



Investigating the Effect of Gamification Mechanics on Customer Loyalty in Online Stores

Mohammad Fathian

Corresponding author, Professor, School of Industrial Engineering, Iran University of Science and Technology, Tehran, Iran. ORCID: 0000-0002-6909-6974. E-mail: fathian@iust.ac.ir

Hossein Sharifi

Reader in Operations and Supply Chain Management, School of Management, University of Liverpool, Liverpool, UK. ORCID: 0000-0002-8948-1036. E-mail: h.sharifi@liverpool.ac.uk

Faranaksadat Solat

M.Sc. Student, School of Industrial Engineering, Iran University of Science and Technology, Tehran, Iran. ORCID: 0000-0001-7371-060X. E-mail: faranak_solat@ind.iust.ac.ir

Received September 12, 2019; Accepted December 27, 2019

Abstract

This study examines how gamification mechanics could be used in online retailers' loyalty programs. In other words, this article attempts to create a conceptual model for the relationship between gamification mechanics and customer loyalty elements. We used a field study to conduct our research. In order to validate the survey, 450 customers from one of the greatest online stores in Iran were questioned. The results of this survey were used to validate our 11 phrases on the relationship between gamification mechanics and customer loyalty. The results were analyzed using confirmatory factor analysis, path analysis, and model fitness tests in structural equations modeled in the Lisrel software. According to the research findings, the relationship between variables and the proposed conceptual model was confirmed. Based on the performed analysis, all 11 phrases were verified.

Keywords: Gamification; Customer loyalty; Perceived value; Online store.

DOI: 10.22059/jitm.2019.287056.2390

© University of Tehran, Faculty of Management

Introduction

Nowadays, the concept of gamification has attracted a lot of attention and popularity. More than 80 percent of millennials and about two-thirds of baby boomers are interested in getting rewards not just for shopping but also for their engagement with various brands. Companies can use gamification techniques to enhance engagement as a key to loyalty. Based on a report, nearly one-third of all participants and 40 percent of millennials believed that the games should be accompanied by loyalty programs (Srinivasan, et al., 2002; Alsawaier, 2018; Burnett, 2019).

To explain the concept of gamification, first, we shall explain motivation and the concept of a 'game'. Motivation created either consciously or unconsciously, is one of the essential requirements for any individual to be able to start working on a task (Vroom, 1964). In other words, internal and external factors that incite people's desire and energy to be continually interested and committed to a job, subject or role, or to make an effort to attain a goal (Vroom, 1964). Moreover, a 'game' can be defined as a voluntary activity that contains some specific rules, and within this framework, there are actors working together towards a common goal (Vroom, 1964). In other words, a game is a situation of conflict in which the payoffs received by participants from their choices, actions, and decisions are at least partly determined by other contestants' actions and choices (Suits, 1967).

This concept shall not be confused with 'work', as a game brings joy and pleasure to the actors. In addition, all games provide the players with a good perspective of reality, for instance, how to do a certain task in their job. Gamification can increase the level of interaction by motivating the sales team to increase revenue, attracting employees to a healthy lifestyle or motivating customer support (Kleman, 2013).

Gamification uses game elements such as points, competing with others and rules, in the form of an online marketing technique that encourages and engages users with a service or product (Frimani, 2014). According to the Harvard Business Review, raising customer attention by 5 percent can result in a 25 to 95 percent gain in profit. Gamification is a real magnet of customer attention and most retailers have implemented it in their strategy (Softengi, 2019).

An example of this situation is a new application from NBC Universal in which participants enter information about their viewing preferences, it allows participants to watch shows for the chance of getting points and each featured episode gives 10 viewers 100 dollars worth of points that they can redeem at outlets like Best Buy, Amazon, Macy's and Target (Softengi, 2019).

Another example is LinkedIn, which you might not think of as a “game mechanic”, but it (and almost every other social media site) implements a game to encourage you to complete your profile. Filling each section of your profile gives you a sense of achievement, as the site displays a status bar to show you how complete your profile is (Bruni, 2018). Changing an individual's behavior is considered as one of the key functions of a game (Xu, 2011). Therefore, gamification mechanics and in general, game mechanics, include game components that the game designer can use to control the behavior of the player (Cunningham & Zichermann, 2011). These mechanics should not be compared to dynamics, as the mechanics are elements and essence of the game; while dynamics are the interaction of the audience and their response to the game mechanics.

Some types of gamification mechanics include score, search, feedback, badge, and social communication. Score (or point) is one of the main mechanics and it is considered as the heart of every game and gamification scheme (Stieglitz, et al., 2017). Points may be exchanged between two players and they have more effect on the audience than any other gamification mechanics. There are several types of privileges in gaming plans, including cash concessions, video game privileges, and social networking privileges (Cunningham & Zichermann, 2011).

Search is one of the most useful mechanics, especially in site design. This mechanic, which is used a lot in gamification, only depends on whether the content on the site is sorted or not. By searching, you can sort the content based on criteria like date, popularity, best-selling, etc. One of the most explicit gamification mechanisms is feedback. Whenever we want to inform the customer or gamer about his/her rank in the game, we use feedback. Examples of feedback on websites include a return guarantee of goods or their originality.

Badge is one of the gamification mechanics that is less appealing than other gamification mechanics to the audience. It is used to distinguish the top three players of each game. It can also be used on various sites for super-customers who have the highest amount of purchases. Leaderboard or standing is another one of the gamification mechanics that is based on a ranking system. In its table, a player or customer can see his/her rank among other competitors (Stieglitz, et al., 2017). Another mechanic is Social Communication, which focuses more on communication between players. Any player interacting with others may be inspired to enter or exit the game as a result of their influence of others. The stages in the games and sites represent the level of each player. Also, changing the bar or the background color is psychologically influential on the player's mood (Cunningham & Zichermann, 2011).

Spiritual Methods are among the less-known techniques of gamification that are carried out through a customer-centric site (Chou, 2015). Random rewards are accidental and unpredictable rewards, and they are very important in every business and game. For instance, slot machines, surprise eggs, and unexpected dynamics are all random rewards (Cunningham & Zichermann,

2011). Sense of ownership is one of the most effective mechanics in gamification, and it can be integrated into the game with something as simple as customizing the player's avatar. It creates a sense of commitment and engagement in the player. However, it should be noted that having too many choices will affect the player in a negative way (Cunningham & Zichermann, 2011). Empowerment is another gamification mechanism, which is when some authority is given to the player (Economou, et al., 2015).

Now that some mechanics of gamification and their variants have been defined, we introduce customer loyalty and its elements. A loyal customer is someone who supplies a large part of a specific need from a specific business (Xu, 2011). This firm does its business in a way that the customer is proud to buy products from that particular brand. In other words, if the Share of Wallet (the share of products in the customer's wallet) in a business is high, it means that its customers are more loyal to that business (Mirzaei and Hosseini, 2017). In the Oxford dictionary, loyalty is defined as the quality of being faithful in your support of somebody/something. The word loyalty derives from the French word "loial". The Latin word for it is "legalis"; which its origin is from the word "law". In other words, the word loyalty is directly related to law.

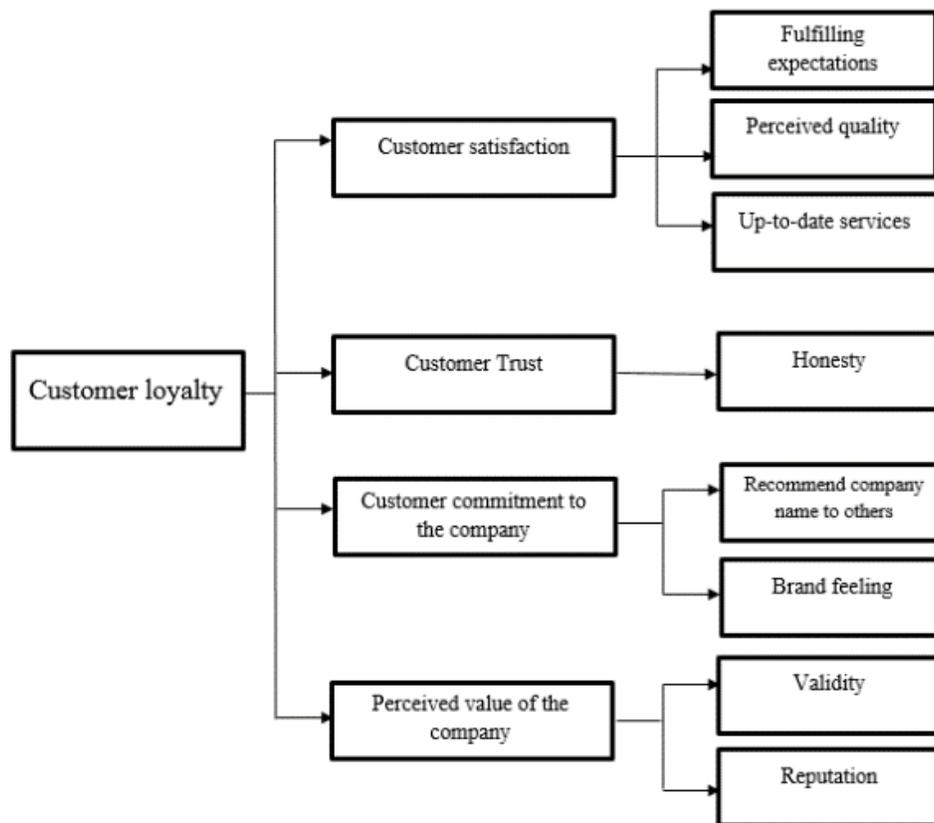


Figure 1. Customer Loyalty Model (Erabi & Varzeshkar, 2005)

Based on Figure 1, loyalty contains four major elements, namely Customer Satisfaction, Customer Trust, Perceived Value, and Customer Commitment to the Company (Erabi & Varzeshkar, 2005). Customer Satisfaction is the consumer's response to a product or service that has been received in a certain time from a company, and has had an influence on the customer's interest in the product or service received (Giese & Cote, 2000). Customer Trust is created as a result of interdependence between individuals and objects, and is a hearty belief in this existing relationship (Kini & Choobineh, 1998). Furthermore, trust means confidently relying on a partner (Garbarino and Johnson, 1999). The Perceived Value, in the customer's opinion, is the balance between the price and quality of the goods and the services based on their features (Sweeney & Soutar, 2001).

Commitment is also a very important element in the continuity of a relationship and means "the desire to maintain a long-term relationship". Commitment comprises of 2 sub-elements, which are organizational relationships and time approach (Garbarino & Johnson, 1999). One of the most influential gamification areas in the business is the loyalty of customers in electronic stores. Internet shopping is a type of shopping that is done through online stores. The web server and browser were first created in Timbersley in 1990, and were used for commercial purposes in 1991. Afterward, Amazon was launched in 1995 and E-bay launched its online stores in 1996 (Wolfenbarger & Gilly, 2001).

The loyalty of customers in today's businesses has a key role. Given that gamification can be used as a method for building loyalty, it is, therefore, necessary to examine the effective mechanics of the gamification space to enhance loyalty. E-shop managers and site designers can use the results of this study to apply suitable mechanics to enhance their customers' loyalty.

In this research, the case study is one of the largest online stores (e-tailing) in Iran, which has a daily view rate of many visitors that cover large volumes of online customers. This store was founded in 2006 and these days about 85 percent of electronic commerce transactions are made through it. According to the Alexa website, the world traffic rank of this online store is 255, and its local ranking (in Iran) is 3.

In the following sections of this research, first, the main reasons for conducting this research are explained and then the research method is discussed, and finally, the activities required for the implementation of the research are specified. These are the three basic principles in the golden circle: 1. What, 2. How, and 3. Why (Hansen, 2017); where "Why" is the most important part. Therefore, the purpose of this study is to investigate the relationship between gamification mechanics and customer loyalty elements in online stores so as to attract and retain them. A Likert Scale has been used to achieve this goal and the survey was distributed among the online store's customers.

Literature Review

The word “gamification” was first introduced by a stamp company in 1896. For 77 years, this word remained unused, until, in 1981, US airlines were the first to introduce the concept of AAdvantage (the frequent flyer program of American Airlines). They designed loyalty programs as a marketing tactic to build and maintain customer loyalty (Kim & Ahn, 2017). However, this concept was neglected until 2008 (Smith, 2014), when it was introduced again in the field of digital media, and gained its popularity after the publication of the ‘Game-based Marketing’ book, in 2010 was a turning point in this field (Xu, 2011), the gamification company hosted the first resurrection meetings in San Francisco and Canada in 2011. In the same year, this approach found its place in the investment firms, and at the same time, universities began studies and conducted research on this topic. Furthermore, numerous companies found out about the opportunities created by this new perspective and invested in this area to provide game creation services (Kim & Ahn, 2017).

Recently, gamification has become very critical. In 2015, an article explored the platforms for providing massive online open courses (MOOCs) (Hansch, et al., 2015). Also, some gamification activities were initiated in journalism, such as Al Qaeda in the Arabian Peninsula (AQAP) which launched an online magazine named ‘Inspire’, to hire and train people to believe in God and to fight non-believers (atheists). It was a virtual game that anyone could play from all around the world, and its main task was to gather resources (Reid, 2013).

Moreover, gamification gained importance for marketing purposes. In 2012, an article examined the gamification effects on services in shops, restaurants, cafes and sports halls (Huotari & Hamari, 2012). In recent years, many articles have been published in this field and they have covered various aspects of the topic (Martí-Parreño, et al., 2016).

In 2017, the impact of having a degree on physical health was examined through online programs (Looyestyn, et al., 2017). In addition to other gamification functions mentioned, tourism is also one of the fields which can benefit a lot from gamification. Gamification can attract and retain tourism customers. In organizations, corporate creative games can also increase employee attentiveness and loyalty. It is also a positive tool for reducing work pressure and improving employees’ health (Aziz, et al., 2017). Figure 2 shows the triple structure of gamification (Hansch, et al., 2015).

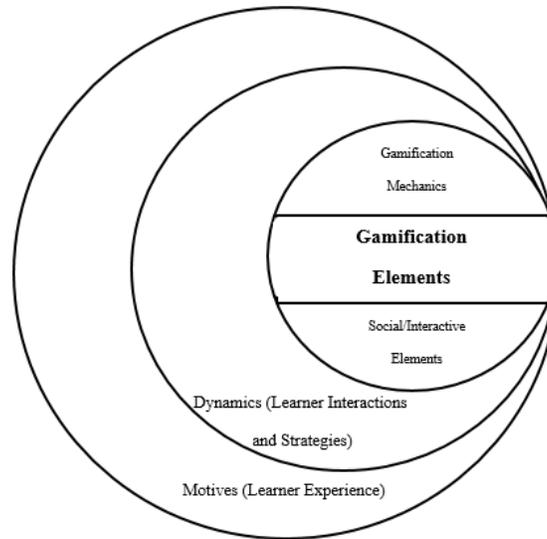


Figure 2. The triple gamification structure

To understand why this might be, let's first take a look at what game mechanics are. The following are quotes taken from various well-known game design books and papers (Marczewski, 2018): “*Core Mechanics represent the essential moment-to-moment activity of players. Core mechanics create patterns of repeated behavior, the experiential building blocks of play*” (Salen, et al., 2004). “*Mechanics describe the goal of your game, how players can and cannot try to achieve it, and what happens when they try*” (Schell, 2014). “*Mechanics are the various actions, behaviors and control mechanisms afforded to the player within a game context.*” (Hunicke, et al., 2004).

Based on the triple framework, we can create systems to understand the game strategy and design, or how to play the game. On the other hand, those responsible for the implementation of an abstract concept in online training platforms can extract and use various elements from all of these models. Generally speaking, gamification in the social networking platform can be a very good opportunity.

As previously mentioned, many articles have been presented on customer loyalty and gamification. However, besides the “Gamification by Design” book by Sebastopol (Cunningham and Zichermann, 2011), not much effort has been taken to write articles on the link between gamification mechanics and customer loyalty elements. Furthermore, related resources such as the “Gamification by Design” have not emphasized this relationship either. Therefore, this research attempts to present a model for mapping out the relationship between gamification mechanics and electronic customer loyalty elements. For this purpose, we first have introduced 11 key mechanics of gamification based on Octalysis and 4 elements of customer loyalty, then we have introduced a conceptual model. Subsequently, the model has been evaluated using the conducted survey.

Research Model and Hypotheses

Given that in this study the relationship between gamification and customers' loyalty in online stores is to be investigated, the conceptual model and research hypotheses evaluate the relationship between two categories' variables. The first set of variables, called gamification mechanics, is the main basis of the gamification design. The second set of variables impact the loyalty of online stores customers. The gamification mechanics are selected based on the Octalysis framework. The Octalysis or Octogenic framework is one of the frameworks in the gamification space. This framework is an octagon, which has a root in each sideways, called a Core Drive (Chou, 2015). Each of these core drives has been explained below.

1. **Epic Meaning:** This is the most powerful and most sensitive strain in the ecstasy framework. Spiritual methods can be related to this drive. It gamifies people's relationships with their groups and ethnicities. Therefore, if any mistakes are made, the customer turns away from the service or product (Economou, et al., 2015).
2. **Accomplishment:** This is the key to most passionate plans and it is what encourages people to specialize in their field of work (Economou, et al., 2015). Coins, badges and winning tables are used for this purpose (Hatami, 2017; Chou, 2015).
3. **Empowerment:** This is what makes gamification projects permanently attractive. Creativity enables players to show their ability and view other players' feedback on their activity (Economou, et al., 2015).
4. **Sense of Ownership:** This mechanic is applied when we feel we own something, usually when shopping or playing a game. For instance, one can buy a virtual product or personalize their account to have a sense of ownership (Hatami, 2017; Chou, 2015).
5. **Social Influence:** This factor is influenced by the relationship of any individual with his/her friends and is only activated when a person operates in a group (Economou, et al., 2015).
6. **Scarcity:** Contrary to creativity, which can be called the 'light' in the game, scarcity is considered to be the 'dark' part of gamification. However, gamification designers are fond of it as they use limitations and constraints to encourage customers (Economou, et al., 2015). Scarcity can be applied in the form of limitations in an online shop.
7. **Unpredictability:** Luck is of the most important factor in this core drive. Many who are interested in gambling get caught up in this core drive (Hatami, 2017; Chou, 2015).
8. **Avoidance:** This is the most comprehensive core drive (Hatami, 2017; Chou, 2015). As Dan Ariely states in his "Predictably Irrational" book, when someone loses something, he/she feels so bad that only something worth 3.7 times the loss can ease the pain (Aggarwal, 2016).

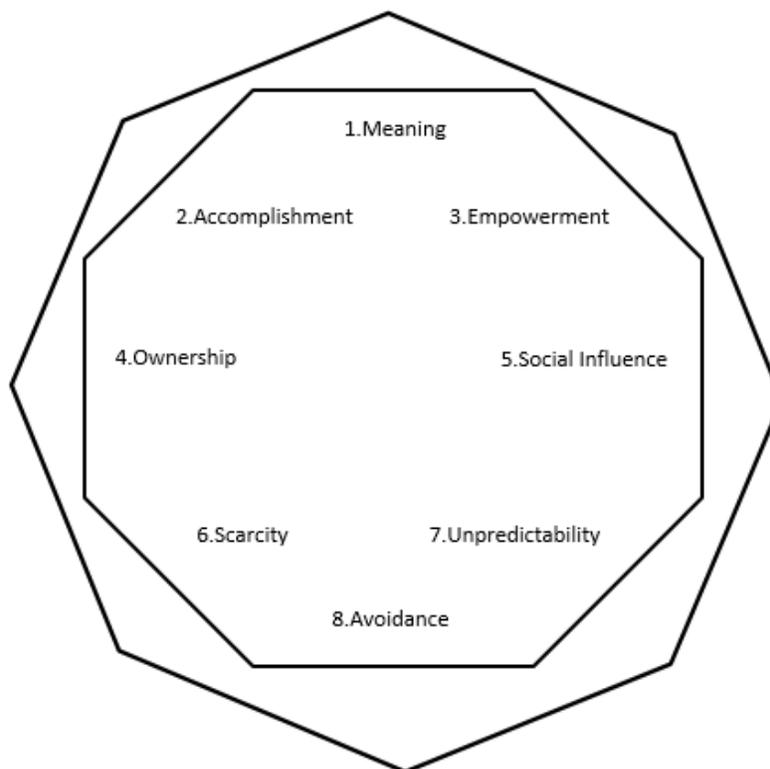


Figure 3. Octalysis Framework (Economou, et al., 2015; Chou, 2015)

The second set of variables in the conceptual model of research represents the factors that drive loyalty to online stores customers. These variables are analyzed based on four major elements, namely Customer Satisfaction, Customer Trust, Perceived Value, and Customer Commitment to the Company through reviewing previous studies (Erabi & Varzeshkar, 2005).

Following an explanation of the elements impacting customer loyalty and the Octalysis framework (Figures 1 and 3); we have proposed a conceptual model for the relationship between gamification mechanics and customer loyalty elements. To extract the relevant mechanics which could be applied to the conceptual model, we have used open interviews with 5 managers and experts of the considered online store. The interviewed individuals have had at least 5 years of experience in the online store and are familiar with gamification. Based on the interviews, 11 possible mechanics were extracted for use in the electronic store as shown in Figure 4. These mechanics were chosen from the Octalysis framework.



Figure 4. The proposed model for the relationship between gamification mechanics and electronic customer loyalty elements

The effect of some gamification mechanics such as giving points or rewards to customers based on their loyalty elements (i.e., customer satisfaction, customer trust, perceived value, and customer commitment to the online store) may seem obvious, but the impact of some other mechanics like search or medals still need to be explored further. Considering the fact that similar researches have rarely analyzed these effects the following questions must be addressed.

1. Can the search mechanic, being able to search the information content of an online store website to see previous customers' opinions about a product or knowing more purchased items, affect customer's trust in the store?
2. Can giving special medals to e-customers with more purchases boost customer trust and

commitment, and ultimately result in loyalty to the store?

3. Can giving random rewards to customers based on their relationship with the e-shop affect their loyalty to the store?

Therefore, we have considered 11 gamification mechanics on one hand and 4 loyalty elements (Cunningham & Zichermann, 2011) on the other hand. The proposed model is presented as the conceptual model of the relationship between gamification mechanics and customers' loyalty elements in online stores (Figure 4). In this model, 4 loyalty elements play a mediating role between 11 gamification mechanics and customer loyalty. Hypotheses that represent the relationship between the mentioned variables are given below.

1. The Point mechanic has a positive effect on customer satisfaction, customer trust, the perceived value of the company and customer commitment to online stores.
2. The Search mechanic has a positive effect on customer satisfaction, customer trust, the perceived value of the company and customer commitment to online stores.
3. The Feedback mechanic has a positive effect on customer satisfaction, customer trust, the perceived value of the company and customer commitment to online stores.
4. The Medal mechanic has a positive effect on customer satisfaction, customer trust, the perceived value of the company and customer commitment to online stores.
5. The Standings mechanic has a positive effect on customer satisfaction, customer trust, the perceived value of the company and customer commitment to online stores.
6. The Social Communication mechanic has a positive effect on customer satisfaction, customer trust, the perceived value of the company and customer commitment to online stores.
7. The Staging mechanic has a positive effect on customer satisfaction, customer trust, the perceived value of the company and customer commitment to online stores.
8. The Spiritual Methods mechanic has a positive effect on customer satisfaction, customer trust, the perceived value of the company and customer commitment to online stores.
9. The Random Rewards mechanic has a positive effect on customer satisfaction, customer trust, the perceived value of the company and customer commitment to online stores.
10. The Ownership mechanic has a positive effect on customer satisfaction, customer trust, the perceived value of the company and customer commitment to online stores.
11. The Empowering mechanic has a positive effect on customer satisfaction, customer trust, the perceived value of the company and customer commitment to online stores.

These hypotheses have been examined by conducting a survey in the given online store, and the results have been explained in the following section. Subsequently, the credibility of the proposed model has been discussed.

Research Methodology

This study is a survey-based research; therefore questionnaires were distributed among the customers of the studied online store. According to Morgan's table for a community of more than 100,000, the number of samples must be 384 (Bahcall, 1980). Before the questionnaire's distribution, it was pre-tested by 5 experts familiar to gamification to evaluate its analysis.

Questionnaires were distributed randomly among the customers who visited the online store from July 2018 to November 2018. Finally, 450 responses were collected. The survey included 48 questions, in the first section, 4 initial questions asking customers' sex, age, degree, and the number of purchases they made. In the second section, participants were asked 44 questions about the effects of the 11 gamification mechanics on the 4 elements of customer loyalty (satisfaction, trust, perceived value, and commitment to the company). The survey was done by using two online platforms, Google Form and Press Line. The gathered data was initially imported into Microsoft Excel, and then transferred into the Statistical Software Lisrel and IBM SPSS Statistics 21 for analysis.

The Cronbach's alpha test has been performed by the SPSS software to assess the reliability of the conducted survey (Bland & Altman, 1997).

$$\alpha = \left(\frac{k}{k-1}\right) \left(1 - \frac{\sum_{i=1}^k S_i^2}{S^2}\right) \quad (1)$$

The path diagram was used to examine the relationship between gamification mechanics and e-customer loyalty elements, and based on input data, a general model was drawn and the coefficients of each path were calculated (Jöreskog & Sörbom, 1993). For this purpose, the gathered data from the survey were transferred from SPSS to Lisrel, where the path analysis was carried out. The results of this analysis have been explained in the next section.

Research Findings

Table 1 shows the demographic information. According to this table, more than half of the respondents were women (54.44%) and there is a relative balance between both genders. Table 1 also shows that the majority of respondents included people in the age range of 21-30 in both genders and that the majority of respondents had a bachelor's or master's degree. We have calculated Cronbach's alpha using the SPSS software. This amount should be more than 0.7 to confirm the reliability of the survey. Based on Table 2, fortunately, for all of the 11 mechanics of gamification, which are present in the main phrases, this number is more than 0.7.

Table 1. Demographic information

Gender		Male	Female
		45.56%	54.44%
Age	10-20	3.56%	7.78%
	21-30	32.00%	38.67%
	31-40	5.33%	4.22%
	41-50	2.22%	2.67%
	51-60	1.33%	0.44%
	61-70	0.44%	0.44%
	71-80	0.44%	0.00%
Education Level / Degree	81-90	0.23%	0.23%
	Elementary	0.67%	0.67%
	Middle School	1.33%	1.11%
	High School Diploma	4.89%	9.78%
	Associate	1.56%	2.66%
	Bachelor	18.44%	22.22%
	Master	16.89%	17.11%
Number of electronic Purchases	PhD	1.78%	0.89%
	At least one	12.22%	24.45%
	2 to 5	16.00%	16.22%
	More than 5	17.33%	13.78%

Table 2. Sorted Cronbach's alpha of gamification mechanics

Gamification Mechanics	Cronbach's alpha
Spiritual Methods	0.947
Standings	0.928
Social Communication	0.922
Ownership	0.905
Staging	0.902
Empowerment	0.896
Random Rewards	0.884
Feedback	0.881
Medal	0.871
Point	0.845
Search	0.811

The Lisrel software has been used to execute the confirmatory factor analysis, path analysis and model fitness tests in structural equations. Initially, the significance of the whole model using confirmatory factor analysis has been investigated. For each factor analysis model, a graph is plotted with standard fitted load factors (standardized regression coefficients) and another graph is plotted with the values of the T-Studio. Moreover, RMSEA, P-value and Chi-Square / Df indices were used to determine the suitability of each model.

The following Figures 5, 6, 7 and 8, show the model of the survey in the standard estimation mode. Model factor loads in the standard estimation mode show the impact of each variable or clause on the variance of the variables or main factors.

In other words, the load factor represents the correlation between each observer variable (survey questions) and the designated variable (factors). For more clarity, we can view each category of questions related to one single loyalty element in Figures 5 to 8.

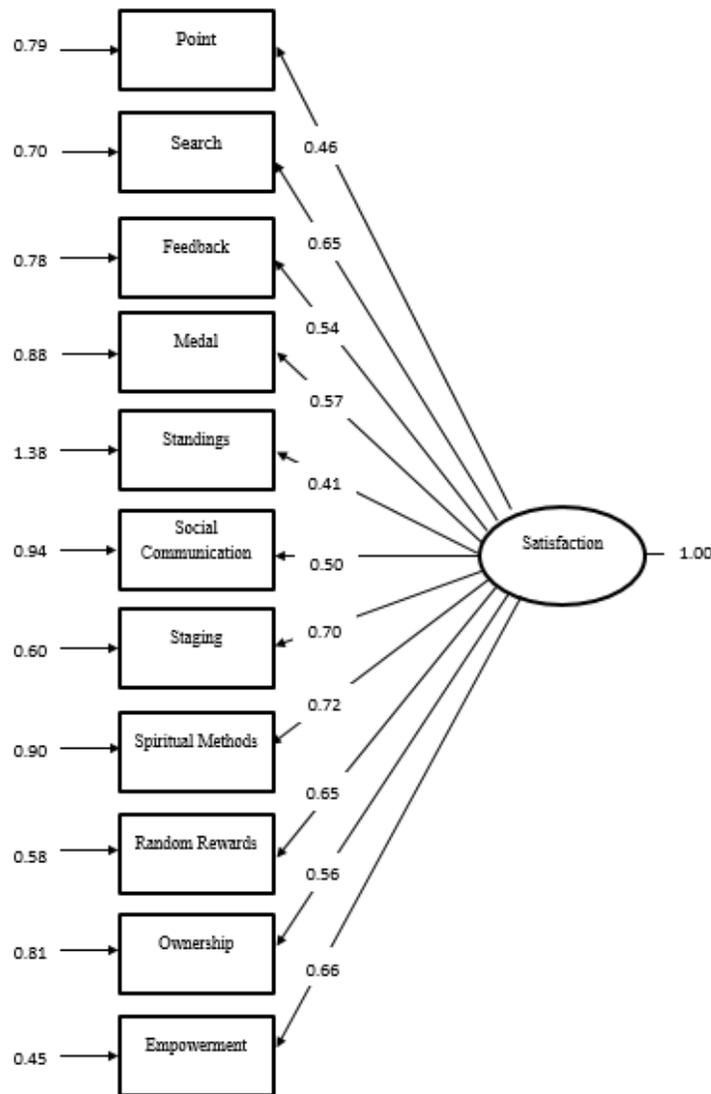


Figure 5. Factor analysis for satisfaction element using standard estimates

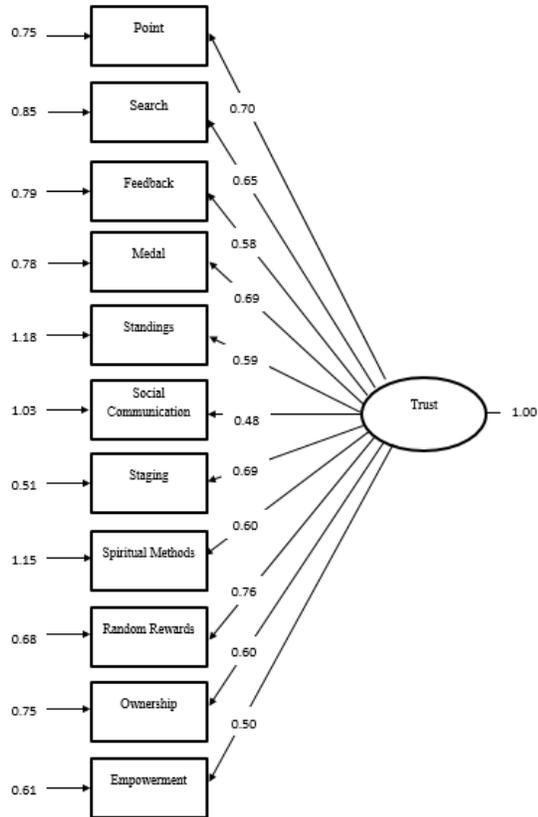


Figure 6. Factor analysis for trust element using standard estimates

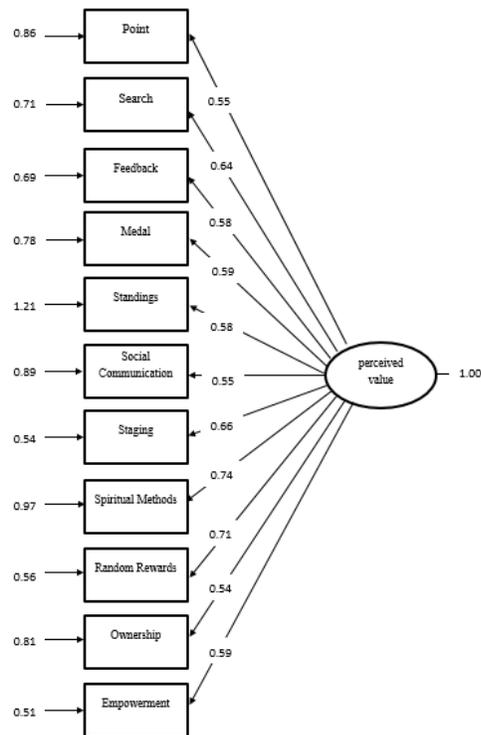


Figure 7. Factor analysis for perceived value element using standard estimates

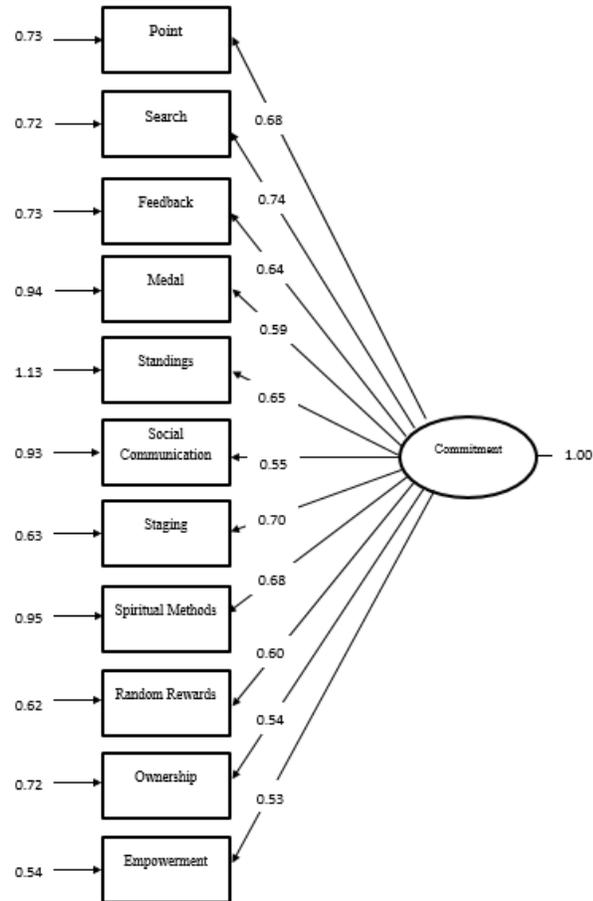


Figure 8. Factor analysis for the company's commitment element using standard estimates

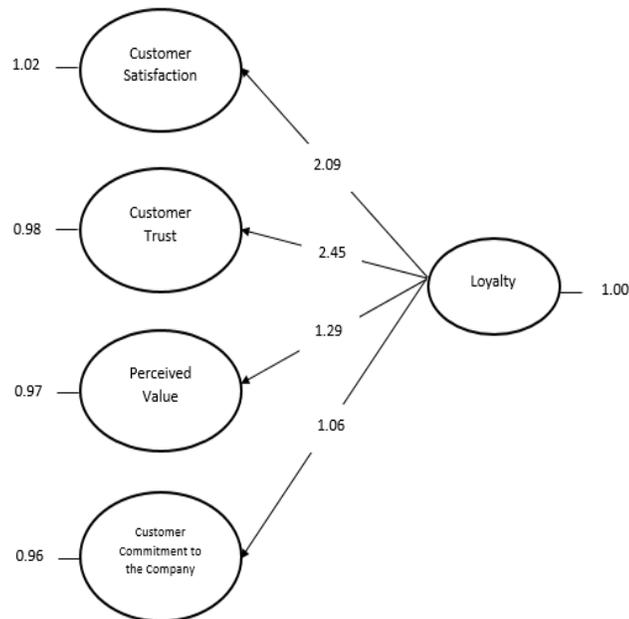


Figure 9. Factor analysis for the loyalty elements using standard estimates

Figures 5 to 8 show that 4 elements of the loyalty that include customer satisfaction, customer trust, perceived value and customer commitment to the company have significant relationships with 11 gamification mechanics, and Figure 9 shows another relationship between these 4 elements with customer loyalty.

The model was evaluated in a meaningful state and all coefficients obtained from the items were significant. (The values of the T-statistic were greater than 1.96.)

Model fitness tests in structural equations:

Although different types of tests, generally are used as fitness indicators, usually 3 to 5 indicators are sufficient (Jöreskog & Sörbom, 1993). These values of the following indicators are mentioned in Table 3.

Root Mean Square Residual (RMR)

This criterion is defined as the root mean of the residual quotient (an indicator for the remaining variance in the fit of each parameter to the sample data) or as the mean of the remainders reported in the model. The RMR criterion is a factor for measuring the residual values and can only be modified by variances and covariance. In a model that is good for these remnants, this criterion is as small as possible (i.e., closer to zero) and this indicates the model is fitted better.

Adjusted Goodness of Fit Index (AGFI) and Goodness of Fit Index (GFI)

Lisrel calculates a fitting goodness index that is the ratio of the sum of the squares (explained in the model) to the total sum of squares of the estimated matrix. Both of these criteria vary from zero to one. The more AGFI and GFI are closer to the unit value in a model, the average fitting gets better.

Root Mean Square Error of Approximation (RMSEA)

This root is the mean square of the approximations. This criterion is defined as the amount of difference for each degree of freedom. The RMSEA value, which is in fact the same deviation test for every degree of freedom, is less than 0.05 for models with good fitness. Models with RMSEA of 0.1 or greater are poorly fitted.

Comparative Fit Index (CFI), Non-Normed Fit Index (NNFI) and Normed Fit Index (NFI)

The NFI index is also called the Benthaler-Bonte index. Equal to or larger than 0.9 indexes have been suggested as a good indicator of the fitness of theoretical models compared to zero models, while some researchers apply a cutoff of 0.80. Another indicator is the Tucker-Lewis index, which is also called the Smoothed Fitness Index (NNFI). Based on scientific agreements, NNFI values less than 0.9 require a revision of the model. The CFI index greater than 0.9 is an indication of the acceptable fitness of the model.

Table 3. Model Fitness Indicators in Structural Equations

Index	Measure
RMR	0.14
AGFI	0.93
GFI	0.95
RMSEA	0.06
NFI	0.80
NNFI	0.90
CFI	0.91

According to Table 1 and the definition of the RMR, a smaller number (values closer to 0) represents a better fitness. In our model, we have obtained a value of 0.18 that would be acceptable. Also according to the definitions, GFI and AGFI indicators values close to one are better. In our model, we have obtained values of 0.95 and 0.93, respectively. RMSEA index should be equal to or less than 0.05, the value obtained is 0.06 which is slightly higher than the defined value. Also according to definitions of NFI, NNFI, and CFI indicators, the values obtained in the model are acceptable.

Discussion

This research was conducted in order to examine whether gamification mechanics can influence customers' loyalty to online stores or not. After interviewing the gamification professionals and online store managers, eleven gamification mechanics were identified and a conceptual model was presented to show the impact of gamification on online store customer loyalty. And ultimately, based on the research's findings, the relationship between variables and the proposed conceptual model was confirmed. Therefore, we can conclude that the online store which has utilized all the eleven mechanisms mentioned in the research can strengthen the loyalty of its customers. In other words, the web site designers of a store should try to use the mentioned techniques, such as spiritual methods, staging, search and so on in gamification solutions in order to create loyal customers. However, according to the research findings, the impact of various mechanisms on the different aspects of customer loyalty is different.

According to the path coefficients in Figures 5 to 8, we can investigate the extent to which each mechanism affects the four elements of customer loyalty. As shown, the spiritual methods have the greatest impact on creating satisfaction and the perceived value of customers and the generation of random rewards have the greatest impact on customer trust, while the search mechanic has the most impact on customer commitment. Based on the specified path coefficients in Figures 5 to 9, we can calculate and prioritize the gamification mechanisms

according to the path coefficients average between each mechanic with customer loyalty as shown in Table 4.

Table 4. The importance of each gamification mechanism on customer loyalty in online stores

Degree of importance	Mechanics of gamification	path coefficients average of each gamification mechanic with loyalty
1	Random Rewards	1.1931
2	Spiritual Methods	1.16255
3	Staging	1.160925
4	Search	1.14025
5	Medal	1.067075
6	Point	1.026675
7	Feedback	0.99405
8	Ownership	0.97735
9	Empowerment	0.956025
10	Standings	0.9349
11	Social Communication	0.878375

According to Table 4, random rewards, spiritual methods, staging, and search are respectively the most important mechanisms between others. Ultimately, the following conclusion could be drawn.

1. Giving random rewards to customers based on their performance can enhance the four elements of loyalty and ultimately play an important role in acquiring loyal customers.
2. Paying attention to spiritual methods is especially important in gaining customers' loyalty. That is, the store can have customers' permanent loyalty by creating an epic and spiritual sense.
3. Staging and showcasing customers' performances can have a significant impact on maintaining loyalty to the store.
4. The ability to search the content and information of an online store's website, for example, seeing previous customers' opinions about a product or knowing which products have been purchased most, can affect customer loyalty in the store.

Therefore, the gamification solutions of online stores should focus on the mechanics of random rewards, spiritual methods, staging, and search. We recommend designers of the store website to pay special attention to these mechanisms. All other mechanisms come next in importance.

Conclusion

Gamification is using game elements or mechanisms such as point, competing with others and rules in the form of an online marketing technique that encourages and engages users with a service or product. A loyal customer is someone who supplies a large part of a specific need from

a particular business. This firm does its business in a way that the customer is proud to buy products from that particular brand. In other words, if the Share of Wallet (SOW) in a business is high, it means that the clients are more loyal to that business.

The purpose of this study is to investigate the relationship between gamification mechanisms and customer loyalty elements in online stores in order to attract and retain them. The Likert Scale survey was used to fulfill this purpose and questionnaires were distributed among the online store's customers. These mechanisms include points, search, feedback, medals, standings, social connections, staging, spiritual methods, random rewards, sense of ownership and empowerment. Moreover, customer loyalty elements include customer satisfaction, customer trust, the perceived value of the company, and commitment to the company. Regarding the results of the conducted survey among customers of the online store and path analysis, the conceptual model was fully validated.

Based on the research findings, it can be seen that the use of spiritual methods in gamification systems will have the greatest impact on the satisfaction and perceived value of customers, while the use of random rewards mechanisms in gamification systems can have a great impact on customer trust and use of the search mechanism in designing gamification systems can have a major impact on the commitment of customers to the online store. It was also found that random rewards, spiritual methods, staging and search mechanics would have the greatest impact on customer loyalty to online stores.

For future studies, researchers can focus on how the personality characteristics of customers influence the acceptance of gamification mechanisms. The application of gamification in enhancing the user interface and user experience (UI/UX) of the online stores' sites could also be studied.

Conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Alsawaier, R. S. (2018). The effect of gamification on motivation and engagement. *The International Journal of Information and Learning Technology*, 35(1), 56-79.
- Erabi, M., Varzeshkar, M. (2005). Monitoring and Increasing Customers Loyalty: Identifying most Effective Factors. *Management Studies Publications (Improvement and Changing)*, 46(12), 1-30.
- Aggarwal, D. (2016). Book Review: Dan Ariely, *The Irrational Bundle: Predictably Irrational, The Upside of Irrationality, and The Honest Truth about Dishonesty*, Kindle edition.

- Aziz, A., Mushtaq, A., & Anwar, M. (2017, March). Usage of gamification in enterprise: A review. In *2017 International Conference on Communication, Computing and Digital Systems (C-CODE)*, (pp. 249-252). IEEE.
- Bahcall, N. (1980). Optical properties of Morgan's poor clusters. *The Astrophysical Journal*, 238, 117-122.
- Bland, J.M., & Altman, D.G. (1997). Cronbach's alpha. *British Medical Journal*, 314(7080), 572.
- Bruni, E. (2018). 7 Great uses of gamification in web design. Retrieved September 15, 2019, from <https://www.webdesignerdepot.com/2018/01/7-great-uses-of-gamification-in-web-design/>.
- Burnett, S. (2019). Is it time to add gamification to your loyalty strategy?. Retrieved September 15, 2019, from <https://www.forbes.com/sites/forbesagencycouncil/2019/01/22/is-it-time-to-add-gamification-to-your-loyalty-strategy/#2181c38952b3>.
- Chou, Y.-K. (2015). *Actionable gamification. Beyond points, badges, and leader board*. Create Space, Independent Publishing platform.
- Cunningham, C., & Zichermann, G. (2011). *Gamification by design: implementing game mechanics in web and mobile apps*. Sebastopol: O'Reilly Media.
- Economou, D., Doumanis, I., Pedersen, F., Kathrani, P., Mentzelopoulos, M., & Bouki, V. (2015, July). Evaluation of a dynamic role-playing platform for simulations based on Octalysis gamification framework. In *Intelligent Environments (Workshops)*, p. 388-395.
- Frimani, M. (2014). *Look at to make concept of Gamification by design in new virtual area and it is applications*. First ed. Tehran: Information Technology and Digital Media Development Center: Information Technology And Digital Media Development Center.
- Garbarino, E., & Johnson, M. S. (1999). The different roles of satisfaction, trust, and commitment in customer relationships. *Journal of Marketing*, 63(2), 70-87.
- Giese, J.L., & Cote, J.A. (2000). Defining consumer satisfaction. *Academy of Marketing Science Review*, 1(1), 1-22.
- Hansch, A., Newman, C., & Schildhauer, T. (2015). Fostering engagement with gamification: Review of current practices on online learning platforms.
- Hansen, H. (2017). Start with why. Retrieved September 15, 2019, from <https://simonsinek.com/>.
- Hatami, K. (2017). Advanced Gamification; a brief review on Octalysis Framework. Mr. Gamification. Retrieved September 15, 2019, from <http://www.mrgamification.com/%D8%A7%DA%A9%D8%AA%D8%A7%D9%84%DB%8C%D8%B3%DB%8C%D8%B3/>
- Hunicke, R., Leblanc, M., & Zubek, R. (2004). A Formal approach to game design and game research. In *Proceedings of Game Developers Conference*.
- Huotari, K., & Hamari, J. (2012). Defining gamification: A service marketing perspective. in *Proceeding of the 16th International Academic MindTrek Conference*. ACM.

- Jöreskog, K.G., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*. Scientific Software International.
- Kim, K., & Ahn, S.J.G. (2017). The role of gamification in enhancing intrinsic motivation to use a loyalty program. *Journal of Interactive Marketing*, 40, 41-51.
- Kini, A., & Choobineh, J. (1998, January). Trust in electronic commerce: definition and theoretical considerations. In *Proceedings of the thirty-first Hawaii International conference on System Sciences* (Vol. 4, pp. 51-61). IEEE.
- Kleman, M. (2013). Gaming the Search Engine Rules: Using Gamification for SEO. Retrieved September 15, 2019, from <https://technologyadvice.com/blog/marketing/gaming-search-engine-rules-using-gamification-seo/>.
- Looyestyn, J., Kernot, J., Boshoff, K., Ryan, J., Edney, S., & Maher, C. (2017). Does gamification increase engagement with online programs? A systematic review. *PloS One*, 12(3). e0173403.
- Marczewski, A. (2018). Game mechanics in gamification. Retrieved September 15, 2019, from <https://www.gamified.uk/2013/01/14/game-mechanics-in-gamification/>.
- Martí - Parreño, J., E. Méndez - Ibáñez, & Alonso - Arroyo, A. (2016). The use of gamification in education: A bibliometric and text mining analysis. *Journal of Computer Assisted Learning*, 32(6). p. 663-676.
- Mirzaei, J., & Hosseini, E. (2017). The effect of feeling marketing on Satisfaction, Trust and customer loyalty to sports brands. *Sports Management Publication*, 39, 549-564.
- Reid, E. F. (2013, June). Crowdsourcing and gamification techniques in Inspire (AQAP online magazine). In *2013 IEEE International Conference on Intelligence and Security Informatics* (pp. 215-220). IEEE.
- Salen, K., K.S. Tekinbaş, & Zimmerman, E. (2014). *Rules of play: Game design fundamentals*. MIT press.
- Schell, J. (2014). *The art of game design: A book of lenses*. AK Peters/CRC Press.
- Smith, D.F. (2014). A brief history of gamification [#Infographic]. A social media journalist for the CDW family of technology magazine websites]. Retrieved September 15, 2019, from <https://edtechmagazine.com/higher/article/2014/07/brief-history-gamification-infographic>
- Softengi, (2019). Gamification in the retail: Turning shopping into a game. Retrieved September 15, 2019, from <http://softengi.com/en/blog/gamification-in-the-retail-turning-shopping-into-a-game/>.
- Srinivasan, S. S., Anderson, R., & Ponnayolu, K. (2002). Customer loyalty in e-commerce: an exploration of its antecedents and consequences. *Journal of Retailing*, 78(1), 41-50.
- Stieglitz, S., Lattemann, C., Robra-Bissantz, S., Zarnekow, R., & Brockmann, T. (2017). *Gamification*. Berlin: Springer.
- Suits, B. (1967). What is a Game?. *Philosophy of Science*, 34(2). p. 148-156.

Sweeney, J.C., & Soutar, G.N. (2001). Consumer perceived value: The development of a multiple item scale. *Journal of Retailing*, 77(2), 203-220.

Vroom, V. H. (1964). *Work and motivation*. New York: Wiley.

Wolfenbarger, M., & Gilly, M. C. (2001). Shopping online for freedom, control, and fun. *California Management Review*, 43(2), 34-55.

Xu, Y. (2011). *Literature review on web application gamification and analytics*. Honolulu, HI. p. 11-05.

Bibliographic information of this paper for citing:

Fathian, Mohammad; Sharifi, Hossein, & Solat, Faranaksadat (2019). Investigating the effect of gamification mechanics on customer loyalty in online stores. *Journal of Information Technology Management*, 11(4), 1-23.

Copyright © 2019, Mohammad Fathian, Hossein Sharifi and Faranaksadat Solat.