Analysis & Design for Self-Managing Teams in Organizations using a Gamification Approach

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Abstract To remain competitive, organizations focus on continuous improvement by cost reductions, productivity increases and quality improvements. A way to anticipate to these challenges, is to turn to team-based working. From a theoretical point of view, self-managing teams seem promising to handle these organizational complexities as they take responsibility for the implementation and the outcomes. In practice, it turns out that self-managing teams are not easily implemented and require more attention than putting a team of skilled people together and giving them tasks and responsibilities. This paper will illustrate the use of a gamification approach to analyze and design for the empowerment of self-managing teams. Gamification is considered as a system design practice and is defined as the design of motivational affordances supported by game elements. The result is a framework for the analysis and design of gamification for self-managing teams. The framework is composed of the relations between motivational affordances of gamification and the motivational needs of self-managing teams in order to enhance the empowerment and performances of self-managing teams in an organization. The framework can serve as a starting point for any practical application of gamification to address self-managing teams complexities. Future research should focus on a re-examine of the relations with a larger sample size, randomized and preferably a control group, next to research to more applications for the design approach for different types of teams or within other contexts.

Keywords Gamification, Motivational Affordances, Motivational Needs, Self-Managing Teams, Decentralization, Design Science Research

1. INTRODUCTION

Organizations have been focusing more and more on efficiency and effectiveness and therefore tend to move away from bureaucracy to a more professional bureaucracy in which working in teams have become extremely popular (Warmelink, 2011). Following decentralization, the delegation of tasks and responsibilities are mostly assigned to

teams of employees instead of to the individual as using teams turns out to be a better way to use employee talents (Robbines & Judge, 2009). Teams are considered as a collection of individuals who are interdependent in their tasks, share responsibility for their outcomes and who are an intact social entity embedded in one or more larger social systems" (Cohen & Bailey, 1997). A special type of teams are self-managing teams, who are typically responsible for their planning, work scheduling and division of work and with that, they take on many responsibilities of their former managers (Robbines & Judge, 2009).

It is interesting to see how self-managing teams will manage themselves as becoming a successful team is not just as easy as putting a team of skilled people together (Salas, Sims, & Burke, 2005). Despite the beneficial effects of teams, teamwork also require increased communication demands and conflicts to be managed (Bossche, 2006). The movement to self-managing team, also makes you question the role of the manager, if the self-managing team ought to manage itself. Organizational design theorists argue that organizations should move to more decentralized organizations with further delegation of tasks and responsibilities (Malone, 2004). Therewith organizations are facing the challenge to make people feel empowered and to give them the right kinds of insights and incentives to make decisions for themselves. This is where gamification might come in, as gamification could function as a strategic tool for among others self-development, organizational awareness as well as performance and productivity gains (Smith, 2011). Gamification has gained a lot of attention over the last five years, which is attributable to its use as a strategic tool to motivate people for completion of their tasks, to reward people for their

efforts and to give them feedback on the right task at the right moment. Although gamification seems very promising to contribute to performances at work, state of the art research shows that there are still many unknowns regarding the definition, design, implementation and outcomes of gamification.

One could argue whether or not gamification is always the solution. To be able to apply gamification successfully, a clear understanding is needed of what gamification exactly is and how it could contribute to performances. The research objective of this article is to present an overview of the use of gamification for self-managing teams to increase performance and enhance the empowerment, in order to arrive at a guideline for successful application of gamification for self-managing teams. Therefore, a theoretical framework is presented for the use and design of gamification and motivational affordances to support the motivational needs satisfaction of self-managing teams in practice. Based on the gained insights of the analysis of self-managing teams and the use of gamification to support their self-management, areas for future research will be identified.

The organization of this article is as follows. To achieve the research objective, the research method is discussed in the second section. The third section elaborates on the definition of gamification and related concepts, since a wide variety of parallel terms exists. This section is followed by an outline of self-managing teams and the subsequent fifth section about their motivational needs. A clear understanding of the definition, development, and theoretical benefits of applying gamification is needed to research its contribution to self-managing teams in practice. The sixth section discusses the self-managing team

performances during a four-weekly gamified intervention. The seventh section presents the framework on how to analyze and design for self-managing teams using a gamification approach. The eight section discusses the guideline for application of gamification, which will provide insight in the successes, limitations and possible future threats of the use of gamification for self-managing teams. This article concludes with the main results, recommendations for future research and a discussion upon this research.

2. RESEARCH METHOD

This article presents the main findings of the design science research of a gamified intervention at self-managing teams, which is guided by the design science research framework of Henver (2007). This framework is relevant and suitable as it guides this research to use the theoretical knowledge base of gamification design and self-managing teams via the rigor cycle to focus on the design cycle for a gamified intervention, while requiring input from test with the self-managing teams via the relevance cycle.

The knowledge base is developed by means of a literature study, by which an overview is provided of existing knowledge on gamification and self-managing teams and to determine the relevance of this research. The literature study is conducted by first studying research by Sebastian Deterding, as he is a frequently cited user experience designer and researcher. In parallel, a literature review by Hamari, Koivisto & Sarsa (2014) was studied, as they selected 24 peer-reviewed, empirical research papers on gamification for their review. The reference list and citations of both researches are analyzed for useful articles dating from 1970 to recent publications.

For the literature research on self-managing teams, first the book Super7 Operations by van Dijk (2013) on self-managing teams in financial services was studied. Subsequently the books Minds in Teams by Bossche (2006), Essential of Organizational Behavior by Robbines & Judge (2009) and the Future of Work (2004) were studied as these are books are frequently used in teaching organization and management.

Additionally, articles are gathered by means of searches in the online scientific databases Scopus, ScienceDirect, Google Scholar and Web of Science. Articles were the key source as they incorporate the most up to date information of these fields of research, next to frequently cited articles and books. The following search terms and combinations thereof are used for all fields and all result types in the databases: gamification, game elements, game design, motivational affordances, intrinsic motivation, gameful and playful. Additional articles are searched by the terms and combinations of self-managing teams, self-directed teams, learning organizations, team awareness and employee empowerment in all fields and all result types in the databases. Selection criteria for the found articles were their relevance to the state of the art overview, design and application of gamification, next to their relevance to the self-managing team knowledge base. Furthermore, the selected articles were publicly accessible, preferably published in an international venue.

Building upon the theoretical base of the potential contribution of gamification to self-managing teams, insights are gathered by means of a case study with two self-managing teams at the Operational Services Department of ING Domestic Bank. For the case study, two self-managing teams of eight persons were studied for two gamified intervention of two and four weeks. Their performances in terms of efficiency, quality

and inventory control were measured, next to their job satisfaction prior and after the intervention. In order to be able to explain the contribution of gamification to the self-managing team performances, the relation between the motivational affordances of gamification and the motivational needs of self-managing teams were researched.
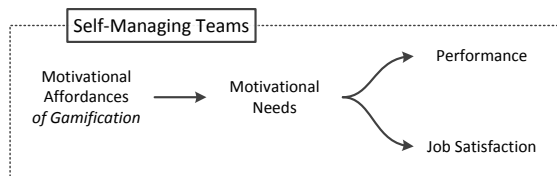
In the case study a mixed methods research design is used for which elements of quantitative and qualitative research approaches are combined (Johnson, et al., 2007). By combining quantitative and qualitative research methodologies in the research of the same phenomenon, the findings can be triangulated by which theoretical assumptions are challenged and a better understanding between theory and empirical findings is supported (Östlund, et al., 2011).

3. GAMIFICATION AND MOTIVATIONAL AFFORDANCES

Literature shows that it is difficult to define what makes gamification work (Rojas, Kapralos, & Dubrowski, 2013). To be able to apply gamification successfully, first a clear understanding of gamification is gained by looking at the rise of gamification and how it is distinctive from related concepts. Subsequently, gamification and its parts are defined and a gamification design process is discussed to arrive at a successful gamified socio-technical system for self-managing teams.

Game and play for serious work-related purposes were already used by Lenin in the mid-20th century (Nelson, 2012). In 1981 research was conducted on why computer games were so fun and absorbing and how these captivating elements could be used elsewhere (Malone, 1981) and it was discover that game elements could make routine work activities more intrinsically interesting (Carroll & Thomas, 1982). Although the basic idea of using game elements for work-related purposes was not new, it was framed as Gamification in 2008 (Currier, 2008) and accordingly it gained significant attention from both researchers and the industry (Hamari, Koivisto, & Sarsa, 2014).

The trend has resulted in a proliferation of definitions with numerous widespread applications which made it hard to distinguish what is gamification and what is not (Deterding, Eudaimonic Design, or: Six Invitations to Rethink Gamification, 2014a). However, researchers conclude that gamification does demarcate a distinct group of gamified concepts, being focused on the use of game elements designed by gameful design. Game elements are considered as the elements that are a game exists of and which are found in most games to play a significant role in gameplay (Deterding, Dixon, Khaled, & Nacke, 2011). Gameful design denotes a playform structured by rules striving towards goals and discrete outcomes, whereas playful design captures a more free playform that is more improvisational, exploratory, expressive and looser (McGonigal, 2011).

Although gameful design and playful design as well as game elements and full-fledged games should be on each other's opposite site of the scale, the boundary between them can often be blurry (Deterding, Dixon, Khaled, & Nacke, 2011). Therefore, a clear definition of gamification is required. Around 2010, the frequently cited definition of Deterding et al. (2011) of gamification being the use of game elements in non-gaming contexts turned out to be a useful

definition to begin with. However, recent research shows a   tendency to move away from the focus on game elements because there is no universal list of game elements, as it is impossible to clearly identify and distinguish game design elements from other design elements (Deterding, The Lens of Intrinsic Skill Atoms: a Method for Gameful Design, 2014c) and second, because it is recognised that the characteristic experiences for gameplay embrace more than just taking an activity and adding a layer of points, badges and leaderboards on top of it (Deterding, Eudaimonic Design, or: Six Invitations to Rethink Gamification, 2014a) (Werbach, (Re)Defining Gamification: a Process Approach, 2014). Therewith gamification is considered as a socio-technical system design practice and is defined as the design of motivational affordances supported by game elements to enhance performances in a group of interacting, interrelated, or interdependent social and technical elements forming a complex whole.

Motivational affordances refer to the motivating actionable properties between an objects and an actor, that may satisfy motivational needs (Zhang, 2008). Motivational affordances of a gamified design can be categorized in the four categories, namely Compete (Reeves & Read, 2009), Challenge (Csikszentmihalyi, 2008), Empathize and Explore (Schell, 2008) (Zhang, 2008); (Groh, 2012). The motivational affordances are created by the use of game elements. Game elements can be found on varying levels of abstraction (Deterding, Dixon, Khaled, & Nacke, 2011). As the boundaries between these categories are again blurry and still provide much room to discuss, it is useful to focus on the motivational affordances created by game elements and to consider game elements as the overarching term for all parts that a game exist of. In order to create

motivational affordances, specific game elements are essential. For competition, rules and leaderboards should be included (Reeves & Read, 2009); to challenge clear goals and actions should be present (Schell, 2008), to empathize, a narrative and interactive storytelling should be used and to explore curiosity should be created and new information should become available over time (Malone, 1981); (Schell, 2008).

A metaphor borrowed from Reeves & Read (2009) is to see game elements as ingredients, for which you need a recipe and a cook to create a successful gamified socio-technical design. As a recipe, there are only a few well-established theoretical frameworks for gamification design (Hamari, Koivisto, & Sarsa, Does Gamification Work?—A Literature Review of Empirical Studies on Gamification., 2014); (Deterding, The Lens of Intrinsic Skill Atoms: a Method for Gameful Design, 2014c). Therefore, design frameworks from other research areas are widely applied for gamification design to have some guidelines to develop a complex gamified intervention that has the desired effect, as frameworks for serious game design (Wenzler, 2008); (Peters & Westelaken, 2014) game design (Schell, 2008) or even from the Medical Research Council (Rojas, Kapralos, & Dubrowski, 2013). The industry mainly follows the steps of Werbach & Hunter (2012) on how to gamify your business. A useful gamification design process was recently developed by Deterding (2014c), which is also chosen as the overarching design methodology for this design science research. The design method by Deterding emerged from previous academic work and design methods in use in the industry. Moreover, the design method is focused on designing in a socio-technical system, taking the technical and social aspects as a whole into account. It is also useful because it makes use of the design lenses for game

design, initially developed by Schell (Schell, 2008) that provide a design guideline for designing a gamified intervention to acquire the desired skills that could potentially affect the target performances.

4. SELF-MANAGING TEAMS

For more than a decade researchers have theorized about how technology will change the shape of organizations. In the business world of today information technology is the key enabler for organizations to decentralize by which they depart from command and control to new organizational models where workers seek advice instead of approval and take the decisions themselves (Malone, 2004). Although there is not just one organizational model to turn to, as such the organizational models should always be customized and are much context-dependent (Bruijn, et al., 2014), increasingly attention is being paid to how organizations can quickly react to what is going on in the market and organization (Lanting, 2013). To remain competitive, organizations focus on lower costs, higher quality and increased throughput and a way to anticipate to this is to focus on a flexible and innovative organization in which more responsibility is given to the people in the organization (Lanting, 2013) .

Following decentralization, the delegation of tasks and responsibilities are mostly assigned to teams of employees instead of to the individual as using teams turns out to be a better way to use employee talents (Robbines & Judge, 2009). A team is a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems (Cohen & Bailey, 1997). Teams are more adaptable, productive and creative than individuals and therefore offer more innovative and comprehensive solutions to these organizational complexities. Self-managing teams are a special type of teams, who also take responsibility for the implementation and outcomes (Robbines & Judge, 2009).

From a theoretical point of view, self-managing teams perform even better than traditional teams in terms of cost, productivity and quality improvements (Cohen & Bailey, 1997). However, practice shows that these teams are not easily implemented and shows inconsistencies in the self-managing team performances.

Empowered by new technologies, organizations increase the ease of communication by which they can benefit from both the freedom, motivation, creativity and flexibility that drive small organizations as the scale and knowledge efficiencies of large organizations (Malone, 2004). The technological advances in communications enable people also in large organizations to achieve the information they need to make the decisions themselves, instead of just following orders from above (Malone, 2004). The organization should set out a strategy and the organization's objectives and should just let the employees themselves figure out how they can contribute to the bottom line of the organization, instead of telling them what to do (Malone, 2004);(Lanting, 2013).

Teams are not only capable of effective problem solving, they also have a huge impact on the employee motivation compared to traditional groupings (Bossche, 2006). Despite the beneficial effects of teams, teamwork also require increased communication demands, conflicts to be managed and more, so one should be aware that team work is not always the answer.

It is important to acknowledge that people are all different and with that, what motivates one person may demotivate the other. In order to motivate people, it is valuable to recognize the different motivational triggers and the different personality types that people may have (Dale, 2014). All kinds of attempts have been made to capture the complex human mind. From literature can be concluded that a simple classification of people cannot be scientifically substantiated, how bright, clear and instructive it may feel. While realizing a simple classification of people is not possible, personality traits are very helpful to describe people. The big five theory (Raad & Doddema-Winsemius, 2006), management drives theory (Weerdt-Norder & Keijser, 2012) or the print thinking theory (Caluwé, Que, & Vermaak, 2004) may be useful, among others, to describe the different personalities and different motivations to change within a self-managing team.

5. MOTIVATIONAL NEEDS

To gain more insight in the potential enhancement of performances by gamification, the effect of motivational affordances on the motivational needs of self-managing teams is researched. Based on the self-determination theory of Ryan and Deci (2000b), the basic human motivational needs of autonomy, competence and relatedness are distinguished. By fulfilling the motivational needs, people can be motivated to show behavior that influences performances positively (Ryan & Deci, 2000a). In general, motivation is defined as being energized and activated to do something and while being motivated people vary in their level and orientation of motivation (Ryan & Deci, 2000a). The level of motivation can range from very little to a lot of motivation. The orientation of motivation determines the why of actions. According to the self-determination theory of Ryan & Deci (1985) the most basic distinction in orientation of motivation are the types of intrinsic and extrinsic motivation. Intrinsic motivation refers to doing something because it is interesting or enjoyable, whereas extrinsic motivation refers to doing something because it results in a separable outcome (Ryan & Deci, 2000a). A classic example is learning, which for intrinsic motivation is done to acquire a new set of skills and for extrinsic motivation is done to gain a good grade for which you also might get some pocket money from your granny.

The environment can facilitate the intrinsic and extrinsic motivation by supporting the satisfaction of the motivational needs (Hamari, Koivisto, & Sarsa, 2014) Autonomy, competence and relatedness are considered as the innate, basic human needs of which the definitions are borrowed from Ryan and Deci (2000a) (2000b): Autonomy refers to self-determination and volition and is defined as "the organismic desire to self-organize experience and behavior and to have activity be concordant with one's integrated sense of self". Competence, also referred to as self-efficacy, is to be able to and to have the knowledge and skills to act effectively in a wide variety of situation. Relatedness is defined as "a sense of belongingness and connectedness to the persons, group, or culture disseminating a goal".

For intrinsic motivation, one should experience perceived autonomy and competence (Ryan & Deci, 2000a). Previous research shows that satisfying the needs of autonomy results in more intrinsic motivation, curiosity and desire for challenge (Deci, Nezlek, & Sheinman, Characteristics of the Rewarder and Intrinsic Motivation of the Rewardee, 1981). For the need of competence to enhance the intrinsic motivation for action, it should be

accompanied by a feeling of autonomy (Ryan & Deci, 2000a). Intrinsic motivation exists in the relation between individuals and activities and by creating properties that focus on potential intrinsic interest, it lead to improved task performance.

Extrinsic motivation requires next to autonomy and competence the experience of perceived relatedness, as these activities do not hold intrinsic interest for the individual (Ryan & Deci, 2000a). For extrinsic motivation, previous research shows that satisfaction of the motivational needs lead to more engagement (Connell & Wellborn, 1990), better performance (Miserandino, 1996), decrease in dropping out (Vallerand & Bissonnette, 1992), higher quality (Grolnick & Ryan, 1987), and greater well-being (Sheldon & Kasser, 1995) among other outcomes.

5. SELF-MANAGING TEAM PERFORMANCES DURING A GAMIFIED INTERVENTION

Analysis of Self-Managing Teams

Gamified designs as an intervention for work activities are likely to address complexities that organizations may have to deal with (Oprescu, Jones, & Kaysikitis, 2014). More insights in this contribution are gained by means of a case study with two gamified interventions of two and four at the Operational Services department of ING Domestic Bank. ING Operational Services is the centralized operations department of ING Domestic Bank, located in Leeuwarden in the Netherlands which handles most of the day-to-day customer requests. To analyze the complexities that self-managing teams have to deal with, first a system analysis is conducted. Observations at two self-managing teams, a survey about their motivational triggers, skillfulness, motivational needs and perception is conducted, next to ten interviews and performance measurements.

From the system analysis it is concluded that the self-managing teams were mainly focused on the inventory management of customer requests and the quality of their service, by which less attention was paid to the deployment and therefore the costs of this type of service.

Designing a Gamified Application for Intervention

In order to make their self-management more efficiency oriented, a gamified intervention is designed. For the interventions, gamified applications were developed, programmed in the Excel user forms by VBA programming language. The design took into account all relevant activities of self-managing teams that contribute to their performance and in addition the group decision making processes, communication and ambience. For the design, the idea was used to create an entrepreneurial mind-set, in order to stimulate the teams to think about their customers, profitability and investments for the future. Their workflows and production norms were translated to products and prices of their own company and their working hours were translated to personnel costs.

As some learning was expected from the first gamification design and intervention, the second gamification design was designed after the analysis of the first gamified intervention. For gamified application, four motivational affordances were designed. For competition, two self-managing teams participated in a created competition for ten days. Each day, they had the challenge to make profit by achieving the right balance for personnel costs and revenues and therewith for their working hours and processed customer requests. To empathize, the feedback and the gamified application was translated to the metaphor of running your own company. Last,

exploration was created by new activities or functionalities in the application.

Gamified interventions

During these experiments, the performances of self-managing teams were analyzed in terms of managerial goals and job satisfaction. The considered performance indicators for the managerial goals were efficiency, quality of service, inventory control and level of skillfulness. Next to the performance measurement, their job satisfaction was measured by means of a standardized job satisfaction questionnaire (Ferreira, 2009), which is based on the Zurich Model of job satisfaction (Bruggemann, Groskurth, & Ulich, 1975),

To gain more insights in the contribution of gamification to self-managing team performances, the motivational need satisfaction of autonomy, competence and relatedness are measured before and after the gamified intervention in the second experiment. The assessment is done by a standardized questionnaire (Deci E. , Ryan, Gagné, Leone, Usunov, & Kornazheva, 2001), based on the self-determination theory of Deci and Ryan (Deci & Ryan, 1985).

Results of the Gamified Intervention

Analysis of the first intervention shows that gamification contributes to the performances of self-managing teams as it supports the transparency of activities, an understanding of the organizational goals and how they can contribute to it, next to improved communication and ambiance within the team. Regarding the design it was noted that mutual competition did harm the team feeling and therefore was mitigated from the second gamification design. Furthermore it underlined the need for motivational affordances as a clear and simple interface did not motivate the self-managing team to change something about

their behavior, although the insights and understanding was created.

self-managing teams in their activities to satisfy the quality target outcomes of 100% processed right and the inventory control target outcome of all requests handled the same day, while balancing the inflow of customer requests, controls and resources in an efficient manner while keeping the employees satisfied or become even more satisfied with their job. The self-managing teams increased their efficiency, while maintaining the same quality level of service and inventory control. The job satisfaction is analyzed by job satisfaction types and did not show a strong relations.

In order to gain more insight in this positive contribution, the contribution of each of the four motivational affordances are analyzed with respect to the motivational need satisfaction. The design of the motivational affordances are a key part in the gamification design, as they are typically designed to satisfy the feeling of autonomy, competence and relatedness (Csikszentmihalyi, 2008).

The results show that compete and challenge are mainly contributing to the achievement of the managerial goals, which were measured in efficiency, throughput and quality. Although, empathize and explore contributes to a lesser extent to these managerial goals, they turn out to be beneficial in another way. To empathize, people feel like taking decisions about someone else and therewith the individual objectives are less blocking the optimal team outcomes. Furthermore, a storyline increases the communication as some crucial conversations or difficult topics are easier to discuss by means of a metaphor. Explore turns out to be a really useful motivational affordance to distinguish the

level or challenges according to the maturity level of a self-managing team.

Both experimental groups show a higher level of perceived autonomy and competence, although the results on one out of two experimental groups does show a negative score. This negative score is expected, as after the baseline scores two self-managing teams of the experimental group merged into the second experimental group. With this merge, these also got new workflows to be learned which explained a lower feeling of competence. The self-managing teams indicate that their communication, decision making processes and ambiance within the team are improved by the gamified intervention. They also felt more empowered, as by the gamified intervention they felt more responsible for their activities and output. By improved communication, better decision making processes and team spirit, it is concluded that the gamified intervention also positively contributed to the relatedness.

6. MOTIVATIONAL AFFORDANCES SATISFYING MOTIVATIONAL NEEDS TO CONTRIBUTE TO SELF-MANAGING TEAM EFFECTIVENESS

A theoretical framework is developed based on the findings of the literature study and the findings of the case study. The framework of gamification for self-managing teams is composed of the relations between motivational affordances, motivational needs and the self-managing team effectiveness. The framework is composed from the studies with self-managing teams. However, the framework might also be useful for other types of teams of organizations.

This framework can be used to analyze the complexities of self-managing teams and to use a gamification approach to design for these complexities. By analyzing the system

of interest, the performances of the self-managing teams are determined by performance indicators established from the interest in the team effectiveness of multiple relevant stakeholders. Next to the performances, the satisfaction from the employees can be determined by job satisfaction types.

To improve the performances of self-managing teams, first their performances and the motivational needs satisfaction of the team need to be analyzed. If there is potential for improvement and a lack of the feeling of either autonomy, competence or relatedness, gamification could be a suitable mean.

Accordingly, motivational affordances can be created by the gamification design process to contribute to these motivational need satisfaction. To contribute to organizational performance indicators like efficiency or other specific targets, a challenge and competition can be designed. Empathize enhances the understanding, communication and ambience in the team. Explore can be used to differentiate for different teams whereas new teams can work with the basic version and more experienced teams could use more functionalities of the gamification design.

By gamification, the perceived feeling of autonomy, competence and relatedness is addressed in the gamified system or application. By transferring the perceived autonomy, competence and relatedness back to the real world, the empowerment and performance of the self-managing team might be improved. The motivational need satisfaction concerns the individual in the team. However, if one team member is much more motivated this might also influence the team. The individual need satisfaction is also linked with the motivational affordances, as some might be triggered

more by one motivational affordance than another.
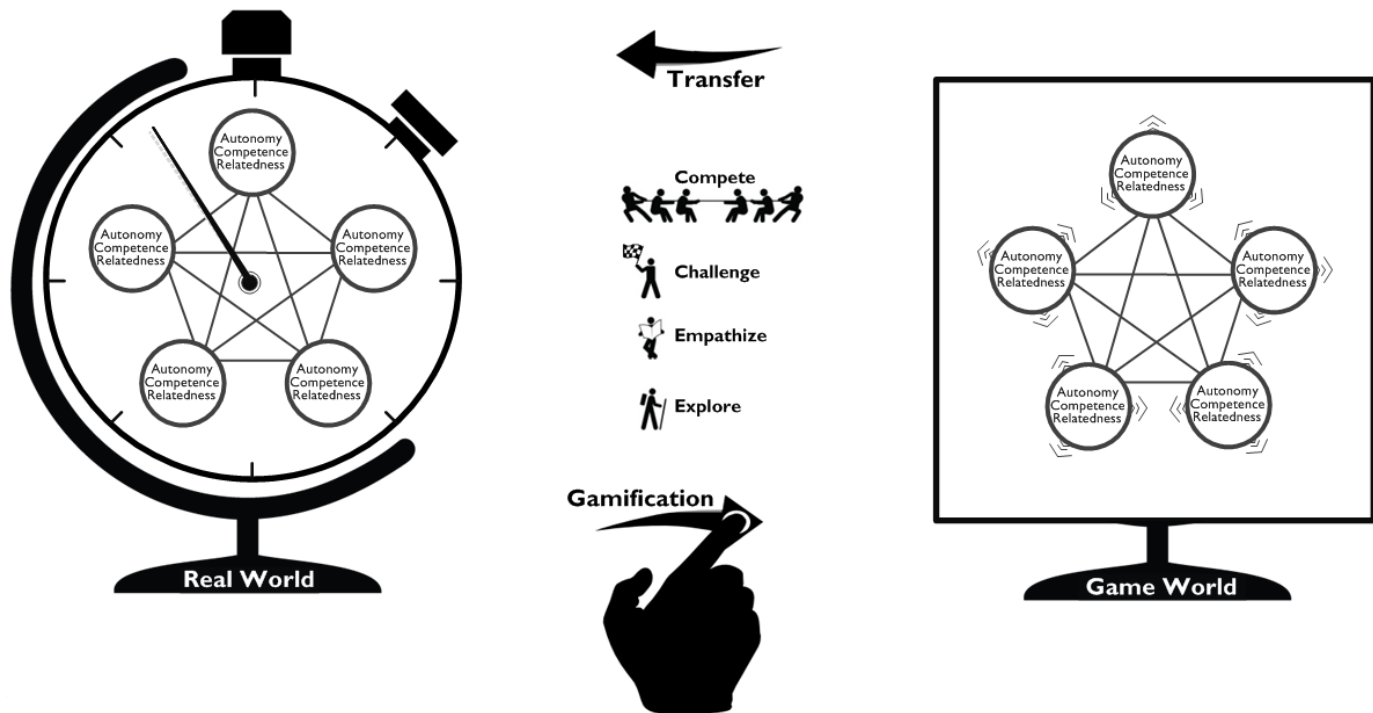
affordances, motivational needs and the self-managing team effectiveness. The framework is composed from the studies with self-managing teams although it might also be useful for other types of teams of organizations. Furthermore, it is useful to verify and validate the design.

To design the gamification, the gamification design process by Deterding (2014) seemed useful in this research, in order to arrive at a successful gamification design. However, in this research a few additions and additions are suggestions to the five original design steps. Preceding the design process, a system analysis should be conducted in order to justify the need and relevance for a gamification design. The strategy for the design should be defined after a stakeholder and objective analysis in order to take the interest of multiple relevant stakeholder into account while defining the strategy. To design a gamified intervention specific design lenses can be used to arrive at competition, challenge, empathize and explore. Furthermore, it is suggested to

validate and verify the design and to test it in the system of interest. By these last steps, it can be decided if the desired outcomes are achieved by the gamification design and whether or not another prototype will be designed.

Based on the team effectiveness, there might be a need for a gamification design either of temporary or continuous use. This research focus on a temporary intervention, however a gamification design for continuous use might also be of interest. To design and implement gamification, a few success factors are defined. First, management should support the empowerment and should take a supportive role towards the self-managing teams, which might be a challenge for some managers. Second, the goals and activities that contribute to it should be understandable and motivating for the self-managing teams. Managerial goals and performance indicators do are often not clear to people on the work floor and

therewith they often do not know to which extent and how they can make a difference themselves.

The use of this framework is as a practical solution to determine if gamification is a suitable mean for the complexities at hand within an organization and accordingly to be used to determine the main concepts that need to be analyzed in order to choose a gamification strategy.

DISCUSSION

The literature review is based upon a literature study for which the selected articles use the term gamification and secondly, articles that refer to self-managing teams. As mentioned in the research, a large variety of parallel and overleaping terms exists for gamification. Studies of closely related concepts might include additional or new knowledge regarding the identified knowledge gaps and suggestions for future research as proposed in this research. Since different terms for gamification might be used in these studies, these relevant studies are hard to find.

Secondly, this literature review states includes many articles of proponents of gamification. However, in the digital media people raise a lot of questions marks regarding the concept of gamification. These public debates are mainly very poorly substantiated and therefore not reflected so well in this literature review.

The results from the case study are gained by a quasi-experimental and pre-experimental design. Ideally, this would be a complete experimental design. Due to the experimental designs used, other factors present that might influence the performances of the self-managing teams could not be excluded.

Furthermore, this paper did not discuss ethical issues of gamification, but this is an interesting issue since lots of personal data and achievement results will be stored and accessible. Although it is not discussed in detail, it is important to not misuse this data and use it for assessments. The gamified intervention is aimed at supporting self-managing teams by giving them insights in their performances and desirable action. Using the gamified application for assessments will violate the trust of the self-managing team members in the gamified application and accordingly, they will nog be totally honest anymore about their performances and tasks.

CONCLUSION

There is a common belief that organizations can benefit from the application of gamification as gamification is a useful tool for increasing motivation, engagement, for educational purposes and more. However, clear academic proof of the benefits of gamification is limited, as the results of various studies turn out to be hardly comparable due to their research approach, objects and contexts.

Within a continuous changing organization, people and workflows within self-managing teams might change. This stresses the need for a gamified application that support the self-managing team performances in their activities to satisfy the target outcomes set by management, while balancing the inflow of work, controls and resources in an efficient manner while keeping the employees satisfied or become even more satisfied with their job. As there are always new people joining the self-managing teams, the professionalization & motivation among other elements can be affected, which again highlights the need for such a gamified application.

The case study at ING Operational Services with two self-managing teams show that gamification does contribute to the self-managing team effectiveness, by enhancing the performances. Mainly the motivational needs of competence and challenge contribute to the motivational need satisfaction of autonomy and competence, whereas empathize related with the relatedness. Explore can be used to adapt the gamification design to the maturity level of self-managing teams. The developed framework serves as a starting point for gamification to enhance self-managing team performances for which the revisited gamification design process of Deterding (2014) is a useful way to arrive at a gamification design.

FUTURE RESEARCH

For future research five interesting directions are identified. First of all, it would be interesting to conduct the explanatory study with a greater sample size and within a longer time frame for an improved statistical power and generalizability of the findings. Second, it would be interesting to include other factors in this research that might have influenced the empowerment and performances of self-managing teams. A more extensive study of the team composition and tasks could strengthen the findings. Therewith the effect of the organizational context, self-managing team characteristics and team composition and tasks could be researched. Furthermore, it could be interesting to focus on the role of the team manager, as his supportive role also influences the effectiveness of self-managing teams. As gamification is a trending topic for researchers and the industry, it is expected that more knowledge will be developed in a relatively short term. Therefore, future research should use the new achieved insights by other researched in order to optimize the use of gamification for self-managing team effectiveness.

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