International Journal of Serious Games

ISSN: 2384-8766
https://journal.seriousgamessociety.org/

Article

Gamification in Retail: Enhancing Grocery Customer Experience with Location-Based Strategies

Alireza Zandi[1] and Yoones A. Sekhavat[2]*

[1]*Department of Instructional Technology and Learning Science (ITLS), Utah State University, Logan, USA;*
[2]*Faculty of Multimedia, Tabriz Islamic Art University, Tabriz, Iran;*
*alireza.zandi@usu.edu; sekhavat@tabriziau.ac.ir**

Keywords:

Gamification
Customer experience
Location-Based Strategies
Gamified Shopping System
Marketing
Eco-Friendly Purchasing
Beacon Technologies

Received: December 2023
Accepted: June 2024
Published: June 2024
DOI: 10.17083/ijsg.v11i2.721

Abstract

This study explores how gamification impacts retail customer experience, emphasizing the need for businesses to differentiate in competitive markets. Gamification involves using game design elements in non-game contexts. The research presents a unique gamified shopping system using location-based (Beacon) technologies with a mobile application. This system engages customers through interactive games and challenges in specific store locations. With a sample size of 25, this study aimed to address the following research questions: What gamifying methods could be applied in a real store? What impact does gamification have on customer experience in a real-store shopping context? What role could gamification play in motivating customers to have an eco-friendly purchasing experience? The application includes features like a suggestion page, puzzle, scoreboard, and a points-based reward system. Study findings showed a significant positive correlation between gamification strategies and customer experience, which aligns with the self-determination theory. The app also integrates eco-friendly features and social interaction elements for an innovative and environmentally friendly approach to enhancing the retail customer experience. This study presents a practical example of gamifying methods integrated into a real store environment, which has the potential to boost the shopping experience for customers and shoppers and protect the environment.

1. Introduction

The expansion of both stores and online commerce has intensified the rivalry among conventional retailers [1]. The firms must now focus on factors beyond the price and product quality to overcome their competitors [2]. To address this challenge, one approach is to prioritize customer experiences. These encompass all the factors that affect how users interact with and perceive a product or system [3].

One way to enhance the user experience for businesses is through game mechanics [4]. Recent scientific studies have shown that game designs and mechanics can be used effectively

in marketing and other business settings [5], [6], [7], [8]. By leveraging elements such as pleasure, time, and reward, games can motivate people to participate in activities that may not be inherently appealing [9], [10]. This motivational aspect has led to the use of games in a wide range of non-game contexts, including medical interventions [11], physical [12] and mental health [13], [14], education [15], [16], learning [17], [18] , business [5] and e-marketing [19]. Companies are increasingly utilizing gaming tactics, such as competition, scoring systems, and rewards, within dedicated apps to attract and retain customers, resulting in increased brand reach and the potential for sustainable growth. The gamification market is experiencing rapid growth, projected to reach USD 48.72 billion by 2029 [20]. Nike Run Club (NRC) app is a prime example of successful gamification marketing, enabling users to track workouts, share achievements, and engage with others. The app's enticing features, including daily feedback for empowerment, leaderboards for social relatedness, and trophies and badges for engagement, have attracted millions of users and turned them into brand fans. The success of gamification in business lies in its ability to foster engagement and sustain continued use, leading to a competitive advantage and sustainable development [21].

Recently, Starbucks launched a bingo game as part of their customer reward program, My Starbucks Rewards. To participate in the reward game, customers need to enroll in the bingo game. Then whenever customers use Starbucks' mobile app for their purchases, the purchases are applied to the bingo game (i.e., they earn reward points for future free food or beverages). Through the bingo challenge, customers can achieve up to 300 additional points, which are worth two free drinks plus 50 additional reward points. Customers are easily able to check their status and redeem the rewards as well [22].

Recent research has examined how gamification can affect the real-world shopping experience, as seen in studies by Olsson et al. [23] and Högberg et al. [24]. A recent study [25] showed that game elements can lead to a more exciting customer experience (CX). This study used these finding to conceptualize “Gamified Customer Experience” that influences customer engagement, satisfaction and brand attitude. However, despite these efforts, a detailed understanding of the underlying mechanisms of gamification's impact on user experience remains elusive. Considering this gap in the literature, our study aimed to investigate the relationship between gamification and customer experience in an Iranian sample. Based on prior research, we hypothesized that the use of gamification will enhance customers' experience. In order to evaluate our hypothesis, we created a location-based app with eco-friendly features and incorporated several gaming elements, such as a daily reward system and social interaction, to encourage user engagement.

This research paper presents an innovative approach to enhancing customer experience in the retail sector through a gamified shopping system. The system is predicated on leveraging Beacon technology, a form of location-based technology, to deliver real-time, contextually relevant engagement experiences to customers. In combination with a mobile application, customers are provided with a gamified shopping experience that involves interactive games and challenges when they arrive at specified zones within the store. The mobile application comprises multiple facets such as a suggestion page, a puzzle, a scoreboard, and a points-based reward system, all of which are designed to amplify customer engagement and incentivize participation by offering rewards such as discount codes and special deals.

The novelty of this system, however, is not confined to its interactive gamification elements alone. Its unique blend of environmental consciousness and social interaction strategies further differentiates it from traditional retail engagement methods. The system integrates eco-friendly features within its structure, thereby encouraging customers to participate in sustainable practices, while simultaneously enhancing their shopping experience. Additionally, it facilitates social interaction, thus enabling the creation of a more dynamic, participative, and socially engaging retail environment. This combination of interactivity, environmental awareness, and social engagement represents a pioneering advancement in the retail sector,

contributing to the augmentation of customer experience in a uniquely engaging, entertaining, and sustainable manner.

2. Background

2.1 Customer Experience

Customer experience has become a key concept in marketing, focusing on delivering a distinct, enjoyable, and unforgettable experience [26]. The customer experience (CX) is a critical factor in achieving economic success and gaining a competitive edge [27]. Lemon and Verhoef [27] focused on the multifaceted nature of the CX, which encompasses a customer's cognitive, emotional, behavioral, sensory, and social reactions to a firm's offerings throughout the entire purchasing journey, despite previous research exploring the holistic customer experience. Thus, emotions, as well as rational thinking and mental processes, can influence consumer behavior [28].

This is a completely unique experience [29] that correlates to a customer's internal and subjective reaction to any direct or indirect encounter with a firm [30]. The quality of this experience is determined not only by elements that are within the retailer's purview, such as the service interface, retail environment, assortment, and pricing, but also by factors that are beyond their control, such as the impact of external influences and the shopper's objectives. Furthermore, the customer's experience encompasses all stages, ranging from search and purchase to consumption and post-sale, and may encompass multiple retail channels [31].

CX has been considered a holistic unidimensional concept [32] as well as a multidimensional construct including effective [33], cognitive [34], social [35] and sensory [36] aspects. Customers' interactions with a product or service can impact their emotional, cognitive, social, or sensory responses, as noted earlier. However, researchers generally focus on studying the affective and cognitive dimensions [37]. Moreover, depending on each dimension, the user experience may result in diverse outcomes, such as satisfaction, purchase intent, loyalty, trustworthiness, engagement, and other related factors.

2.2 Gamification

Sebastian Deterding, among others, has defined gamification “the use of game design elements in non-game contexts” [38]. Gamification refers to “a design approach of enhancing services and systems with affordances for experiences like those created by games” [39].

Games have recently developed themselves as a popular kind of entertainment and consumer culture and have become a commonplace part of people's daily routines [40]. Gamification is a game-thought process that refers to transforming activities, systems, services, products, or organizational structures to afford gameful experiences [41]. Gamification is a process that helps users to think and solve problems through game mechanics [42].

Games by focusing on human basic needs such as emotion, competence, and achievement could motivate people to engage in activities that are not intrinsically attractive [43].

Regardless of the application setting, gamification uses multiple game elements to elicit a meaningful engagement from users. After reviewing the literature on tailored gamification, [44] have reported a list of the most common gamification elements among which are badges and customization. While customization allows users to express themselves through the construction of their virtual space, avatars, characters, and some features of the system's interface, badges are a graphical indication of a user's accomplishments which is also referred to as achievement.

Moreover, Werbach et al. [45] have classified game elements into three categories of dynamics, mechanics, and components in descending order of abstraction. The major

characteristics of the gaming system that should be attended and controlled but never directly entered into the game are known as dynamics. Mechanics refer to the core procedures that move the action forward and encourage player interaction. The more detailed and specific instantiations and manifestations of mechanics or dynamics are components.

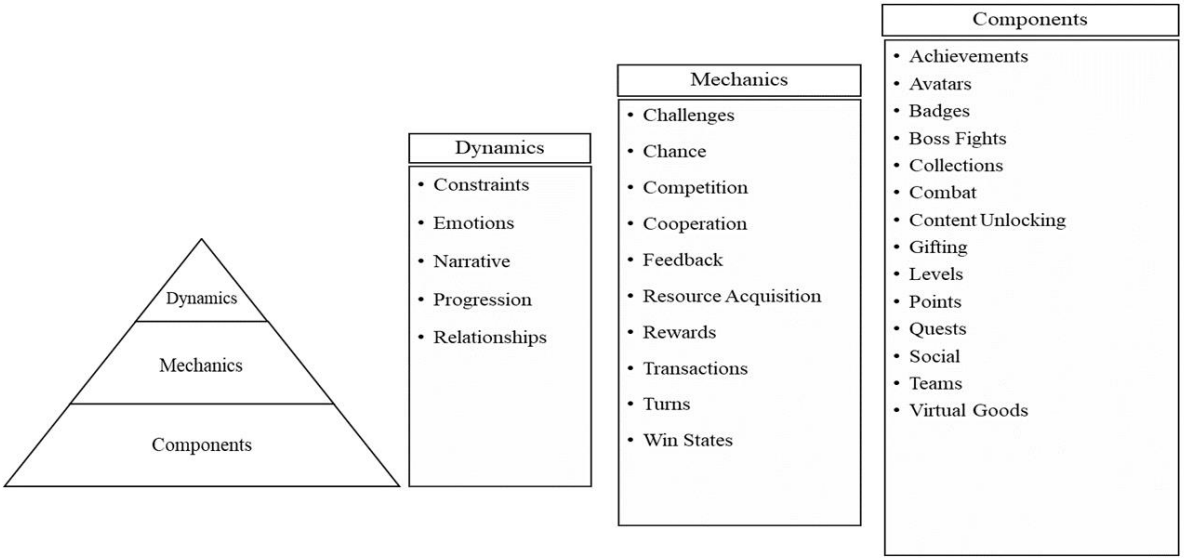

Figure 1. Game elements adopted from Hunter and Werbach [45]

2.3 Customer Experience & Gamification

Traditional stores and retailers are under the pressure of competition from e-commerce. Following the marketing trend of focusing on customer experiences is one method to handle this problem [23]. Gamification is well-suited to this sort of experience. The advancement of new technologies has allowed businesses to gamify classic procedures to improve customer experience [46]. Gamification has become one of the fastest-growing concepts in marketing in recent years, with the goal of persuading, motivating, and manipulating customer behavior [47].

There are several psychological perspectives that explain the ways gamification may influence an individual's behavior and experience. For example, trait perspective assumes that each game element may satisfy a need or motive depending on a particular user's personality. A gamification design with a focus on success and progress will satisfy the need for achievement in people who care about that. A design focusing on control and competition will motivate people with a strong need for power, and a gamification design that emphasizes membership will attract individuals with a motive for affiliation. What we learn from this perspective is to use different game elements to positively influence the behavior of people with a wide range of motives and needs [48], [49].

A behavioral learning approach shows that a gamification design with a focus on providing positive and negative performance feedback will motivate the users to do the demands of the gamified task. Other psychological approaches focus on how gamification influences interests and emotions. Designs that align with users' interests and evoke positive emotions can effectively motivate engagement with tasks and demands. Furthermore, the self-determination theory postulates that gamification and game elements foster intrinsic motivation through enhancing competence, autonomy, and social relatedness [48], [49]. From the perspective of expert developers, gamification improves software by enhancing its technical features and

fulfilling the mental and psychological needs of users, such as increased motivation, a stronger sense of belonging, and better communication [50].

Specific game elements and gamification designs influence sociopsychological needs as well, enhancing social engagement and providing a context for social comparison. Social Comparison Theory posits that individuals evaluate themselves against others to validate their opinions, form judgments, and alleviate uncertainty [51]. Gamification features such as leaderboards, which display scores for the user and others, provide opportunities for social comparison and motivate users to engage in the gamified process to increase their scores [52].

The literature related to gamification and customer experience has been divided into two main paths: online shopping and real-store shopping. Online shopping involves purchasing products or services over the Internet [53]. It is known for its convenience and accessibility, allowing consumers to shop from any location at any time. Real-store shopping focuses on face-to-face interactions with sales staff and the immediate availability of products, providing a more tangible shopping experience [54]. Hajarian and Hemmati [55] conducted a study on using gamification in the Word of Mouth (WOM) recommendation system to suggest products to customers on e-commerce websites. The researchers aimed to stimulate users to share product recommendations with one another via WOM, utilizing gamification methods. Their proposed WOM strategy was successful in increasing consumer purchases and unique visits. The average number of female customers' visits grew by 116 percent, while the average number of male customers' visits climbed by 100 percent, using the suggested WOM recommendation system. In addition, there has been a 7% decrease in the purchases, indicating an increase in the number of purchases made by customers.

Jami Pour et al. [47] in a study have aimed to further clarify the mechanisms of gamification influence on CX. To achieve this goal, they investigated the mediating role of brand engagement between gamification and CX in an online grocery store context. Based on the results, gamification positively impacted customer experience. Additionally, gamification had a positive and significant effect on customer brand engagement. Brand engagement, characterized by the degree of a customer's cognitive, emotional, and behavioral commitment to their interactions with a brand, is crucial in gamification. Interacting with gamified features such as rewards and challenges cultivates a deeper emotional and psychological connection to the brand, boosting satisfaction, loyalty, and advocacy [56]. Customer brand engagement, in turn, has a positive and significant impact on customer experience [47]. Research by Hamari et al. [57] underscores this by revealing that gamification elements significantly elevate user engagement and interaction, which are critical aspects of brand engagement. Additionally, Xi and Hamari [58] demonstrated that gamification enhances customer involvement and develop positive brand perceptions, highlighting its significance in marketing strategies. Also, it has been revealed that customer brand engagement mediates the association between gamification and customer experience [47].

A review of 257 papers from Web of Science and Scopus databases has found that in digital environments, the incorporation of game aspects in non-game activities has a substantial impact on consumer engagement and online consumer decisions. Moreover, rewards and challenges were the two most applied mechanisms, with points, badges, and leaderboards being the most tested gamification elements [59].

M. Olsson et al. [23] have used a location-based treasure hunt app in a real retailing environment. Their findings have revealed that an increasing level of gamification is associated with intrinsic motivation which in turn is positively correlated with satisfaction. Also, satisfaction partly has a positive direct relationship with the intention to use. Högberg et al. [24] in their work on a major European sports retailer showed that gamification affects the hedonic value of an activity and that this effect can be partly explained by a positive effect. When this hedonic value was compared to satisfaction with a reward, the hedonic value was found to be a better predictor of continued engagement intention. Finally, gamification through

continued engagement intention is positively associated with brand engagement [24]. Furthermore, in digital marketing communications, gamification can be a powerful tool to make interactions with the brand more enjoyable, thereby enhancing the overall customer experience [60]. Digital marketing communication is defined as "communication through digital or electronic media among businesses and consumers" [61]. Unlike traditional methods, digital marketing enables more interactive and dialog-based communication between the provider and the user [62]. Examples include online ads, mobile communication, and WOM marketing through social media [61]. A research study has shown that gamified and playable ads increase consumers' perceived control, which, in turn, leads to more positive attitudes toward the advertised products [63].

2.4 The Present Study

Although researchers have already applied gamification in a real-store context to manipulate CX, there is much to understand in the mechanisms of the influence. Using multiple and various game components, mechanics and dynamics will allow investigators to comprehensively clarify the influence of gamification on CX in a real store retailing context. Moreover, while previous studies have shown a strong impact of gamification on customer online purchasing experience in Iranian culture, to the best of our knowledge, there is no study in a real marketing environment. Therefore, studying the impact of gamification on CX in a real shopping environment will add to our knowledge in this area. Also, we can use gamifying potentials to encourage customers to have an eco-friendly purchasing experience. For example, they can be motivated to use their own reusable shopping bags (not asking for plastic bags) in front of getting scores in the game. Therefore, this study aimed to investigate location-based gamification's impact on customers' eco-friendly purchasing experience in a hypermarket. Generally, the questions of the present study include 1) What gamifying methods could be applied in a real store? 2) What impact does gamification have on customer experience in a real-store shopping context? 3) What role could gamification play in motivating customers to have an eco-friendly purchasing experience? The hypotheses of the study are as follows:

1. **Hypothesis:** We developed a gamification method using game elements introduced by Hunter and Werbach [45], and we hypothesized that this method can physically engage customers in purchasing behavior and encourage them to stay in the store and visit different parts of the store.
2. **Hypothesis:** We hypothesized that the gamification design used in this study will be associated with an improved CX in the real-store shopping context.
3. **Hypothesis:** We hypothesized that gamification will promote customer motivation towards eco-friendly shopping.

3. Method

3.1 Participants

The participants were 25 customers (20-40 years, 14 women and 11 men) of a grocery store in Shiraz City, Fars province selected by the available sampling method.

The majority of participants (36%) in the study were between the ages of 25-30. The next most common age group was 30-35, which accounted for 28% of the sample, followed by 20-25 years (20%), and 35-40 years (16%). In terms of marital status, 56% of participants were married, while the remaining 44% were single. ChatGPT

We targeted young adult customers as participants because this population is more likely to use new technologies in their daily activities. The participants within this group were randomly

invited. However, it is important to note that the results of this study pertain specifically to these individuals, not to everyone.

3.2 Procedure

This research was implemented experimentally in a big grocery store in Shiraz City to perform the test process. The entire study was conducted on a single sunny day (morning to evening) during winter. Given the 5 beacon pieces we had, we tried to cover a large area of the store that includes 3 hallways and 2 refrigerators to encourage the customers to explore all around the store. When entering the store, a total of 25 customers were randomly asked to install the app on their smartphones. and were provided the details of the tasks they had to perform. These tasks included collecting puzzle pieces, collecting resources, and finding the chance wheel to collect points. One of the most interesting challenges for customers in performing the test process was asking for help from others to find the puzzle pieces using the QR code. At the end of the shopping, they were asked to come back to us to complete the gameful experience questionnaire. Then, we collected the application data. After completing the questionnaire and collecting the application data, exquisite gifts were given to the customers based on their scores in the application.

3.3 Instruments

To assess gamification and CX, the Gameful Experience Questionnaire [64] was used. This scale has 7 dimensions and 54 items, and scores on a 7 Likert scale. The designers of the test have reported the Cronbach Alpha coefficient of 0.95, 0.91, 0.91, 0.91, 0.91, 0.95, and 0.93 for the accomplishment, challenge, competition, guided, immersion, social experience, and playfulness dimensions, respectively. In the present study, we applied the six dimensions of accomplishment, challenge, competition, guided, immersion, and social experience to measure CX (44 items), and we used the playfulness dimension to assess gamification (10 items, how playful our gamifying method was). Since it was the first time GAMEFULQUEST was applied to an Iranian sample, we translated it and investigated its' psychometric properties. All analyzes were performed in AMOS 24 software. In these analyses, the maximum likelihood (ML) method related to parameter estimation is used. Then, the results of this analysis were examined using item-to-item analysis using Spearman correlation and SPSS software. The results of the initial estimation of confirmatory factor analysis showed that the items related to CX, and gamification were acceptable because the fitness indexes showed a strong fit.

The CX variable consisted of 44 items with a range of correlation values between 0.17 to 0.86 ($p < .05$). The alpha value for the CX variable was 0.90, indicating high internal consistency. The Gamification variable consisted of 10 items with a range of correlation values between 0.30 and 0.71 ($p < .05$). The alpha value for the Gamification variable was 0.77, indicating good internal consistency. Overall, these results suggested that the GAMEFULQUEST survey has good reliability and validity for measuring the CX and Gamification variables.

4. Game design

In this research, a gamified shopping system has been designed using location-based technology. When a customer installed the shopping gamification app on their phone and arrived at the desired location, they received a signal through the location-based Beacon technology applied in the grocery store. At that place, customers played the games and do the challenges provided by the application. Games and challenges were played individually or in

groups, and in the end, based on the scores earned, the customer received points such as a discount code, special offer or gift.

In the application, various pages including a suggestions page, puzzle, scoreboard, resources, customer club, lucky wheel, and points system were designed, which are described below.

Figure 2. Stages of the game design Location-based system

4.1 Location-Based System

Beacons were installed in different places and locations of the grocery store. To use the application, the customer should turn on their phone's Bluetooth. All the tasks and challenges on the application were provided to the customers based on the signals received by the beacons installed in different parts of the grocery store. One of the beacons was installed near the front door of the grocery store, which signaled the application to send notifications of the offers and discounts to the customers when they approached the grocery store. The application encouraged the customers to enter the grocery store by sending them attractive offers. Important notifications appear on the application's first page, while other suggestions are displayed on a subsequent page. Some offers are received before arrival, while others appear at the time of purchase, depending on the store's beacon.

4.2 Tasks and Challenges

When the customer entered the grocery store, they would receive 10 points for entering the grocery store by sending a signal from the beacon device near the front door. Customers could only benefit from entry points once a day. The point of entering the grocery store caused customers to be encouraged to make a purchase every day. At a certain point in the grocery store, the lucky wheel appeared on the application, and the customer could use it to receive random points, which made a surprise to the customers. In addition, three score resources including grocery store presence, shelves and refrigerator resources were embedded in the application. The customer should start collecting resources in the grocery store. By obtaining the required resources, packages such as doubling points and participating in lotteries could be obtained. The icons related to all three resources were placed on the first page of application. The scores of shelves and refrigerators resources increased respectively by the signals from the beacons placed on the shelves and refrigerators.

One of the challenges was completing the puzzles embedded in the application. By utilizing beacon signals, customers could locate puzzle pieces in various sections of the grocery store during their visit. Additionally, they were required to scan a QR code belonging to another customer to find the remaining pieces. This interactive activity fostered communication among individuals, promoting empathy and a sense of connection, while also providing an opportunity to share shopping experiences. Regarding Bartle's taxonomy of player types [65] , the gamified design used in this study was rewarding three types of players including achievers, explorers, socializers as they were the pattern of customer behaviors that can benefit a grocery store [65]. It should be noted that the participants lost the scores of specific steps, if they had not completed it.

4.3 Customer Club and Scoreboard

A customer club was designed in the app, which had three levels including bronze, silver and gold. Once the customer installed the app, they would become a member of the customer club at the bronze level. By completing the puzzle, the customers would be promoted to the silver level, and to reach the gold level, they had to complete another puzzle. The customer club offered various services which are provided in Table 1.

The points collected by each customer through various activities were recorded on the scoreboard. The grocery store could give special prizes and gifts to the users who would get the highest points each week. By collecting the necessary points and clicking on the converting icon, the customers could change their points with a discount QR code. Table 2 shows a summary of the activities that the customer could do to earn points. Also, table 3 shows the elements of the game components, dynamics, and mechanics which were used in the designed app.

Table 1. The services offered by the customer club

Level	Services
bronze	Special discount for some products of up to 5% 1 point for every 1000 Tomans (Iran currency) purchasing
Silver	Special discount for some products of up to 7% 1.2 points for every 1000 Tomans (Iran currency) purchasing Special purchases for birthdays, Eid al-Fitr, Eid al-Adha, Eid al-Ghadir, and Eid al-Adha
gold	Special discount for some products of up to 10% 1.5 points for every 1000 Tomans (Iran currency) purchasing Special purchases for birthdays, Eid al-Fitr, Eid al-Adha, Eid al-Ghadir, and Eid al-Adha

Table 2. A list of activities and scores

Activity	Score
entering the grocery store	10
lucky wheel	By chance
No-to-plastic bags	30

Table 3. The game elements used in the study

Game Elements		Activity
Components	Point	By collecting points, they can be converted into discount codes.
	Badges	The levels of the customer club were shown with medals in the application.
	Leaderboard	The scores would be revealed every weekends.
	Gifting	The winners in the leaderboard would be awarded a prize each weekend.
Mechanics	Challenges	The puzzle which was designed in the app
	Chance	The lucky wheel which was designed in the app
	Competition	Collecting points by scanning ads, so that customers are among the top people in the leaderboard
	Cooperation	The puzzle pieces that should be find by other people's help
	Rewards	Converting points to discount codes

	Resource Acquisition	Collecting the resources designed in different parts of the grocery store
Dynamics	Emotion	The customer does not use plastic and collects resources and points when shopping
	Progression	Collecting points and upgrading the customer club levels

4.4 Eco-Friendly Movement

No-to-plastic bags as an eco-friendly movement was gamified in the app. If the customers had a bag with them and did not take a plastic bag from the cashier, the cashier would give them a QR code to scan and get additional scores. The score incentivized individuals to avoid using plastic bags, despite the benefits they offer in terms of safeguarding the environment and lowering grocery store expenses associated with supplying plastic bags.

Figure 3. The main page of the designed application; different elements of the application like resources, no-to-plastic icon are shown by the arrows.

Figure 4. Actual Pictures from the Research Process

5. Result

5.1 Descriptive Findings

The descriptive analyses have revealed that the major participants (36%) were in the 25 to 30 years old range. Moreover, most of the participants had an undergraduate academic education (68% with a bachelor's degree). Also, a total of 56% of participants were married while 44% were single. Finally, almost 56% of the study sample were women and 44% were men.

5.2 Gamifying Methods & Resources

The participants were asked to find the puzzle pieces and to complete them. Regarding Figure 5, 80% of the participants gathered all the puzzle pieces and completed them. A total of 12% of the customers failed to find just one piece, and 8% of them lost 2 pieces of the puzzle. Based on the results, it seems that customers have received a great response from this part, and it is a good incentive to buy in the grocery store.

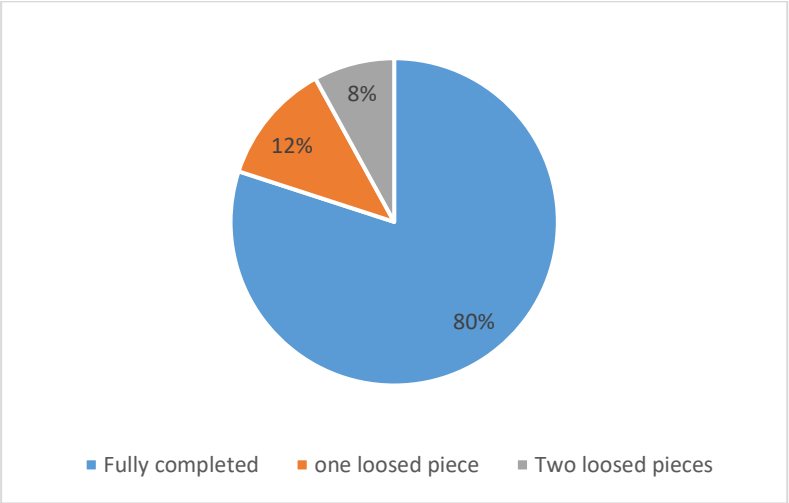

Figure 5. The results of the found puzzle pieces

Additionally, the result of spent time (presence resource) in the grocery store is given in Figure 6. The results related to the collected refrigerator and shelf resources are shown in Figures 7 and 8. Also, table 4 shows the mean and SD of each resource.

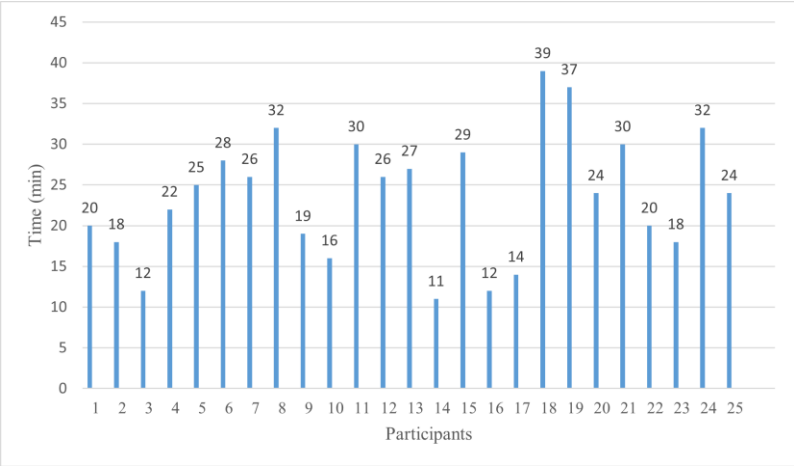

Figure 6. Presence resource

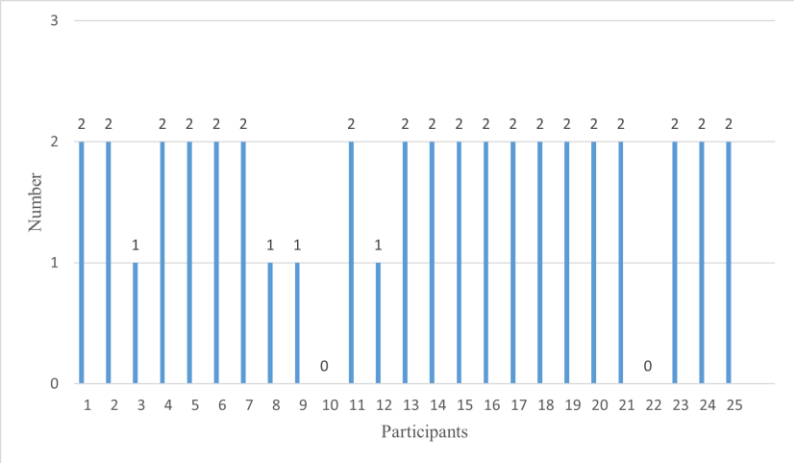

Figure 7. Refregrator resource

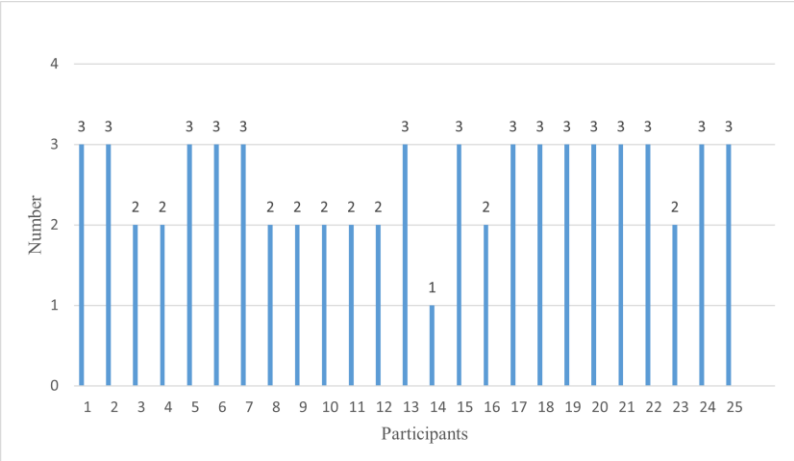

Figure 8. Shelf resource

Table 4. Mean and SD of each study resources

Resource	N	Mean	SD
Presence	25	23.64	7.64
Shelves	25	2.56	0.58
Refrigerators	25	1.68	0.62

5.3 Gamification and CX

The descriptive analyses have revealed that 68% of participants relatively agreed with gamifying the shopping process; 28% strongly agreed, and 4% agreed. Table 5 reveals the results of participants' agreeableness to gamifying the process of shopping.

Table 5. The descriptive results of participants' agreeableness to gamifying the shopping process

		Age groups				Gender		Marital Status	
		20-25	25-30	30-35	35-40	male	female	single	married
Agree	N	0	1	0	0	0	1	0	1
	%	0	11.1	0	0	0	7.1	0	7.1
Relatively agree	N	3	7	4	3	6	11	9	8
	%	60	77.8	57.1	75	54.5	78.6	81.8	57.2
Strongly agree	N	2	1	3	1	5	2	2	5
	%	40	11.1	42.9	25	45.5	14.3	18.2	35.7
Total	N	5	9	7	4	11	14	11	14
	%	100	100	100	100	100	100	100	100

Table 6. The descriptive results of CX in the shopping process

		Age groups				Gender		Marital Status	
		20-25	25-30	30-35	35-40	male	female	single	married
Agree	N	0	0	0	0	0	0	0	0
	%	0	0	0	0	0	0	0	0
Relatively agree	N	3	6	4	2	5	10	8	7
	%	60	66.7	57.1	50	45.5	71.4	72.7	50
Strongly agree	N	2	3	3	2	6	4	3	7
	%	40	33.3	42.9	50	54.5	28.6	27.3	50
Total	N	5	9	7	4	11	14	11	14
	%	100	100	100	100	100	100	100	100

Also, the result of the Pearson correlation coefficient has revealed a significant positive relationship between gamifying and CX ($r = 0.69$, $p < .01$). Therefore, gamifying the process of shopping is associated with an improved CX in a real- grocery store context.

Table 7. The results of the Pearson correlation coefficient

Variable	Gamifying		CX	
	r	P	r	P
Gamifying	1	0.000	0.69	0.000
CX	0.69	0.000	1	0.000

5.4 Eco-Friendly Movement

Of the 25 participants, 16 customers (64%) did not ask for a plastic bag from the cashier in order to get the score, and a participant (4%) had their own reusable bag. In total, 68% of the participants received the score of the eco-friendly movement part.

6. Discussion

In recent decades, the increasing growth of online shopping has made it difficult for retailers to compete and develop. However, focusing on CX by using gamifying methods could help real grocery stores to survive in the competitive environment of the market. The purpose of the present study was to develop a gamified shopping environment and investigate the relationship between gamification and CX.

We developed a method of gamification based on the game elements introduced by Hunter and Werbach [45], and the results of the resources showed that this method has the potential to physically engage the participants as showed by the time they spent in the store, the number of shelves and refrigerators they visited. This gamification method can be used to create a more attractive shopping experience, which will benefit the customers and the stores as well by increasing the shopping time and exploratory behaviors of the customers. This finding supports the first hypothesis of this study and shows that the implementation of the source of presence was effective in keeping the customers for a longer time in the store as confirmed by the customers. These results align with studies in digital marketing and marketing communication. For example, Kumar and Reinartz [66] found that engaging digital environments improves customer loyalty and shopping duration. Similarly, Hamari et al. [57] showed that gamification elements increase user engagement and interaction. Additionally, Sprott, Czellar, and Spangenberg [67] demonstrated that experiential marketing strategies enhance customer involvement and positive brand perceptions. These studies underscore the value of interactive strategies in enhancing the shopping experience and fostering deeper customer-brand relationships.

Shelves resource has helped a lot to make all the shelves visible to the customer. The source of the refrigerator has caused people to be driven to freezer and refrigerator products. The reward of the application, which is in the form of a discount, has made customers do their best to collect more points. Collecting puzzle pieces to upgrade the level of the customer club has made customers more curious and adventurous in the grocery store. The lucky wheel score has caused customers to search for the wheel to increase their score.

Based on Werbach et al. [45] we used different game elements (dynamics, mechanics, and components) to improve CX. The results indicated that gamification is associated with an improved CX, which supports the second hypothesis of this study. This finding is also consistent with the previous studies [25]. Using game elements in a non-game context can increase a desired behavior [68]. It has been shown that an increasing level of gamification and technology experience have direct positive associations with intrinsic motivation which, in turn, has a positive direct association with satisfaction. Finally, satisfaction is positively related to intention to use [23]. Based on the self-determination theory, gamification by using mechanics such as rewards could satisfy the customers' basic psychological needs like competence, autonomy, and relatedness, and then motivate them to purchase [59]. Regarding the gamification design used in this study, the game elements of points, badges, and leaderboards enhance competence by offering feedback and recognition of achievements. While gifting and cooperation foster relatedness through social interactions and community building. Challenges and progression support competence by setting clear goals and development paths, and rewards and resource acquisition provide motivation and acknowledgment of effort. Competition and chance add excitement and engagement, indirectly supporting these needs. By fulfilling the needs for autonomy, competence, and relatedness, these elements create a motivating and engaging user experience [69], [70], [71]. However, elements such as reward and punishment may differently influence individuals regarding their individual differences and personality traits [72], [73], and future studies may consider moderating personality traits by using rewards in the gamification design.

The gamification system introduced in this research helps customers to achieve and entertain and encourages them to buy. When gamification elements are properly combined with the goals of grocery stores or brands, they can strengthen the brand and even increase the real return on investment and make end users interact with the grocery store or brand in a real sense. Prior research supports these outcomes, showing that gamification can significantly impact brand engagement [24], [74], [75]. For instance, Xi and Hamari [74] demonstrated that gamification enhances brand engagement and equity in online brand communities by fostering active user participation and emotional connections with the brand . Högberg et al. [24] found that in-store gamified customer experiences can create strong brand engagement by making the shopping experience more enjoyable and interactive, thus increasing customer loyalty and satisfaction. Rather et al. [75] highlighted that during the pandemic, gamification not only sustained customer brand engagement but also facilitated co-creation, allowing customers to feel more involved and connected with the brand even in challenging times.

Also, the gamification system which is introduced in the present study had eco-friendly goals which in turn could help to reduce using plastic bags for shopping. The findings of this study showed that a good percentage of customers refuse to get plastic bags for their shopping in order to receive the score, which supports the third hypothesis in our study. Regarding the devastating effect of plastic waste on the ecosystem [76] the gamification features can be used by stores and hypermarkets to encourage eco-friendly movement in customers and reduce the number of plastic bags finally released in the environment. Theoretical and practical implications

6.1 Theoretical and Practical Implications

While many studies were conducted on customer experience, little empirical insight of customer experience in a real grocery store exists. The present study has introduced a beneficial gamifying design for both grocery stores and customers. Also, the following points can be mentioned for future research: Creating a nationwide platform between other grocery stores so that the points can be spent in other grocery stores, routing for grocery store items, and adding more variety of games to the application. Starting with a gamification app system can indeed stimulate local economies and directly benefit communities. The idea of a nationwide platform was to show the potential for scaling up, like implementing the gamification app in city branches or across the country. This approach allows us to test and refine the system at a smaller scale before potentially expanding. We see value in both local and broader applications and welcome further research on customer experiences in these settings.

From a Psychological point of view, this study has implications for enhancing motivation among the users of a specific gamified platform. The game elements used by this study can be utilized to meet needs for autonomy, socialization, competence, and learning. This will finally provide the users with a better experience while will help the service providers to maximize their marketing potential. Additionally, as it mentioned above, this gamification design can be further used to improve digital marketing. A proposed marketing method in this study was scanning the QR codes on the ads installed around the store which helps participants to pay attention to the ads and collect extra points by scanning them. This gamified and playful advertisement method can be used widely by future studies, digital markets, and real stores to enhance their communication with potential customers.

6.2 Limitations

Although the findings of this study are insightful, there are some limitations in this research that are recommended for future examinations. First, the study was done on a limited sample customers who all were from Iran. Future studies could repeat this study on the participant from other societies and cultures. Also, we did not consider different aspects of user experience

(i.e., cognitive, emotional, social, physical, and effective) separately. Future studies in this area are suggested to assess those aspects independently.

This study has been done on a small sample of volunteer young adult participants in Shiraz city. The generalizability of the findings of this study should be investigated on the larger and more diverse sample of participants. Demographic factors such as age can often influence the motivation and collaboration level of the customers. Additionally, the participants of this study volunteered to participate. Thus, they were initially motivated to collaborate and complete the gamified steps of shopping. Acceptance and feasibility of the proposed gamification design should be further studied in customers with different levels of motivation. Such studies can explore any limitations of this method for customers with any level of motivation, and with various socio-demographic information.

As mentioned, the location of this study was Shiraz city which is the fifth most populous city in Iran with 1.869 million inhabitants, and an important economic, social, and political hub in southern Iran. Since it is a large city and an economic hub in Iran, it is possible that the customers have a better shopping power compared to general population, especially that the participants were all young at the actively working ages. This factor should be considered in interpreting the results of this study. Future studies can be focused on smaller cities with lower purchasing power to explore if the gamification method mentioned in this study can yield the same results and the same level of collaboration in the customers.

Furthermore, this study primarily focused on gamification in a physical retail context, which differs from the virtual interactions often seen in digital marketing. One limitation of our conceptual framework is that it does not fully address the nuances of gamification in a digital marketing environment. Future research should explore how gamification can be effectively integrated with various digital marketing strategies, assessing its impact across different online and offline contexts. This would provide a more comprehensive understanding of gamification's potential in diverse marketing settings.

7. Conclusion

The present study proposed a gamification design for in-store shopping and aimed to address the following research questions: 1) What gamifying methods could be applied in a real store? 2) What impact does gamification have on customer experience in a real-store shopping context? 3) What role could gamification play in motivating customers to have an eco-friendly purchasing experience? The results of this study indicate the feasibility of the proposed gamification design as it encouraged the customers to spend a good amount of time in the store and explore the different parts of it. Moreover, an association between gamification and CX is shown in the present study, which supports the main idea of the investigators. Finally, the proposed gamification method showed the potential to promote eco-friendly movements in customers. However, it should be noted that the results of this study should be interpreted regarding all the factors. Further studies are needed to examine the effectiveness of this method for different contexts and conditions.

Acknowledgements

We extend our sincere gratitude to Tabriz Islamic Art University for funding and supporting this paper, which is an elaboration of a thesis completed at the university under the supervision of the corresponding author.

References

[1] D. K. Gauri *et al.*, "Evolution of retail formats: Past, present, and future," *Journal of Retailing*, vol. 97, no. 1, pp. 42–61, 2021, doi: https://doi.org/10.1016/j.jretai.2020.11.002.

[2] S. Rose, M. Clark, P. Samouel, and N. Hair, "Online Customer Experience in e-Retailing: An empirical model of Antecedents and Outcomes," *Journal of Retailing*, vol. 88, no. 2, pp. 308–322, 2012, doi: https://doi.org/10.1016/j.jretai.2012.03.001.

[3] T. Partala and T. Saari, "Understanding the most influential user experiences in successful and unsuccessful technology adoptions," *Computers in Human Behavior*, vol. 53, pp. 381–395, 2015, doi: https://doi.org/10.1016/j.chb.2015.07.012.

[4] K. Robson, K. Plangger, J. H. Kietzmann, I. McCarthy, and L. Pitt, "Game on: Engaging customers and employees through gamification," *Business horizons*, vol. 59, no. 1, pp. 29–36, 2016, doi: https://doi.org/10.1016/j.bushor.2015.08.002.

[5] N. V. Wünderlich, A. Gustafsson, J. Hamari, P. Parvinen, and A. Haff, "The great game of business: Advancing knowledge on gamification in business contexts," *Journal of Business Research*, vol. 106, pp. 273–276, Jan. 2020, doi: https://doi.org/10.1016/j.jbusres.2019.10.062.

[6] Sheetal, R. Tyagi, and G. Singh, "Gamification and customer experience in online retail: A qualitative study focusing on ethical perspective," *Asian Journal of Business Ethics*, vol. 12, no. 1, pp. 49–69, 2023, doi: https://doi.org/10.1007/s13520-022-00162-1.

[7] J. M. Lopes *et al.*, "Exploring the role of gamification in the online shopping experience in retail stores: An exploratory study," *Social Sciences*, vol. 12, no. 4, p. 235, 2023, doi: https://doi.org/10.3390/socsci12040235.

[8] Y. A. Sekhavat, "KioskAR: an augmented reality game as a new business model to present artworks," *International Journal of Computer Games Technology*, vol. 2016, 2016, doi: https://doi.org/10.1155/2016/7690754.

[9] G. Richter, D. R. Raban, and S. Rafaeli, "Studying gamification: The effect of rewards and incentives on motivation," 2015, doi: https://doi.org/10.1007/978-3-319-10208-5_2.

[10] R. S. Alsawaier, "The effect of gamification on motivation and engagement," *The International Journal of Information and Learning Technology*, vol. 35, no. 1, pp. 56–79, 2018, doi: https://doi.org/10.1108/IJILT-02-2017-0009.

[11] M. Floryan, P. I. Chow, S. M. Schueller, and L. M. Ritterband, "The Model of Gamification Principles for Digital Health Interventions: Evaluation of Validity and Potential Utility," *J Med Internet Res*, vol. 22, no. 6, p. e16506, Jun. 2020, doi: https://doi.org/10.2196/16506.

[12] J. Arambarri, I. de la Torre, M. López-Coronado, and I. Álvarez, "Investigating the Potential market of a Serious Game for Training of Alzheimer's Caregivers in a Northern Spain region.," *International Journal of Serious Games*, vol. 1, no. 4, 2014, doi: https://doi.org/10.17083/ijsg.v1i4.36.

[13] S. G. Six, K. A. Byrne, T. P. Tibbett, and I. Pericot-Valverde, "Examining the effectiveness of gamification in mental health apps for depression: systematic review and meta-analysis," *JMIR mental health*, vol. 8, no. 11, p. e32199, 2021, doi: https://doi.org/10.2196/32199.

[14] V. W. S. Cheng, "Recommendations for implementing gamification for mental health and wellbeing," *Frontiers in psychology*, p. 3434, 2020, doi: https://doi.org/10.3389/fpsyg.2020.586379.

[15] I. Gurjanow, M. Oliveira, J. Zender, P. A. Santos, and M. Ludwig, "Mathematics trails: Shallow and deep gamification," *International Journal of Serious Games*, vol. 6, no. 3, pp. 65–79, 2019, doi: https://doi.org/10.17083/ijsg.v6i3.306.

[16] A. Manzano-León *et al.*, "Between level up and game over: A systematic literature review of gamification in education," *Sustainability*, vol. 13, no. 4, p. 2247, 2021, doi: https://doi.org/10.3390/su13042247.

[17] M. Sailer and L. Homner, "The Gamification of Learning: a Meta-analysis," *Educational Psychology Review*, vol. 32, no. 1, pp. 77–112, Mar. 2020, doi: 10.1007/s10648-019-09498-w.

[18] M. Sümer and C. H. Aydın, “Design principles for integrating gamification into distance learning programs in higher education: A mixed method study,” *International Journal of Serious Games*, vol. 9, no. 2, pp. 79–91, 2022, doi: https://doi.org/10.17083/ijsg.v9i2.494.
[19] F. Noorbehbahani, F. Salehi, and R. Jafar Zadeh, “A systematic mapping study on gamification applied to e-marketing,” *Journal of Research in Interactive Marketing*, vol. 13, no. 3, pp. 392–410, Jan. 2019, doi: https://doi.org/10.1108/JRIM-08-2018-0103.
[20] “Gamification Market Size & Share Analysis - Growth Trends & Forecasts (2024 - 2029).” [Online]. Available: https://www.mordorintelligence.com/industry-reports/gamification-market
[21] H.-P. Lu and H.-C. Ho, “Exploring the Impact of Gamification on Users’ Engagement for Sustainable Development: A Case Study in Brand Applications,” *Sustainability*, vol. 12, no. 10, 2020, doi: https://doi.org/10.3390/su12104169.
[22] J. Hwang and L. Choi, “Having fun while receiving rewards?: Exploration of gamification in loyalty programs for consumer loyalty,” *Journal of Business Research*, vol. 106, pp. 365–376, Jan. 2020, doi: https://doi.org/10.1016/j.jbusres.2019.01.031.
[23] M. Olsson, J. Högberg, E. Wästlund, and A. Gustafsson, “In-Store Gamification: Testing a Location-Based Treasure Hunt App in a Real Retailing Environment,” in *2016 49th Hawaii International Conference on System Sciences (HICSS)*, Jan. 2016, pp. 1634–1641. doi: https://10.0.4.85/HICSS.2016.206.
[24] J. Högberg, M. O. Ramberg, A. Gustafsson, and E. Wästlund, “Creating brand engagement through in-store gamified customer experiences,” *Journal of Retailing and Consumer Services*, vol. 50, pp. 122–130, Sep. 2019, doi: https://doi.org/10.1016/j.jretconser.2019.05.006.
[25] I. K. Disse and M. Olsson, “Uncovering the gamified customer experience in the retail environment,” *International Journal of Retail & Distribution Management*, vol. 51, no. 7, pp. 955–971, 2023, doi: https://doi.org/10.1108/IJRDM-07-2022-0268.
[26] C. Tynan and S. McKechnie, “Experience marketing: a review and reassessment,” *Journal of marketing management*, vol. 25, no. 5–6, pp. 501–517, 2009, doi: https://doi.org/10.1362/026725709X461821.
[27] K. N. Lemon and P. C. Verhoef, “Understanding Customer Experience Throughout the Customer Journey,” *Journal of Marketing*, vol. 80, no. 6, pp. 69–96, Nov. 2016, doi: https://doi.org/10.1509/jm.15.0420.
[28] E. C. Hirschman and M. B. Holbrook, “The experiential aspects of consumption: Consumer fantasies, feelings, and fun,” *Journal of consumer research*, vol. 9, no. 2, pp. 132–140, 1982, doi: https://doi.org/10.1086/208906.
[29] C. Gentile, N. Spiller, and G. Noci, “How to Sustain the Customer Experience:: An Overview of Experience Components that Co-create Value With the Customer,” *European Management Journal*, vol. 25, no. 5, pp. 395–410, Oct. 2007, doi: 10.1016/j.emj.2007.08.005.
[30] C. Meyer and A. Schwager, “Understanding customer experience,” *Harvard business review*, vol. 85, no. 2, p. 116, 2007, doi: https://doi.org/10.1509/jm.15.0420.
[31] P. C. Verhoef, K. N. Lemon, A. Parasuraman, A. Roggeveen, M. Tsiros, and L. A. Schlesinger, “Customer Experience Creation: Determinants, Dynamics and Management Strategies,” *Journal of Retailing*, vol. 85, no. 1, pp. 31–41, Mar. 2009, doi: 10.1016/j.jretai.2008.11.001.
[32] I. Krasonikolakis, A. Vrechopoulos, A. Pouloudi, and S. Dimitriadis, “Store layout effects on consumer behavior in 3D online stores,” *European Journal of Marketing*, vol. 52, no. 5/6, pp. 1223–1256, Jan. 2018, doi: 10.1108/EJM-03-2015-0183.
[33] S. Molinillo, R. Anaya-Sánchez, and F. Liébana-Cabanillas, “Analyzing the effect of social support and community factors on customer engagement and its impact on loyalty behaviors toward social commerce websites,” *Computers in Human Behavior*, vol. 108, p. 105980, Jul. 2020, doi: 10.1016/j.chb.2019.04.004.

[34] M. Barari, M. Ross, and J. Surachartkumtonkun, "Negative and positive customer shopping experience in an online context," *Journal of Retailing and Consumer Services*, vol. 53, p. 101985, Mar. 2020, doi: 10.1016/j.jretconser.2019.101985.

[35] S. K. Roy, M. S. Balaji, and B. Nguyen, "Consumer-computer interaction and in-store smart technology (IST) in the retail industry: the role of motivation, opportunity, and ability," *Journal of Marketing Management*, vol. 36, no. 3–4, pp. 299–333, Feb. 2020, doi: 10.1080/0267257X.2020.1736130.

[36] A. Bleier, C. M. Harmeling, and R. W. Palmatier, "Creating Effective Online Customer Experiences," *Journal of Marketing*, vol. 83, no. 2, pp. 98–119, Mar. 2019, doi: https://doi.org/10.1177/0022242918809930.

[37] A. Hermes and R. Riedl, "Dimensions of Retail Customer Experience and Its Outcomes: A Literature Review and Directions for Future Research," in *HCI in Business, Government and Organizations*, F. F.-H. Nah and K. Siau, Eds., Cham: Springer International Publishing, 2021, pp. 71–89. doi: https://doi.org/10.1007/978-3-030-77750-0_5.

[38] S. Deterding, M. Sicart, L. Nacke, K. O'Hara, and D. Dixon, "Gamification. using game-design elements in non-gaming contexts," *CHI'11 extended abstracts on human factors in computing systems*, pp. 2425–2428, 2011, doi: https://doi.org/10.1145/1979742.1979575.

[39] J. Koivisto and J. Hamari, "The rise of motivational information systems: A review of gamification research," *International Journal of Information Management*, vol. 45, pp. 191–210, Apr. 2019, doi: https://doi.org/10.1016/j.ijinfomgt.2018.10.013.

[40] T. Malaby, *Making virtual worlds: Linden lab and second life*. Ithaca, NY: Cornell University Press, 2010. doi: https://doi.org/10.7591/9780801458996.

[41] N. Xi and J. Hamari, "Does gamification satisfy needs? A study on the relationship between gamification features and intrinsic need satisfaction," *International Journal of Information Management*, vol. 46, pp. 210–221, Jun. 2019, doi: https://doi.org/10.1016/j.ijinfomgt.2018.12.002.

[42] G. Zichermann and C. Cunningham, *Gamification by design: Implementing game mechanics in web and mobile apps*. O'Reilly Media, Inc., 2011.

[43] J. Tang and P. Zhang, "Exploring the relationships between gamification and motivational needs in technology design," *International Journal of Crowd Science*, vol. 3, no. 1, pp. 87–103, Apr. 2019, doi: https://doi.org/10.1108/IJCS-09-2018-0025.

[44] A. C. T. Klock, I. Gasparini, M. S. Pimenta, and J. Hamari, "Tailored gamification: A review of literature," *International Journal of Human-Computer Studies*, vol. 144, p. 102495, Dec. 2020, doi: https://doi.org/10.1016/j.ijhcs.2020.102495.

[45] K. Werbach, D. Hunter, and W. Dixon, *For the win: How game thinking can revolutionize your business*, vol. 1. Wharton digital press Philadelphia, 2012.

[46] K. Robson, K. Plangger, J. H. Kietzmann, I. McCarthy, and L. Pitt, "Is it all a game? Understanding the principles of gamification," *Business Horizons*, vol. 58, no. 4, pp. 411–420, Jul. 2015, doi: https://doi.org/10.1016/j.bushor.2015.03.006.

[47] M. Jami Pour, K. Rafiei, M. Khani, and A. Sabrirazm, "Gamification and customer experience: the mediating role of brand engagement in online grocery retailing," *Nankai Business Review International*, vol. 12, no. 3, pp. 340–357, Jan. 2021, doi: https://doi.org/10.1108/NBRI-07-2020-0041.

[48] M. Sailer, J. Hense, H. Mandl, and M. Klevers, "Psychological perspectives on motivation through gamification," 2013, doi: https://doi.org/10.55612/s-5002-019-002.

[49] M. Sailer, J. U. Hense, S. K. Mayr, and H. Mandl, "How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction," *Computers in human behavior*, vol. 69, pp. 371–380, 2017, doi: https://doi.org/10.1016/j.chb.2016.12.033.

[50] B. Say, H. Altunel, M. Kosa, and M. Koca-Atabey, "Evaluation of an industrial case of gamification in software quality improvement," *International Journal of Serious Games*, vol. 10, no. 3, pp. 23–42, 2023, doi: https://doi.org/10.17083/ijsg.v10i3.594.

[51] L. Festinger, “A theory of social comparison processes,” *Human relations*, vol. 7, no. 2, pp. 117–140, 1954, doi: https://doi.org/10.1177/001872675400700202.
[52] M. D. Hanus and J. Fox, “Assessing the effects of gamification in the classroom: A longitudinal study on intrinsic motivation, social comparison, satisfaction, effort, and academic performance,” *Computers & education*, vol. 80, pp. 152–161, 2015, doi: https://doi.org/10.1016/j.compedu.2014.08.019.
[53] E. Constantinides, “Influencing the online consumer’s behavior: the Web experience,” *Internet research*, vol. 14, no. 2, pp. 111–126, 2004, doi: https://doi.org/10.1108/10662240410530835.
[54] E. Pantano and L. Di Pietro, “Understanding consumer’s acceptance of technology-based innovations in retailing,” *Journal of technology management & innovation*, vol. 7, no. 4, pp. 1–19, 2012, doi: http://dx.doi.org/10.4067/S0718-27242012000400001.
[55] M. Hajarian and S. Hemmati, “A Gamified Word of Mouth Recommendation System for Increasing Customer Purchase,” in *2020 4th International Conference on Smart City, Internet of Things and Applications (SCIOT)*, Sep. 2020, pp. 7–11. doi: https://doi.org/10.1109/SCIOT50840.2020.9250209.
[56] L. D. Hollebeek, M. S. Glynn, and R. J. Brodie, “Consumer brand engagement in social media: Conceptualization, scale development and validation,” *Journal of interactive marketing*, vol. 28, no. 2, pp. 149–165, 2014, doi: https://doi.org/10.1016/j.intmar.2013.12.002.
[57] J. Hamari, J. Koivisto, and H. Sarsa, “Does gamification work?--a literature review of empirical studies on gamification,” presented at the 2014 47th Hawaii international conference on system sciences, Ieee, 2014, pp. 3025–3034. doi: https://doi.org/10.1109/HICSS.2014.377.
[58] N. Xi and J. Hamari, “The relationship between gamification, brand engagement and brand equity,” 2019, doi: http://dx.doi.org/10.24251/HICSS.2019.099.
[59] S. Tobon, J. L. Ruiz-Alba, and J. García-Madariaga, “Gamification and online consumer decisions: Is the game over?,” *Decision Support Systems*, vol. 128, p. 113167, Jan. 2020, doi: https://doi.org/10.1016/j.dss.2019.113167.
[60] H. Nobre and A. Ferreira, “Gamification as a platform for brand co-creation experiences,” *Journal of Brand Management*, vol. 24, pp. 349–361, 2017, doi: https://doi.org/10.1057/s41262-017-0055-3.
[61] V. Shankar, D. Grewal, S. Sunder, B. Fossen, K. Peters, and A. Agarwal, “Digital marketing communication in global marketplaces: A review of extant research, future directions, and potential approaches,” *International Journal of research in Marketing*, vol. 39, no. 2, pp. 541–565, 2022, doi: https://doi.org/10.1016/j.ijresmar.2021.09.005.
[62] V. Shankar and E. C. Malthouse, “The growth of interactions and dialogs in interactive marketing,” *Journal of interactive Marketing*, vol. 21, no. 2, pp. 2–4, 2007, doi: https://doi.org/10.1002/dir.20080.
[63] X. Hu and K. Wise, “How playable ads influence consumer attitude: exploring the mediation effects of perceived control and freedom threat,” *Journal of Research in Interactive Marketing*, vol. 15, no. 2, pp. 295–315, 2021, doi: https://doi.org/10.1108/JRIM-12-2020-0269.
[64] J. Högberg, J. Hamari, and E. Wästlund, “Gameful Experience Questionnaire (GAMEFULQUEST): an instrument for measuring the perceived gamefulness of system use,” *User Modeling and User-Adapted Interaction*, vol. 29, no. 3, pp. 619–660, 2019, doi: https://doi.org/10.1007/s11257-019-09223-w.
[65] R. Bartle, “Hearts, clubs, diamonds, spades: Players who suit MUDs,” *Journal of MUD research*, vol. 1, no. 1, p. 19, 1996.
[66] V. Kumar and W. Reinartz, “Creating enduring customer value,” *Journal of marketing*, vol. 80, no. 6, pp. 36–68, 2016, doi: https://doi.org/10.1509/jm.15.0414.
[67] D. Sprott, S. Czellar, and E. Spangenberg, “The importance of a general measure of brand engagement on market behavior: Development and validation of a scale,” *Journal of*

Marketing research, vol. 46, no. 1, pp. 92–104, 2009, doi: https://doi.org/10.1509/jmkr.46.1.92.

[68] E. D. Mekler, F. Brühlmann, K. Opwis, and A. N. Tuch, "Do points, levels and leaderboards harm intrinsic motivation? An empirical analysis of common gamification elements," presented at the Proceedings of the First International Conference on gameful design, research, and applications, 2013, pp. 66–73. doi: https://doi.org/10.1145/2583008.2583017.

[69] R. Van Roy and B. Zaman, "Need-supporting gamification in education: An assessment of motivational effects over time," *Computers & Education*, vol. 127, pp. 283–297, 2018, doi: https://doi.org/10.1016/j.compedu.2018.08.018.

[70] A. Suh, C. M. Cheung, M. Ahuja, and C. Wagner, "Gamification in the workplace: The central role of the aesthetic experience," *Journal of Management Information Systems*, vol. 34, no. 1, pp. 268–305, 2017, doi: https://doi.org/10.1080/07421222.2017.1297642.

[71] P. Luarn, C.-C. Chen, and Y.-P. Chiu, "Enhancing intrinsic learning motivation through gamification: a self-determination theory perspective," *The International Journal of Information and Learning Technology*, vol. 40, no. 5, pp. 413–424, 2023, doi: https://doi.org/10.1108/IJILT-07-2022-0145.

[72] T. E. Robinson, L. M. Yager, E. S. Cogan, and B. T. Saunders, "On the motivational properties of reward cues: Individual differences," *Neuropharmacology*, vol. 76, pp. 450–459, 2014, doi: https://doi.org/10.1016/j.neuropharm.2013.05.040.

[73] L. K. Isheqlou, M. Soltanlou, M. Zarean, M. T. Saeedi, and S. Heysieattalab, "Feedback-related negativity in perfectionists: An index of performance outcome evaluation," *Behavioural Brain Research*, vol. 444, p. 114358, 2023, doi: https://doi.org/10.1016/j.bbr.2023.114358.

[74] N. Xi and J. Hamari, "Does gamification affect brand engagement and equity? A study in online brand communities," *Journal of Business Research*, vol. 109, pp. 449–460, 2020, doi: https://doi.org/10.1016/j.jbusres.2019.11.058.

[75] R. A. Rather, S. H. Parrey, R. Gulzar, and S. U. Rehman, "Does gamification effect customer brand engagement and co-creation during pandemic? A moderated-mediation analysis," *Journal of Global Scholars of Marketing Science*, vol. 33, no. 2, pp. 285–311, 2023, doi: https://doi.org/10.1080/21639159.2022.2083000.

[76] K. K. Khoaele, O. J. Gbadeyan, V. Chunilall, and B. Sithole, "The devastation of waste plastic on the environment and remediation processes: a critical review," *Sustainability*, vol. 15, no. 6, p. 5233, 2023, doi: https://doi.org/10.3390/su15065233.