Incentive design and gamification for knowledge management

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ABSTRACT

Knowledge is one of the most important resources for businesses. Knowledge management systems (KMS) are implemented to guarantee an adequate handling of this resource. While innovations in Knowledge Management often focus on technical approaches or structural aspects of knowledge storing, less attention is paid to the different aspects of human motivation and the individual willingness to knowledge sharing. The employee as sharer and receiver of knowledge, however, has to be motivated properly in order to ensure a high content quality within the KMS and appropriate handling of knowledge. Gamification has proven to be a feasible approach to increase employee motivation. This paper, therefore, analyses the effects of game mechanics on motivation and knowledge sharing behavior. In addition, advantages and risks of implementing game components in KMS are illustrated.

1. Introduction

The sustainable use of business resources is a key to corporate success. In addition to human, physical or financial resources, knowledge is a rather abstract but no less crucial key resource of a company (Helm, Meckl, & Sodeik, 2007). It gives companies a decisive advantage over their competitors and secures the flow of business processes. The notion of "knowledge is power" represents the struggle for success and competitive advantages in the world of business. While on the one hand, the adequate protection of the company's own knowledge is of great importance for companies, on the other hand, a free and open handling of knowledge is required in the internal process. Withholding of knowledge has a negative impact on knowledge sharing (KS) behavior of the knowledge community as a whole like intra-organizational knowledge-hiding (Serenko & Bontis, 2016) and may additionally lead to knowledge gaps. These can have far-reaching consequences for the company's operating capability in the event of an employee's absence like loss of the organizations' ability for task performance (Levy, 2011; Massingham, 2008). Furthermore, knowledge loss can cause high time and cost efforts for training and acquisition of knowledge which is or has already been possessed by co-workers (Serenko & Bontis, 2016). This makes knowledge management capability a competitive factor for organizations (Chuang, 2004).

Knowledge management (KM) comprises the processes of creating, storing, transferring and applying knowledge within a company (Alavi & Leidner, 2001). Knowledge Management Systems (KMS) are IT-systems that provide technical support to employees in the processes of KM (Desouza & Awazu, 2005). Examples of KMS are Content management systems (CMS), Wikis, Blogs, Enterprise social networks (ESN), Groupware systems or Bugtracker. They allow employees to create documents or other forms of knowledge artifacts (videos, instructions, tickets), to store and structure them. Creating and maintaining a shared and searchable knowledge base supports the re-usage of knowledge and, hereby, value-creation of the company. But a KMS alone cannot guarantee successful KM. The relevance of different contextual factors for KS and KM such as relational models (Boer, Berends, & van Baalen, 2011), subjective norms (Chennamaneni, Teng, & Raja, 2012), corporate culture (Girdauskienė & Savanevičienė, 2007; Huerta, Salter, Lewis, & Yeow, 2012; Javernick-Will, 2012) but also barriers have been examined comprehensively (Hong, Suh, & Koo, 2011; Richter & Derballa, 2009; Riege, 2005; Singh & Kant, 2007).

Irrespective of the company's requirements with regard to KM, employees ultimately decide for themselves to what extent they provide their knowledge by transforming tacit into explicit knowledge or hide their knowledge instead (Serenko & Bontis, 2016). For example, employees might hesitate to use a KMS due to technical, organizational or individual barriers (Ardichvili, Page, & Wentling, 2003; Richter & Derballa, 2009). Instead of using the KMS as a platform for KS, they

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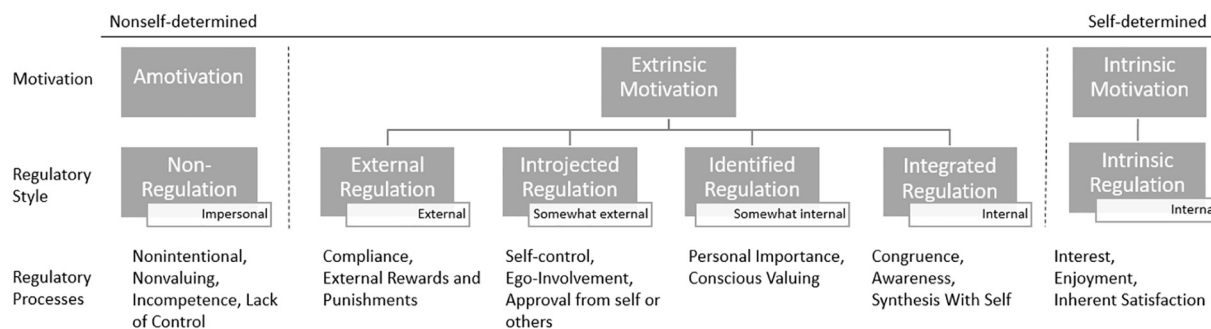
Fig. 1. Self-determination theory (Ryan & Deci, 2000a).

communicate directly or refuse to share knowledge (Ardichvili et al., 2003; Wasko & Faraj, 2005). This can be due to a lack of understanding of the relevance of KS for the community or to underestimating the value of one's own knowledge (Ardichvili et al., 2003). But also perceived loss of power due to giving up the ownership to knowledge negatively effects the attitude towards KS (Chennamaneni et al., 2012). It is the task of corporate management to establish a corporate culture that is characterized by openness and fairness (Bock, Zmud, Kim, & Lee, 2005; Chennamaneni et al., 2012; Wasko & Faraj, 2005) and values KM. By underlining the overall entrepreneurial value of KS the "knowledge is power"-attitude within the company can be overcome (Hong et al., 2011; Singh & Kant, 2007; Webster et al., 2008; Wong & Aspinwall, 2005). Another individual barrier that keeps employees from KM is motivation (Hong et al., 2011; Richter & Derballa, 2009; Singh & Kant, 2007). Actually, motivation has been identified as one of the most crucial points for KS (Chen, Chang, & Liu, 2012; Gagné, 2009; Šajeva, 2014; Singh & Kant, 2007).

According to Rosenstiel (2011), human behavior is affected by the four conditions individual skills, situational enabling, empowerment and obligation, and individual desire. Together with personal values, the motivation forms the individual desire. There is a positive correlation between motivation and KS willingness and behavior (Lin, 2007; Liu & Fang, 2010). Furthermore, motivation is decisive with regard to the quality of KS (Gagné, 2009). Studies identified a diverse spectrum of KS motivating that ranges from intrinsic motivation such as altruism (Lin, 2007; Liu & Fang, 2010) to aspects of social relevance like reputation or peer-recognition (Chennamaneni et al., 2012; Javernick-Will, 2012; Lin, 2007) and external factors such as rewards (Bock et al., 2005). Also the illustration of the reciprocal benefit of KS, both for oneself and the company highlights the individual value of KM, addresses feelings such as gratitude, obligation and trust (Javernick-Will, 2012) and thus has a positive impact on KS behavior (Bock et al., 2005; Cho, Li, & Su, 2007; Lin, 2007). Such an illustration of reciprocal benefit can be achieved by the provision of feedback which can furthermore provide recognition and appreciation (Gagné & Deci, 2005). The aim of this paper is to outline opportunities to address and strengthen the necessary motivation for KM in a targeted manner.

For the general context of work, Lindenberg (2001) argues that "obligation-based intrinsic motivation is more important than enjoyment-based intrinsic motivation" and that such an obligation-based motivation can be sustained by allowing enjoyment as a compatible background goal. Gamification seems to be a feasible approach here. Deterding, Khaled, Nacke, and Dixon (2011) define gamification as "the use of game elements in non-game contexts". It is an approach to change or influence the behavior of someone by increasing motivation through persuasive design (Spagnolli, Chittaro, Gamberini, & Werbach, 2014; Vassileva, 2012). Game mechanics such as competition, status, immediate or long-term feedback or challenges target on an enhancement of the recipients' motivation (Hamari, 2017; Hamari & Koivisto, 2015). Through game components like rankings, ratings or badges, incentives can be created. With the aim of enhancing the motivation of

recipients, gamification has been applied to various contexts such as education and learning or business (Hamari, Koivisto, & Sarsa, 2014; Koch, Ott, & Oertelt, 2013; Reiners & Wood, 2015). Also for the context of KM, benefits of gamification have been addressed but predominantly not in a holistic way (Shpakova, Dörfler, & MacBryde, 2017) but limited to selective measures such as points for content creation (Swacha, 2015; Trees, 2015).

The aim of this paper is to close this gap by adding a holistic approach for the incentive creation through gamification in KM. Based on an extensive literature study on the identification of KM-relevant motivational factors, we examine gamification as a method for applying incentives within KMS and the creation of an incentive system KM. Advantages and risks of specific game mechanics, especially in regard to their long-term-effect on KS behavior, are theoretically analyzed in order to identify benefits as well as possible side effects. In this way, the paper provides practical implications that support a far-sighted development and implementation of KMS.

2. Theoretical background

In order to correctly assess the opportunities and challenges of designing incentives in KM, a fundamental understanding of motivation is mandatory. Motivation is the intention to perform an action. We base our analysis on the self-determination theory (SDT), which is a theory of motivation and personality that was developed by Deci and Ryan (1985). A model of the SDT is given in Fig. 1. Within their theory, the authors differentiate between intrinsic and extrinsic motivation. The basis of the SDT is the assumption of the existence of three basic psychological needs each human has and pursuits to satisfy. These needs that form the basis for intrinsically motivated behavior are *autonomy*, *competence* and *belonging* (Ryan & Deci, 2000a).

Ryan and Deci (Deci & Ryan, 1985; Ryan & Deci, 2000a) describe intrinsic motivation as the self-propelled drive to perform an activity. The actor's focus is on the activity itself which is performed for its own sake. Acting out of an intrinsic motivation brings a feeling of doing something valuable or doing it out of enjoyment. Other than the autonomous type of intrinsic motivation, extrinsic motivation is controlled and makes people act out of obligation, pressure or coercion (Deci & Ryan, 2015). In terms of extrinsic motivation, the focus of an activity is directed towards the anticipation of a compensation or achievement that is subject to direct or indirect external influence.

In the context of business, extrinsic motivation is often associated with financial rewarding, e.g. performance-based bonuses or an extra day off. But the expectation of a financial reward is just a small part of the extrinsic motivation, namely *externally regulated* extrinsic motivation. Altogether four levels of self-determination and self-regulation are differentiated. The extrinsic motivation by external regulation has the lowest degree of autonomy.

In the case of *introjected regulation*, the trigger of an activity is the internal pressure, which, however, is experienced as caused by the outside. This means an activity is carried out "because that's how it