work settings could benefit from the insights of SDT on motivation and self-regulation (Bauer & Mulder, 2006; Gagné & Deci, 2005). In general, a gamification situation wherein psychological needs are fulfilled is more likely to induce internalization processes, resulting in enduring motivation. Oppositely, gamification elements that are experienced as frustrating the fulfillment of one's psychological needs are likely to diminish one's intrinsic motivation (Vansteenkiste et al., 2006). Similar to Van Roy and Zaman (2017), who posited that gamification can motivate learners in a qualitative good way when it supports the three basic needs of competence, autonomy and relatedness, we argue that gamification at the workplace can motivate employees to further develop their career potential. However, to optimize its added value, the gamification design has to be carefully considered to make sure that the proper mechanisms are incorporated and aligned with the conditions that influence their possible effects.

Our findings appear to support this claim. First, the fulfillment of the psychological needs for competence, autonomy, and relatedness is facilitated in gamification through several (but not all) distinguished game mechanisms. Most of the gamification mechanisms that are identified in this empirical work, show great potential for the fulfillment of the needs as presented by SDT, except those gamification mechanisms that amplify competition and external financial rewards. More specifically, from our contribution we infer that the

need for competence can be satisfied through the gamification mechanisms of *fun, surprise, opportunities for personal development, feedback*, and *ownership*. To reflect on these outcomes, the empirical work on learning in educational contexts by Van Roy and Zaman (2017) may be helpful. The first heuristic, that is based on SDT, that these scholars proposed implies that gamification users benefit from challenging but manageable goals. Their second heuristic states that in gamified settings people need to receive positive, competence-related feedback. The outcomes of our empirical work tally with these heuristics to a considerable extent. Feeling in control and competent to manage the gamification tasks, both being important characteristics of ownership, are only possible in case the user is confronted with manageable goals. Surprisingly, yet of utmost importance, we found that fun and surprise are additional mechanisms that can be used to optimize gamification designs. From research on expertise development, it is known that deliberate practice plays an important role in the acquisition of expert performance (Ericsson et al., 1993). It goes without saying that when people enjoy a certain learning activity or game in this case, they are more inclined to put more time and efforts in it, that is, to practice it.

The need for autonomy seems to be facilitated through the mechanism of *choice*. This outcome also squares with Van Roy and Zaman's (2017) overview on how game elements can support the need for autonomy. More precisely, based on their research, they formulated two heuristics: (a) obligatory uses should be avoided, and (b) provide a moderate amount of meaningful options. Obviously, the mechanism of choice in our study corresponds with the first heuristic (Van Roy & Zaman, 2017). The second heuristic that was derived from their research in an educational context is a promising candidate for gamification at the workplace as well. After all, just like for learners in an educational context, employees in a work setting are predominantly driven by game design elements that comply with their values.

The need to experience relatedness could be satisfied through the mechanisms of *story line* and *social interaction*. The resemblance with the final heuristic by Van Roy and Zaman (2017), indicating that in implementing gamification one should eliminate factors that hinder social interactions between users, and that one should rather facilitate interaction and feelings of relatedness, is clear. It is interesting that in our empirical work we also found that story line is a gamification mechanism that can contribute to the fulfillment of the need for relatedness. Therefore, we would like to stress that it is important to pay attention to add a story line that stimulates one's fantasy and experience interrelatedness with colleagues. Second, from our empirical work, we may conclude that the various conditions of gamification that were identified in this study are directly related to safeguarding the abovementioned psychological needs. According to our interviewees, the need for autonomy is, in comparison with the other types of psychological needs, most optimally enhanced by the distinguished conditions of gamification. In their view, the conditions of *personal preferences* and *individual psychological safety* are directly related to safeguarding the autonomy of the participants. In addition, competence, being an important psychological need, is interpreted to be facilitated by the awareness of the added value of the activity (*purposefulness*). It can therefore be argued that the gamification conditions that are identified in this study show a great potential for the fulfillment of psychological needs to increase personal motivation, development, and well-being.

In particular, SDT (Ryan & Deci, 2000) states that individuals have to portray proactive behavior and learning behaviors to protect the sustainability of their career (De Vos et al., 2020). The proactive, growth- and development-oriented employee interacts with their surrounding world, and strives for the fulfillment of autonomy, competence, and relatedness (Gagné & Vansteenkiste, 2013; Ryan & Deci, 2000). The outcomes of our research indicate that employees indeed may actualize their capabilities in a proactive way, in case they can work in a supportive environment (Ryan & Deci, 2000) that provide resources (referred to as "nutriments" in SDT) and, as such, support the sustainability of their career and personal life (De Vos et al., 2020). In the case studies involved, gamification comprises the supportive environment that provides ample resources to increase the workers' health, happiness, and productivity (i.e., their career sustainability; Van der Heijden et al., 2020).

Limitations of the Study and Recommendations for Future Research

During the interviews and the expert meetings, it became apparent that the prevalent definitions of the concepts of gamification, simulation, and serious gaming are not unambiguous for the participants in our research. Notwithstanding all our efforts to protect construct validity, confusion about the precise meaning of concepts could have influenced interviewees' responses. In addition, one interviewee was interviewed through the telephone instead of in a face-to-face session. Third, the overall number of interviews was limited. However, as has been stated before, this should not have complicated data saturation (Guest et al., 2006). In addition, our study only involved Dutch working organizations.

Due to the explorative character of this study and the abovementioned limitations, more scientific research is needed to better understand the interplay between the identified gamification elements and how these relate to the underlying psychological needs. First, as we found that the important mechanism of social interaction appears to be necessary to increase team building, we call for more research into ways to increase social interaction in the implementation of gamification in workplace settings. While doing so, we want to stress that thorough attention should be given to the impact that the competition mechanism can play in team building and, in particular, aimed at gaining more insight into

its possible detrimental effects. Other interesting research questions might be as follows: Can ownership mechanisms increase employees' feeling of responsibility? How can mechanisms of choice and competition serve this objective as well? Moreover, the gamification of workplace settings involves the use of game elements in people's daily working routine, usually in the form of performance-based evaluations. The consequences hereof for individuals' sense of safety and security in gamification should be further studied. In addition, more empirical work is needed to get knowledge on the following questions: To what extent do individuals' personal preferences and an organization's culture have to be aligned for gamification to be successful? Which factors are most important to such alignment? Further to these interesting avenues for future research, we call for more work aimed at determining the generalizability of our findings. After all, as gamification is context-specific, we argue that there are no one-size-fits-all solutions for gamification in different businesses and workplace settings. In a similar vein, more empirical work is needed to better understand which elements of gamification are transferable over different occupational sectors and across countries.

Conclusion

Based on this in-depth case study on gamification in working organizations in the Netherlands, we conclude that gamification of work can be beneficial to both employers and employees. We think that our results are noteworthy and provide good challenges for future research and cross-validation in different occupational settings and countries. From a practical point of view, the results of this study can serve as an informative source for employers who want to successfully implement gamification in their work environment. Gamification is a new approach to the organization of work. It challenges the way work has been organized since the advent of industrial work relations. Employees have the possibility to become autonomous actors, motivated and managed by direct feedback on individual performances. At the same time, by using gamification at the workplace, employees could become more engaged with the organization and find more meaning in the work they do, while increasing the sustainability of their careers and of the organization they work for (De Vos et al., 2020; Van der Heijden et al., 2020). To make the most out of it, a multiple-stakeholder perspective (cf. Colakoglu et al., 2006) should be taken, wherein employers, supervisors, and employees themselves should altogether take responsibility for optimizing the use of gamification in workplace settings. In doing so, they have to take into account and pay ample attention to the conditions that have an impact on the chances for success in gamification, the psychological mechanisms underlying successful gamification, the properties of gamification schemes, and the effects of these. Obviously, the interaction between the parties involved, which is aimed to increase the benefits of gamification in the workplace, should be based on mutual respect and consideration for possible differences in values, preference, and capabilities in relation to the specific games that are implemented. To conclude, we advocate an integrative approach to gamification, wherein different levels of influential factors related to the conditions, psychological mechanisms, properties of gamification schemes, and their effects are carefully monitored by all stakeholders involved. This integrative approach, applying the SDT framework (Ryan & Deci, 2000), is needed to enable the organization to build a culture of high-quality motivation and to foster and support its further development (Rigby & Ryan, 2018).

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