

# Gamification for Energy Conservation and Corporate Social Responsibility (CSR)

Masoud Keimasi, Majid Lotfi Ghahroudi, Mahdi Parseh <sup>1</sup>

<sup>1</sup> Assistant Professor of department of Management, University of Tehran, Tehran, Iran. keimasi@ut.ac.ir

<sup>2</sup> Department of Management, Faculty of Management, University of Tehran, Iran, majidlotfi@ut.ac.ir

<sup>3</sup> Department of Executive master of business administration, Payame Noor university, Iran, greenmastermt@gmail.com

Received: 06/11/2020

Accepted: 10/12/2020

Published: 15/12/2020

## Abstract

Gamification can be applied to effect positive behavioral changes in various fields, including energy conservation. This research may assist corporations in their corporate social responsibility activities, in designing personalized gamified behavioral interventions for their employees, towards energy conservation in workplaces. In this study, we show some studies which used gamification solutions in their business. Companies can apply these kinds of solutions, especially for energy conservation.

**Keywords:** Energy conservation, Environmental protection, Gamification, Corporate social responsibility (CSR)

## 1 Introduction and literature review

### 1-1 Gamification:

Gamification is a rather significant trend in recent years. It builds on the emotional and involving qualities of gaming but may not entail a full-fledged game. Gamification exists in a large number of industries; retail, media, consumer goods, and healthcare. It is used as means to educate employees in all types of industry, create customer engagement to brands and businesses, and even nudge people to change their behavior. The present paper is an introduction to the special issue on "Theoretical Perspectives and Applications of Gamification in Business Contexts". In total the special issue comprises of 11 novel and high-quality contributions on gamification. These are selected to enhance our understanding of underlying mechanisms that impact employees' and customers' attitudes and behaviors.

There is no doubt that e-learning gamification in companies can enhance engagement in learning. The mundane learning experience can be transformed into fun with play games and engaging one by implementing elements of gamification into learning. There are many articles that are related to gamification

in business or training employee in the companies. In this part of this study, we collect some of them for literature review section.



Fig1. Gamification and corporate training  
(<https://playxlpro.com>)

For instance, an article is related to Gamification in Commercial Fields. This study is a prelude to "Theoretical Perspectives and Applications of Gamification in Commercial Fields". In total, the article includes 11 new and quality collaborations in gamification. These items are selected to increase their understanding of the

1 - Corresponding author

underlying mechanisms that influence the attitudes and behaviors of employees and customers (Wünderlich and et al., 2020). The development of business applications with game features has given rise to a new trend called gamification and challenged e-banking to introduce new game elements, such as mechanics and social cues, to its traditional applications. Yet, there has been a lack of empirical evidence regarding the intention to use, these types of applications and their possible impacts on business. In the article, researchers explore the role of gamification, socialness, and other four well-known variables (ease-of-use, usefulness, enjoyment, and intention to use) in a gamified business application and corresponding business. They proposed and evaluated a model based on the Technology Acceptance Model to better analyze and understand the adoption of gamified business applications. To test this model, they developed a study using a sample of 183 bank customers, and found that gamification significantly improved the customer's sense of social interaction, which, in turn, strongly influenced the customer's intention to use the applications. They argue that this intention to use could provide a strong benefit to the business, in term of increased customer engagement. This paper presents a new conceptual model to predict behavioral intention in regards to gamification in e-banking, illustrating seven variables that affect the adoption of e-banking by bank customers. Their findings contribute overall to a better understanding of gamification in e-banking (with the extension of Technology Acceptance Model theories, and the new variable gamification), providing important practical implications for software development and marketing practices. Here, they explore the role of gamification, sociality, and four other popular variables (ease of use, utility, enjoyment, and intent) in a graphic business application and related jobs. (Rodrigues and et al., 2016).

Gamification includes combining elements of online games, such as points, scoreboards, and badges in non-game fields, to improve interaction with employees and consumers. The main point of this article is, in short, what previous authors have examined in the field of gamification. Literature analysis of 50 articles from 2011 to 2016 was performed using Leximancer software to determine and shape the main themes and concepts presented in gamification articles. In response to their research question, "What guidelines for future research can be the main themes and concepts in published scientific articles on gamification?" They conclude that the researchers identified eight themes (gamification; game; usage; users; business; rating; interaction; learning) and twenty-eight related concepts. The present systematic review helps to create possible guides for prospective studies, based on analyzed articles, integrating game design content into business, learning and teaching, with a view to "conclusions" and "future research" sections. In addition, the usefulness of Leximancer for qualitative content analysis highlights research in this area. (Rodrigues and et al., 2019). The gamification software development gave emphasis to the role

played by the users to test and improve the software. The study by Futebank and et al. presents a framework for software gamified in e-banking, taking a users' groups and a qualitative research approach, to check the users' design preferences in five cases of banking software gamified (Futebank, Dreams, Galaxy, Olympics, and Warrants). After software presentation, and usage experience, 53 participants, responses to a survey with six open questions. The data were analyzed through a text semantic software, to detect and classify lexical items in, accordance, with standard of software quality characteristics and user experiences. Two primary categories were identified, as well five dimensions in each element and characteristic categories. The results show five characteristic dimensions (design, appearance, functionality, rules, and objectives) and five element dimensions (game, product, security, process, and information). These findings provide a framework for web designers and e-business, highlighting the most important software features when dealing with serious applications with game design. It adds value to the current literature on understanding the customer relationship with the game and the financial product, identifying new dimensions (game and product) on the approach of thinking and design gamification in e-banking. Our finding contributes to a better understanding of key elements and characteristics in e-banking software design and has important practical implications for software development and marketing practices. Thoughts on the users' software design preferences identified, should propel increase adoption and attractiveness of online banking.

Gamification software development emphasizes the role that users have played in testing and improving the software. This study provides a framework for graphical software in e-banking, taking into account user groups and a qualitative research approach, to examine user design settings in five cases of gamification banking software (Futebank, Dreams, Galaxy, Olympics and Warrants). In this study, after presenting the software and user experience, 53 participants answered a survey with six open questions. The data were analyzed through a text semantic software to identify and classify lexical items in accordance with the standard of software quality specifications and user experiences. Two main categories as well as five dimensions were identified in each element and category. The results show five characteristic dimensions (design, appearance, performance, rules and objectives) and five elemental dimensions (game, product, security, process and information). These findings provide a framework for web designers and e-commerce and highlight the most important software features when dealing with serious game design applications. This adds to the current literature on understanding the customer relationship with the game and the financial product, identifying new dimensions (games and products) on the design thinking approach and gamification in e-banking. Their findings help to better

understand the key elements and features in e-banking software design and have important practical implications for software development and marketing practices. Thoughts on the design preferences of identified users should increase the acceptance and attractiveness of online banking. (Rodrigues and et al., 2016).

Another study aims at examining gamification all together with its game elements, techniques and mechanism, and how they may be used in business software implantation and operation in enterprise management. The research goes through the literature to clearly define gamification and to reveal concrete applications of it. The methodology in the study employed a focus group of subject matter experts in business software applications who held a brainstorming session to identify which gamification elements from the literature analysis is appropriate and relevant to the scoped enterprise information systems in the study: ERP (enterprise resource planning), CRM (customer relationship management), and BI (business intelligence). The results first provide gamification elements for the implementation and management of business software systems, as well as an explanation of how the extracted gamification elements can be used especially for the purposes and objectives of the business software. The aim of this study was to investigate gamification along with game elements, techniques and mechanisms and how to use them in planting and using commercial software in company management. This research through literature clearly defines gamification and shows specific applications of it. In this method, a focused group of subject matter experts in commercial software programs that held brainstorming sessions is used to identify gamification elements from the appropriate literature analysis related to the information systems of the study company: ERP (Enterprise Resource Planning), CRM (Customer Relationship Management) and BI (Business Intelligence). The results first provide gamification elements for the implementation and management of commercial software systems, as well as an explanation of how to use the extracted gamification elements specifically for the purposes and purposes of commercial software (Yordanova and et al., 2021).

In addition, Gamification is the use of elements and techniques from video game design in non-game contexts. Amid the rapid growth of this practice, normative questions have been under-explored. The primary goal of this article is to develop a normatively sophisticated and descriptively rich account for appropriately addressing major ethical considerations associated with gamification. The framework suggests that practitioners and designers should be precautious about, primarily, but not limited to, whether or not their use of gamification practices: (1) takes unfair advantage of workers (e.g., exploitation); (2) infringes any involved workers' or customers' autonomy (e.g., manipulation); (3) intentionally or unintentionally harms workers and other involved parties; or (4) has a negative effect on the moral character of involved parties. Gamification is the use of video

game design elements and techniques in non-gaming contexts. Amid the rapid growth of this practice, normative questions have received less scrutiny. The main purpose of the related article is to provide a very complex and rich descriptive account to properly address the important ethical considerations associated with gamification. This framework suggests that physicians and designers should be cautious about using or not using gamification methods, primarily, but not limited to: (2) violating the independence of workers or customers involved (e.g., manipulation); (3) intentionally or unintentionally harming workers and other parties involved. Or (4) has a negative impact on the moral character of the parties involved. (Kim and et al., 2016). In an interesting paper aims to examine the impact of predictive gamification, through a sales simulator game, as a strategy to minimize sales problems in organizations. This article aims to investigate the impact of predictive gamification through a sales simulation game as a strategy to minimize sales problems in organizations. Rocha and et al., 2019).

Moreover, gamification is the concept of leveraging the psychological predisposition to engage in gaming, using mechanisms that game designers have applied in making video games, as a potential means to make real world activities more engaging. A serious game is a game designed for a primary purpose beyond that of pure entertainment. The influence of games on the cognitive, emotional and social domains of players increases motivation and engagement of learners. Within a gamified environment, individuals demonstrate a willingness to engage in repetitive tasks, experience failure, and make repeated attempts despite the risk. In the workplace, gamification provides many benefits for companies, including enhanced workforce recruitment and retention, increased program adoption, and improved work performance. However, many companies are reluctant to adopt gamification due to the challenges of accomplishing change within organizational hierarchies, as well as other concerns like demographics, ethics, and a history of failed attempts at gamification. The related paper presents a literature review to synthesize research and findings on serious games and gamification in the workplace. This paper presents a literature review for the synthesis of research and findings on serious games and game development in the workplace. (Larson and et al., 2020). Also, Gamification is the application of game features, mainly video game elements, into non-game context for the purpose of promoting motivation and engagement in learning. The application of gamification in a pedagogical context provides some remedy for many students who find themselves alienated by traditional methods of instruction. The use of gamification could provide a partial solution to the decline in learners' motivation and engagement the schooling system is facing today. Specifically, the college environment could benefit a lot from gamifying not only their graduate recruitment strategies, but also the college course content and curricula. This critical analysis of literature on gamification is intended to be part of a sequence on

the effect of gamification on motivation and engagement. A proposed methodology in the study of gamification effect on motivation and engagement in addition to an empirical study on three college courses are being finalized to complete this trilogy. An interesting paper aims to discuss these issues. Gamification is the use of game features, mainly video game elements, in non-game contexts to enhance motivation and interaction in learning. The use of gamification in the field of education provides some solutions for some students who consider themselves foreign to traditional methods of education. The use of gamification can be a partial solution to reduce the motivation and interaction of learners that the education system is facing today. In particular, the college environment can benefit greatly from playing not only graduate attraction strategies, but also college course content and curricula. This critical analysis of the literature on gamification is considered to be part of the sequence of the effect of gamification on motivation and interaction. A proposed method for studying the effect of gamification on motivation and participation in addition to an experimental study in three academic courses to complete this trilogy is being finalized. The purpose of this article is to discuss these issues. (Alsawaier and et al., 2018).

In addition, games as service systems is the subject of another study. This article is an attempt to reconcile gamification with service marketing theory, which defines the consumer as a co-producer of services. Shows these games as service systems consisting of operator and agent resources. It provides a definition of gamification, a definition that emphasizes its empirical nature. This definition highlights four important aspects of gamification: financial resources, psychological intermediaries, goals of gamification, and context of gamification. Using the definition provided in this article, four possible gamification actors are identified and gamification as a communication stage of the service environment is examined. (Huotari and et al., 2017).

Despite the proliferation of gamification in the workplace, little is known about the contextual factors that contribute to its efficacy and impact on employee engagement and organizational productivity. Using self-determination theory, the related study examines the effect of external motivations such as social pressure or internalized guilt on the satisfaction of employees' psychological needs and their behavioral intentions. A survey (n = 291) in several industries shows that external motivation can reduce employee independence and employee satisfaction, but when external motivation is internalized (such as perceived personal value), it can reduce needs satisfaction, intrinsic motivation, and Provide behavioral intent. For managers, these results suggest that beyond being enjoyable, sustainable game design should provide benefits that are meaningful and valuable to employees. While acknowledging that more research is needed, this study provides a basis for a deeper understanding of how game-making functions as the first empirical study of the role of external motivations. (Mitchell and et al., 2020).

Gamification is an increasingly common marketing tool. Yet, to date, there has been little examination of its ethical implications. In light of the potential implications of this type of stealth marketing for consumer welfare, this paper discusses the ethical dilemmas raised by the use of gamified approaches to marketing. The related paper draws on different schools of ethics to examine gamification as an overall system, as well as its constituent parts. This discussion leads to a rationale and suggestions for how gamification could be regulated and/or controlled by more informal codes of conduct. The paper ends by outlining a practical framework which businesses can use to evaluate the potential ethical implications raised by their own gamified marketing techniques. This article examines gamification as a general system as well as its components, using various ethical schools. This discussion leads to a logical justification and suggestions for how gamification is regulated and / or controlled by informal codes of conduct. This article concludes with a practical framework that businesses can use to evaluate the potential ethical implications of their graphic marketing techniques (Thorpe and et al., 2019).



Fig 1. Employee gamification benefits  
(<https://www.cleveroad.com>)

Employee gamification benefits:

Employees motivation

In some companies, rivalry between managers or departments is encouraged which can lead to many conflicts and disputes. Using gamification for employees approach you will leave the idea but iron out the difficulties. Contests in a game will be considered less seriously than a failure at work.

Cost reduction

Add a step counter into your employees' app and reward a person who walks the most, or eats the healthiest foods. Eventually, you'll see the results. Healthy workers are sick less often.

#### Team building

The contests between departments usually ruins good fellowship. Combine these departments and set one goal for them. Even if people don't like each other, being on one team will unite them.

#### Accelerate productivity

Being in a team, feeling the support of the team members magically influences on the productivity. Especially if the goal is clear and the reward is cherished (like bonuses, paid awards or additional days to a vocation).

#### Reduce stress

Workers react better if the task is set in a game (they feel like it's a game). Here's a simple gamification example, if your sales manager sold 5 cars last month and you told him his plan is 10 cars now, he or she can consider it an impossible task. If the same task will be set in a game, the user sees himself as a player and feels less stressed.

#### Fast staff training

Gamification for employee training is the other way to reduce costs. Lots of educational platforms apply the gamification approach, so why can't we do the same? New equipment manuals, workplace safety standards or the characteristics of new goods aren't so interesting. But if you add game elements with lots of encouragements and a reward, in the end, you'll be surprised with your employees' results.

### 1-2 Energy conservation:

A report in 2013 by the European Environmental Agency shows that measures targeting behavioral change may help to achieve energy savings up to 20% (Barbu and et al., 2013). While the buildings sector consumes only 20% of the total delivered energy worldwide, the commercial sector features the fastest-growing energy demand with its consumption projected to grow by an average of 1.6% per year until 2040 (Conti and et al., 2016). So, it is necessary to notice people in the workplace since more energy consumes in there. While gamification would contradict with some personality types, characteristics, and cultural norms, it effects on intrinsic motivation that is fundamental for sustained long-term behavioral change (Kotsopoulos and et al., 2018).

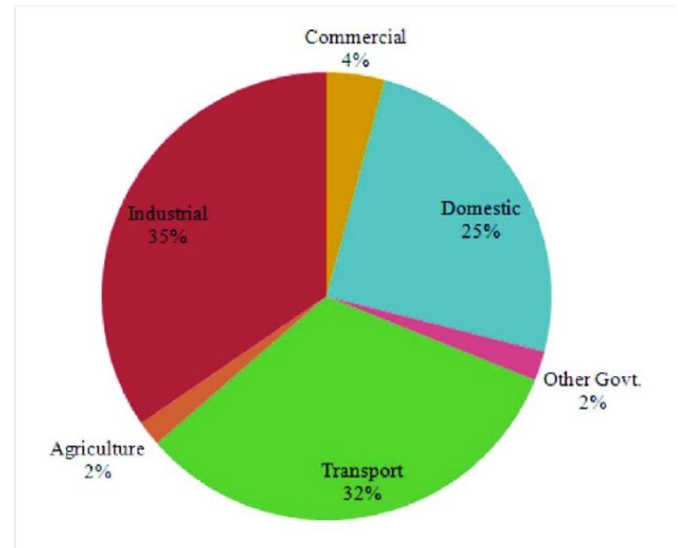


Fig 1. Energy consumption by sector (Mirjat and et al., 2017)

### 1-3 Corporate social responsibility:

The companies can acquire many benefits from the implementation of environmental management and corporate social responsibility activities, (Rosen, 2001). These activities encourage a transformation in the other companies in order to focus on sustainable development and integrates business along with protection of the environment. Moreover, environmental protection activities are not only related to the integration of environmental concern within a company, it is also associated with opportunities in the company to convert the existing production processes and products so that they become environmentally friendly (Berry and Rondinelli, 1998). In addition, corporate social responsibility (CSR) activities have been undertaken by different departments such as marketing and operations (Mittal and Sangwan, 2014). So, companies can put their gamification activities for energy conservation in CSR policies. There are many studies in this field and I just bring summary of some of them in this study. Another studies: (Lindgreen, A., & Swaen, V. (2010). Corporate social responsibility, Unit, B., Star, E., & SmartWay, E. P. A. (2015). Corporate social responsibility. Matten, D., & Moon, J. (2004). Corporate social responsibility. *Journal of business Ethics*, 54(4), 323-337. Tai, F. M., & Chuang, S. H. (2014). Corporate social responsibility. *Ibusiness*, 6(03), 117, Ghahroudi, M. L. (2020). The impact of corporate environmental performance on corporate financial performance in Tehran stock exchange. *Journal of*



Economics and Environment, 1(3), 3-3 and so on).



Fig 2. Benefit of CSR

### 3 Conclusion:

Gamification must be applied to effect positive behavioral changes in many fields, including energy conservation. This study may assist companies in their corporate social responsibility activities, in designing personalized gamified behavioral interventions for their employees, towards energy conservation in workplaces. It can be in their job tasks or learning process or other parts of their job in the company. In this study, we show some of the related studies that applied gamification for changing behavior. So, companies can use these solutions, especially in the CSR section for energy conservation.

### References:

Alsawaier, R. S. (2018). The effect of gamification on motivation and engagement. *The International Journal of Information and Learning Technology*

Barbu, A.D., Griffiths, N., & Morton, G. (2013). Achieving energy efficiency through behaviour change: what does it take? Luxembourg. Retrieved March 11, 2017, from <http://www.engerati.com/sites/default/files/Day2-1440-AncaDianaBarbu-EUW2013.pdf>.

Conti, J., Holtberg, P., Diefenderfer, J., LaRose, A., Turnure, J. T., & Westfall, L. (2016). *International Energy Outlook 2016, With Projections to 2040* (May 2016). Washington, DC, U.S.A.: U.S. Energy Information Administration (EIA)

Huotari, K., & Hamari, J. (2017). A definition for gamification: anchoring gamification in the service marketing literature. *Electronic Markets*, 27(1), 21-31.

Kim, T. W., & Werbach, K. (2016). More than just a game: ethical issues in gamification. *Ethics and Information Technology*, 18(2), 157-173.

Kotsopoulos, D., Bardaki, C., Lounis, S., & Pramadari, K. (2018). Employee Profiles and Preferences towards IoT-enabled Gamification for Energy Conservation. *International Journal of Serious Games*, 5(2), 65-85.

Larson, K. (2020). Serious games and gamification in the corporate training environment: A literature review. *TechTrends*, 64(2), 319-328.

Mirjat, N. H., Uqaili, M. A., Harijan, K., Valasai, G. D., Shaikh, F., & Waris, M. (2017). A review of energy and power planning and policies of Pakistan. *Renewable and Sustainable Energy Reviews*, 79, 110-127.

Mitchell, R., Schuster, L., & Jin, H. S. (2020). Gamification and the impact of extrinsic motivation on needs satisfaction: Making work fun? *Journal of Business Research*, 106, 323-330.

Rocha, E. M., Pereira, G. M., & de Jesus Pacheco, D. A. (2019). The role of the predictive gamification to increase the sales performance: a novel business approach. *Journal of Business & Industrial Marketing*.

Rodrigues, L. F., Costa, C. J., & Oliveira, A. (2016). Gamification: A framework for designing software in e-banking. *Computers in Human Behavior*, 62, 620-634.

Rodrigues, L. F., Oliveira, A., & Rodrigues, H. (2019). Main gamification concepts: a systematic mapping study. *Heliyon*, 5(7), e01993.

Rodrigues, L. F., Oliveira, A., & Costa, C. J. (2016). Playing seriously—How gamification and social cues influence bank customers to use gamified e-business applications. *Computers in human behavior*, 63, 392-407.

Thorpe, A. S., & Roper, S. (2019). The ethics of gamification in a marketing context. *Journal of business ethics*, 155(2), 597-609.

Wunderlich, N. V., Gustafsson, A., Hamari, J., Parvinen, P., & Haff, A. (2020). The great game of business: Advancing knowledge on gamification in business contexts.

Yordanova, Z. (2021). Gamification Application in Different Business Software Systems—State of Art. In *Advances in Computer, Communication and Computational Sciences* (pp. 683-693). Springer, Singapore.