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# In-store assortment training to the distribution manpower of dairy companies using gamification

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## Abstract

The aim of this study is to design and implement an e-learning course for distributors of fast-moving consumer goods using gamification. In the first step, the components of the in-store assortment are extracted using a systematic literature review, and customer preferences in each of these factors were determined as users' opinions of 387 customers. In the next step, the game is designed based on the persuasive game design (PGD) model, and the mechanics, dynamics, and aesthetics (MDA) of the game were determined by an experts' panel, and a mobile app is designed as a learning tool. In the following step, the designed game was carried out by the distributors and the game prizes are awarded to the winners. Finally, the effects of the gamified e-learning are evaluated using the IMI questionnaire and analyzing the players' points. Findings show that enjoyment, perceived competence, effort importance, pressure tension, perceived choice, and usefulness of this course are significantly higher than average. Besides, the average of points gets higher during repetition rounds while the dispersion of the points gets lower. As a result, it seems that gamification could be a valuable alternative to learning operational tricks for marketing staff, especially distributors.

**Keywords:** Assortment, Layout, Human Resources, Retailer, Android Game, Empowerment

## Introduction

The practical training of marketing staff can improve their performance as well as the whole organization's competitiveness (Diaz-Fernandez et al., 2017). Among the various occupational groups of the sales force, the product distributors act as the front line and, in fact, they are bridges between business and brick-and-mortar retailers, especially for fast-moving consumer goods. One of the primary duties of fast-moving consumer goods (FMCGs) distributors is to assort goods in retail stores or sometimes consult retailers on arranging goods (Timonina-Farkas et al., 2020). FMCGs are products with a short useful



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lifetime and are typically designed for single or limited uses, followed by disposal (Bocken et al., 2022). The assortment issue becomes increasingly crucial when it is specified that the product assortment also influences the in-store behavior of the consumer, and many decisions about the fast-moving consumer goods are made at the point of purchase (Bialkova et al., 2020). According to these findings, an optimized assortment can significantly stimulate these product sales (Fornari et al., 2021). Therefore, the optimal assortment training of the distribution staff becomes necessary. Consequently, employing motivational and interactive methods in training them is one of the main challenges for human resources (HR) managers.

On the other hand, the penetration of information technology and digitalization can be opportunities to overcome this challenge and transform organizational training systems into an attractive and interactive educational environment (Garg et al., 2022). A review of the developments in this field shows that gamification is one of the appropriate approaches in this context (Sailer & Homner, 2020). In general, applying game elements in non-game contexts is a new approach and has recently spread out in various business areas (Bai et al., 2020). With the motivational power of gamification, gamification in HR training is one of the topics of interest for researchers and HR managers (Huang et al., 2020). Gamification could be one of the choices to learn the basic principles of assortment for the product distributors, because gamification engages them in the learning process by using game mechanics, aesthetics, and game thinking (Hassan & Hamari, 2020). Besides, it increases the enjoyment and effectiveness of the learning process (Gerdenitsch et al., 2020). The gamified learning design and determining the game's elements and scenario impact achieving the training process's objectives (Kyewski & Krämer, 2018; Tsay et al., 2018). In short, the main objective of this research is to design and implement gamified learning for an important case study. We are also interested to see whether gamified learning could have the necessary motivation for distributors.

## **Literature study**

Theoretical reviews of this study are provided on two lines of research, a brief review of gamification in learning and the principles of in-store assortment.

### **Gamification and learning**

The term gamification was coined in the early 2000s (Marczewski, 2013). However, this concept has grown significantly in recent years. As Göksün and Gürsoy (2019) state, gamification is a new concept in the field of education, and some researchers have tried to explain the relationship between gamification and learning by providing a framework such as gamified learning.

According to the flow theory, when people engage in challenging activities such as gaming, they can reach maximum performance. But it is important to remember that there must be a fit between the individual's skill and the challenge (Rachels & Rockinson-Szapkiw, 2018). Goal-setting theory (Huang et al., 2019), cognitive evaluation theory (Kyewski & Krämer, 2018), theory-driven gamification design model based on goal pattern, access, feedback, challenge and cooperation, behavior reinforcement theory, and social comparison theory (Huang & Hew, 2018) are other theories used in the field of gamification.

One of the main theories that psychologically explains the effectiveness of gamification is the self-determination theory (Mekler et al., 2017). This states the psychological need for self-determination is based on the three expected characteristics of competence, autonomy, and social communication that meet these needs and significantly affect motivation and learning. In this theory, the environment and different types of feedback are part of the elements of the game (Sailer & Homner, 2020). In some studies, subjects such as engagement and involvement, motivation, anxiety, collaboration, and learning have been followed as game goals (Lone et al., 2018).

The features and capabilities of game-making have led to the use of this approach in organizational training. El-Telbany and Elragal (2017) designed a game-generated process to train personnel about the ERP life cycle and its benefits as an organizational system. Ulmer et al. (2020) provided an overview of enterprise gamification approaches and have evaluated its challenges. Furthermore, a skill-based gamification framework for manual tasks was proposed, and a case study was done in the industry 4.0 model using existing work structures with two KPIs. Then, to assess the framework's validity, the gamification concept for the e-longboard production was analyzed via user studies in the model factory.

At last, they suggest that the gamification framework could be transferred and applied to maintenance tasks on CNC machines. Aparicio et al. (2021) found that using game elements on the website can increase the use of the website and, ultimately, the repurchase intention to buy. They assessed customers' opinions about badges systems, progression elements (dynamics), mechanics (watch and win), leaderboards systems, and points systems on the website and finally used the SEM to analyze and test the hypotheses.

### **In-store assortment**

One of the challenges of physical retail is space constraints for in-store and shelf assortment. The customer's in-store behavior can also be affected by the assortment (Ruiz-Real et al., 2020). Despite this, few studies have been conducted in the optimal assortment of shelves of a product group in retail stores (Roederkerk & Lehmann, 2020). Some studies have already focused on the placement of the shelves, which have examined the optimal location of the refrigerator and shelves. The location of the refrigerator in the corridors and beside

the entry and exit point (Berkhout, 2019), and the proximity of the shelves and the refrigerator to each other (Diehl et al., 2015) are among such studies. Some research has investigated the effect of the shelves' assortment on consumers' behavior, such as store switching (Gázquez-Abad et al., 2021), consumers' expectation for popular products on a particular shelf (Valenzuela et al., 2013), brand attention and appreciation (Aurier & Mejía, 2020), and perceived variety and complexity (Mejía et al., 2021; Roederkerk & Lehmann, 2020). Having understood the importance of above results, in-store assortment should be taken more seriously by retailers.

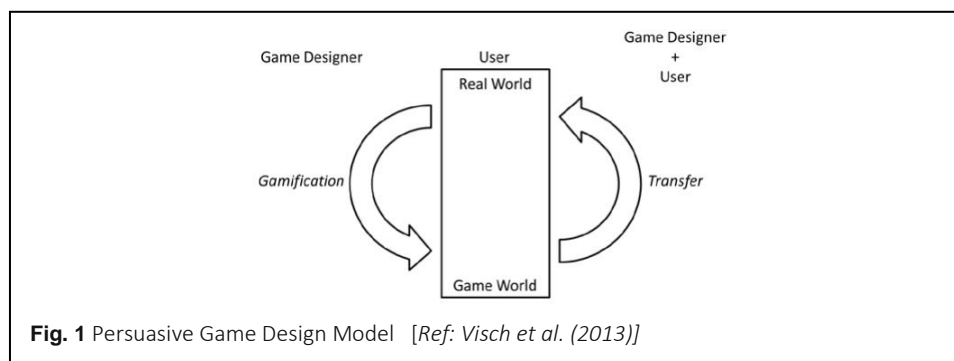
### Persuasive game design: gamified learning of in-store assortment

The main aim of this study is to design and implement a gamified learning course of in-store assortment learning. As the theoretical basis of the gamification design process, the Persuasive Game Design (PGD) model is used. This model proposes that games are essentially experience-defined. In daily life, users experience the real world. Through gamification design, it is possible to shift customers' ordinary "real-world" experience toward a more "game-like" experience. By adding game elements to real-world behaviors of customers, users (product distributors) are triggered to experience gratifying and motivating game feelings during ordinary physical world activities. A transfer effect occurs when the experiences obtained by distributors in the game world successfully influence the players' attitudes or behavior in the physical world (Visch et al., 2013) and in-store assortment as expected. The PGD model is shown in Figure 1.

Based on the cookbook method of PGD (Siriaraya et al., 2018), the design and development of persuasive gamified learning include four major stages:

1. Define the transfer effect
2. Investigate the user's world
3. Design the game
4. Evaluate the effects

Therefore, the methodology of this study consists of the above four steps, as suggested by the PGD method. The stages of this research are shown in Table 1.



**Table 1** Stages of research

Stage	Objective	Method
Define the transfer effect	Define the transfer effect that aims to deliver the world experience	Expert sessions
Investigate the user's world	Determine the in-store assortment components and determine the consumer preferences	A systematic literature review (SLR) and filed survey on customers with statistical tests
Design the game	Design the educational game scenario	Carry out creative design sessions
Evaluate the effects	Implement the educational game and analyze the findings	Statistical tests

Since the aims and content of the persuasive game are specified by qualitative methods (i.e., interviews, SLR, and expert panel) and the data will be analyzed quantitatively (i.e., using statistical tests), this study is among the mixed studies. In addition, to comply with the ethical principles of research, participation in this training program was voluntary. In addition, individuals' private information was neither on the company list nor the training process. Participating in the game process was also optional, and participants could leave the program at any time. Experimental data were also presented cumulatively and analytically, and the results of individual efforts were used only for data analysis. The detailed methodological aspects of the research are summarized in the following.

### Define the transfer effect

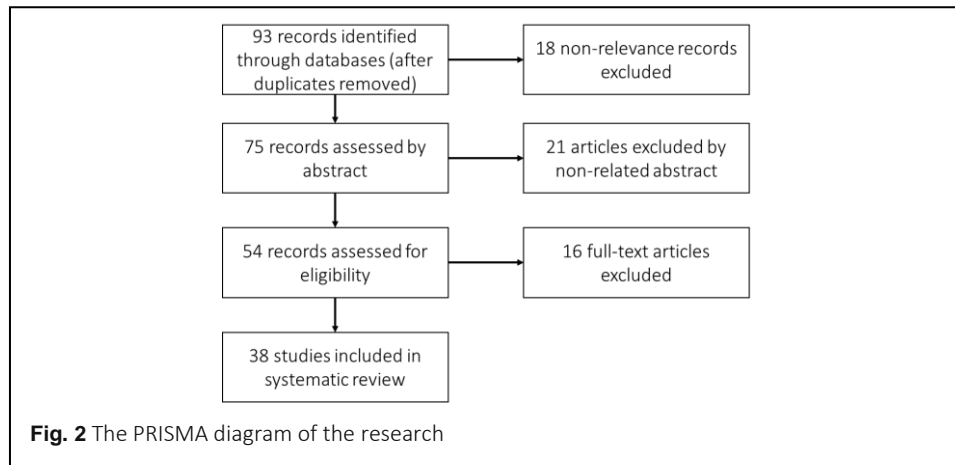
Based on the PGD method, a more common approach to identifying the desired transfer effect is organizing rapid design sessions with stakeholders and clients in the practice of commercial serious game design. This study includes 11 sales managers and distribution experts of FMCGs. These sessions were carried out early to help them frame their desired business goals within the scope of a gamification project to align their interests and form a real transfer goal. The demographic details of the experts are given in Table 2.

### Investigating the user's world

In the next stage, the components of the in-store assortment are determined using an SLR method and a library research method. The PRISMA is used in the SLR, and 38 eligible studies are selected, as in Figure 2.

**Table 2** Demographic characteristics of the participants [Sales managers and distribution experts] in the learning content development

Participants	Total	Gender		Age			Experience		
		Female	Male	<35	35-51	>51	<5	5-15	>15
Sales managers and distribution experts	No.	4	7	6	3	2	3	3	5
	%	36	64	54	28	18	27	27	46



The statistical population for determining the dimensions of in-store assortment is all scientific and reputable publications from 2000 to 2020, and most related studies were selected judgmentally and purposefully using PRISMA. In this research step, in-store assortment factors are determined using an SLR. The inclusion and exclusion criteria of the studies were their thematic relationship with the in-store assortment factors. These studies were searched in reputable databases with accessibility to the text, and in this search, related keywords included “in-store”, “assortment”, “layout”, “shelf”, “arrangement”, “position”, “location”, “alignability”, and/or “allocation”. In the SLR, assortment dimensions were identified in different articles for regions outside the study environment, and Iranian customer preferences may differ from the findings of other studies. Thus, to determine the customer preferences in each assortment component, the statistical population included 387 customers of dairy products in Iran, which were chosen by convenience sampling. The distribution of demographic characteristics of participants is shown in Table 3.

In this stage, a researcher-made questionnaire was developed based on the findings of a SLR. Two experts initially confirmed the validity of this questionnaire. This step aimed to verify that the designed game process could meet the professional training of sales staff. For this purpose, the tool was presented to the experts. According to the tool’s development process and content, the experts confirmed the tool’s validity qualitatively and subjectively. In this process, the consensus of the experts has been the basis for ensuring the validity.

**Table 3** Demographic characteristics of the participants [Customers] in the learning content development

	Total	Gender		Age			Experience		
		Female	Male	<35	35-51	>51	<5	5-15	>15
Customers	No.	387	247	140	203	126	58	-	-
	%	-	64	36	52	33	15	-	-

Since the variables of the questionnaire were nominal, to determine the reliability of the questionnaire, the inter-item consistency is calculated by Kuder-Richardson (KR20) according to Equation 1 (Patock, 2004),

$$KR20 = \frac{K}{K-1} \left( 1 - \frac{\sum p \cdot q}{s^2} \right) = \frac{26}{25} \left( \frac{3.350}{16.032} \right) = 0.823 \quad (1)$$

where  $K$  is the number of dimensions,  $p$  and  $q$  are summed up to 1.  $s^2$  is the variance of total scores of participants, and based on this criterion, the reliability was outstanding. Afterward, the independent sample T-test is performed to examine the significance of the difference in preferences and determine the predominant preferences of customers, which is given in Table 4. Eventually, the preferences of Iranian customers have been compared with the preferences mentioned in foreign studies. Consequently, the dimensions and preferences set out in Table 4 should be transferred to distributors as learning content.

The results of this step are used as learning content (user's world) for distributor staff. The reason for doing this step was to provide a framework of customer behavior inside the store that can be different in our study environment (i.e., Iran) from the findings of other studies.

### Persuasive Game Design

Gamification and game-based learning may cause misunderstandings for some educators and game designers. The two concepts: gamification, and game-based learning, are distinctively blurred. Nevertheless, as Alsawaier (2018, p.59) stated, "gamification is not when learning is changed into a computer game but rather when adding a design layer of game elements to enhanced learning, increase engagement, and encourage positive behavior." Accordingly, to design and implement this learning course by gamification and to fit the game design to the distributors' preferences, needs, and capabilities as end-users, the designer could integrate the game into an existing real-world context. As an example, real-world assortment tasks would be reflected through game-world activities. Accordingly, after being immersed in the game, the player returns to the real world where the transfer effect should take place, for instance, by executing the skills learned during the gameplay (Siriaraya et al., 2018). With this approach, the learning game should be carried out in two main stages, Game Concept Design and Iterative Game Design and Development.

**Table 4** Consumer preferences in the face of in-store assortment in the domain of distributors

Assortment factor	Ref.	States	No.	%	$\chi^2$	Sig.	Customers' preference	
							Survey	literature
(q1) Variety vs quantity on shelves	Scheibehenne et al. (2009)	More variety	345	89	237.2	<0.001	✓	✓
		More quantity	42	11			-	-
(q2) Purchase abandonment	Kahneman and Patrick (2011)	Crowded shelves	128	33	44.3	<0.001	-	-
		Secluded shelves	259	67			✓	✓
(q3) Customer sensitivity	Van Nierop et al. (2008)	Brand	285	74	304.2	<0.001	✓	✓
		Price	88	23			-	-
		Accessibility	14	4			-	-
(q4) Product similarity versus brand similarity	Fasolo et al. (2009)	Refrigerators with different brands	226	58	10.9	<0.001	✓	-
		The refrigerator is a brand and full of product	161	42			-	✓
(q5) Intra-product space	Sevilla and Townsend (2016)	Lots of products and compacts	145	37	24.3	<0.001	-	-
		Extended assortment	242	63			✓	✓
(q6) Selection based on the vertical position of the shelf	Berkhout (2019)	The highest shelf	58	15	419.5	<0.001	-	-
		Shelves in front of the customer	317	82			✓	✓
		The lowest shelf	12	3			-	-
(q7) Selection based on the horizontal position of the shelf	Atalay et al. (2012)	The right side of the refrigerator	258	67	216.5	<0.001	✓	-
		In the middle of the refrigerator	103	27			-	✓
		The left side of the refrigerator	26	6			-	-
(q8) Perception of product quality in shelf classes (higher quality)	Valenzuela and Raghubir (2015)	The highest shelf	144	37	165.5	<0.001	-	✓
		Middle shelves	224	58			✓	-
		The lowest shelf	19	5			-	-
(q9) Perception of product price in shelf classes (higher quality)	Valenzuela and Raghubir (2015)	Higher classes	249	64	201.7	<0.001	✓	✓
		Middle classes	116	30			-	-
		Lower classes	22	6			-	-
(q10) Willingness to pay for products on the shelf classes	Nelson and Simmons (2009)	Higher classes	179	46	166.1	<0.001	-	✓
		Middle classes	198	51			✓	-
		Lower classes	10	3			-	-
(q11) Product assortment based on ads	Dreze et al. (1994)	Higher classes	105	27	248.9	<0.001	-	-
		Middle classes	266	69			✓	-
		Lower classes	16	4			-	✓
(q12) Refrigerator scan side	Valenzuela and Raghubir (2015)	From right to left	301	78	119.4	<0.001	✓	✓
		From left to right	86	22			-	-
(q13) Brand position in the refrigerator	Deng et al. (2016)	Higher classes	153	40	177.6	<0.001	-	NA**
		Middle classes	222	57			✓	-
		Lower classes	12	3			-	-
(q14) Symmetry on the shelves	Kahn and Wansink (2004)	Less attention	154	40	16.1	<0.001	-	-
		More attention	233	60			✓	✓
(q15) Position in front of the customer	Townsend and Kahn (2014)	Description label	29	8	153.5	<0.001	-	-
		Product and brand image	228	59			✓	✓
		Production date, expiration date, and price	130	33			-	-
(q16) Quality vs. number in the refrigerator	Dreze et al. (1994)	Less refrigerator but cleaner	307	79	133.2	<0.001	✓	✓
		More refrigerators	80	21			-	-

Assortment factor	Ref.	States	No.	%	$\chi^2$	Sig.	Customers' preference	
							Survey	literature
(q17) Assortment of weak products versus strong products (better products)	Hansen et al. (2010)	The first refrigerators	75	20	224.9	<0.001	-	✓
		Middle refrigerators	45	11			-	-
		The last refrigerators	267	69			✓	-
(q18) The proximity of dairy products to other products (customer shopping cart)	Diehl et al. (2015)	Eggs, bread, and vegetables	245	63	160.9	<0.001	✓	✓
		Washing liquid, paper towels, glass cleaner	54	14			-	-
		Chips, puff pastry, cake	88	23			-	-
(q19) Position of low-selling products	Berkhout (2019)	The first refrigerators	137	35	123.6	<0.001	-	✓
		Middle refrigerators	36	9			-	-
		The last refrigerators	214	56			✓	-
(q20) Refrigerator position in scheduled purchases	Berkhout (2019)	Middle	77	20	140.3	<0.001	-	✓
		Side	310	80			✓	-
(q21) Refrigerator position in impulse buying	Berkhout (2019)	Middle	81	21	130.8	<0.001	-	✓
		Side	306	79			✓	-
(q22) The attractiveness of the length of the corridor	Berkhout (2019)	Short corridor	213	55	3.9	<0.001	✓	✓
		Long corridor	174	45			-	-
(q23) The space dedicated to dairy in a small shop	Berkhout (2019)	Big	172	44	4.8	0.029	-	-
		Small	215	56			✓	✓
(q24) The space dedicated to dairy in department stores	Berkhout (2019)	Big	361	93	289.9	<0.001	✓	✓
		Small	26	7			-	-
(q25) The attractiveness of outlet refrigerators	Berkhout (2019)	Unattractive	211	55	3.2	0.075	✓*	-
		Attractive	176	45			-	✓
(q26) Stairwell space for dairy	Berkhout (2019)	Unattractive	238	61	179.3	<0.001	✓	✓
		Unimportant	126	33			-	-
		Attractive	23	6			-	-

### **Game Concept Design**

At this stage, the previous steps' real-world experience is considered the baseline. To design the gamified course, a rapid design session is carried out, in which the MDA framework (mechanics, dynamics, and aesthetics) is used (Hammedi et al., 2017) as shown in Table 5.

### **Iterative Game Design and Development**

After carrying out creative design sessions, an initial storyboard is developed, and an interactive prototype of the game is built (e.g., on the Android OS). Afterward, some evaluative sessions are carried out, and the result of this process is a user flow diagram, as shown in Figure 3.

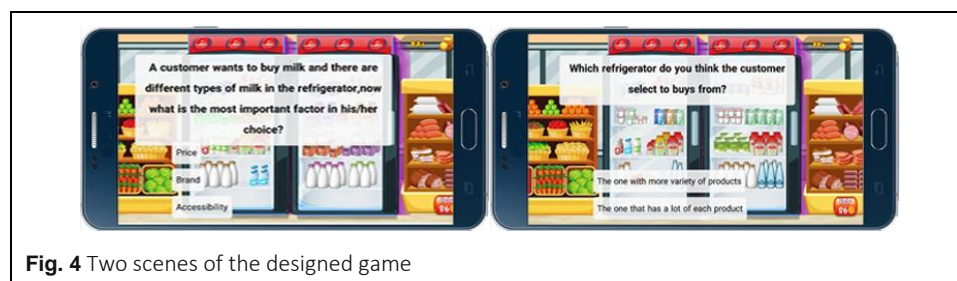
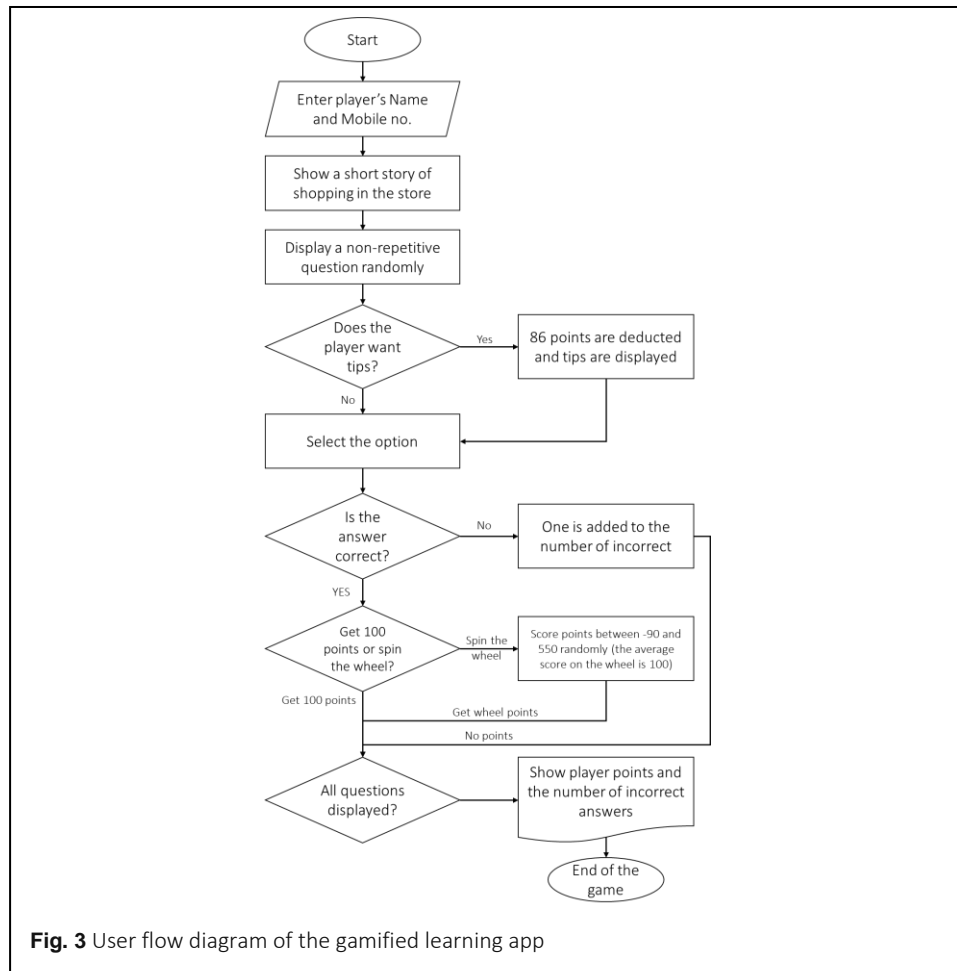
For this study, both steps have been followed.

Based on the flow diagram of Figure 3, the trainee enters the game with their mobile number after installing the game on their mobile phones. This number corresponds to the telephone numbers database that the company selected for training, and based on this registration, and their game scores are recorded and stored as analytical data. When people enter the main environment of the game, first, the narration of the game is presented to the audience visually. In addition, the rules of the game are explained. Then, by seeing the image that shows the need and purpose of the game, the user enters the store environment. In this model, sales staff can be assumed to be customers who simulate customer behavior while playing.

**Table 5** Specifications of the game scenario features

MDA	Dimensions	Elements
Mechanics		
Challenge mechanics	Challenge	Urge to master in the game in the earliest time
Fantasy mechanics	Motivation	Award considered by the organization
	Entertainment	Optional selection of luck spin wheel and gaining or losing points, in addition to the points of the steps
Win/lose decision	Winner	The first persons that complete the game and lottery between pioneers
Learning components	Content	The player must select the best assortment alternatives, and the proper selection is based on customer preferences; The player could have a help tip by spending some points. Assortment questions are based on assortment factors and determining consumer preferences (Table 4)
Dynamics	Challenges	Both time pressure and the challenge of collecting points to pass the game stages
Aesthetics	Environment	The game environment is inspired by a comic store that evokes purchasing experience in an imaginary world

Based on this flowchart, the interactive prototype of the mobile app was created, and then gameplay and usability testing were carried out by the panel, and the final version of the app was developed based on aesthetic considerations. Two scenes of this app are shown in Figure 4.



**Table 6** Demographic characteristics of the participants [Distributors] in the learning content development

Participants (trainees)	Total		Gender		Age			Experience		
			Female	Male	<35	35-51	>51	<5	5-15	>15
Distributors	No.	63	2	61	15	38	10	4	29	30
	%	-	3	97	24	60	16	6	46	48

## Evaluation of effects

In the final step of this research, the learning process passed through the designed game. For this purpose, the 63 persons of distributors played the game on a specific day, and the prizes were awarded to the winners. Data related to each participant's scores and the number of their efforts were collected in the app's database during the game period. These participants were invited based on the information from verified cell phone lists delivered by companies. The demographic characteristics of the statistical sample in this study have been presented in Table 6.

For this research problem, it was necessary to assess the effect of the gamified learning process from various aspects, including interest (enjoyment), perceived competence, effort (importance), pressure (tension), perceived choice, and value (usefulness) based on the IMI questionnaire (McAuley et al., 1989). In this questionnaire, the participants' opinions were asked based on 24 questions in the form of a 7-point Likert scale. In this regard, using the collected data to determine the evaluation of the training course participants, the data's normality was checked, and the data normality was confirmed based on skewness and Kurtosis. Then the average score in each dimension is compared with the average number by the one-sample t-test. The results are given in Table 7.

Another aspect of the expected effect was the distributors' engagement in the learning process. At the end of the competition, the number of rounds of the players to complete the game was abstracted as shown in Table 8.

The main purpose of this gamification was to learn the principles of assortment from the customer's point of view to the distribution staff. Then, the analysis is dedicated to the findings of learning effectiveness. To determine the effectiveness of the game in learning

**Table 7** The results of normality and one-sample t-test of IMI dimensions

	Mean	S.D.	Skewness	Kurtosis	t	Sig. (2-tailed)	95%CI
Interest/enjoyment	4.948	0.913	-0.927	-0.068	8.243	<0.001	(0.718,1.178)
Perceived competence	5.022	0.834	-0.956	0.270	9.722	<0.001	(0.812,1.232)
Effort importance	5.043	0.744	-0.784	-0.253	11.130	<0.001	(0.856,1.231)
Pressure tension	5.065	0.849	-1.098	0.539	9.960	<0.001	(0.852,1.279)
Perceived choice	5.045	0.974	-1.024	0.349	8.519	<0.001	(0.800,1.291)
Value/usefulness	5.120	0.771	-1.192	0.574	11.530	<0.001	(0.926,1.314)

\*To score this data, scores the items scores were reversed for which an (R) is shown after them. To do that, subtract the item response from 8, and use the resulting number as the item score.

**Table 8** Summary of game results

Number of rounds played	Number of game attempts					Total
	2	3	4	5	6	
Number of players (%)	7 (11%)	18 (29%)	18 (29%)	11 (17%)	9 (14%)	63

**Table 9** Effectiveness of game results

Score	N	Min	Max	$\mu$	$\sigma$	Statistics (Std. error)		KS test Sig.
						Skewness	Kurtosis	
The first attempt	63	8	15	11.68	2.206	0.092 (0.302)	-1.19 (0.505)	<0.001
The last attempt	63	15	26	23.24	3.083	-0.848 (0.302)	-0.31 (0.595)	<0.001

**Table 10** Significance of the difference in points earned in the game by the participants

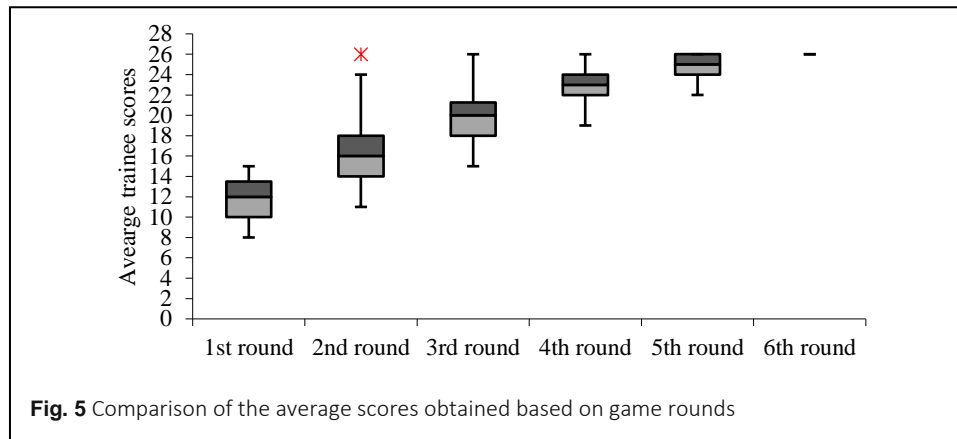
Score	Paired difference		Std. Error Mean	t	df	Sig.
	$\mu_d$ (CI %95)	$\sigma_d$				
The first attempt- The last attempt	-11.566 (-12.361, -10.750)	3.197	0.0403	-28.692	62	<0.001

the principles of in-store assortment among the distribution staff, the average score of trainees in the first round of the game has been compared with the average score of them in the final round. In this regard, first, the normality of the data was checked by the Kolmogorov-Smirnov test and in the 95% confidence interval, and the normality of the data was confirmed (Sig. <0.01). The results and descriptive data of this step are shown in Table 9.

By performing a paired sample T-test, the significant difference in first and last-round scores was examined. The test results have been presented in Table 10.

As observed in Table 10, there is a significant difference between the scores of the first and last rounds of the participants in this training (Sig. <0.001). So that the average score of the trainees in the first round of the game was 11.68 out of 26 (44.9%), while with the efforts of people in the period of 2 to 6 rounds, their average score has been reached to 23.24 (89.4%) as shown in Figure 5.

By comparing points in the game stages (Figure 5), it is concluded that with the repetition of the game by the participants, the dispersion of data has decreased. For instance, in the sixth round of the game, all the data of the upper whisker and lower whisker difference has become zero, which practically shows the convergence of the data (responses).



## Conclusions and recommendations

### Results and discussion

This study was designed and implemented to train the principles of in-store assortment to the distribution workforce of FMCGs' companies by using gamification. The behavior of domestic consumers was also determined, which showed that the Iranian consumer has many behavioral factors similar to the findings of foreign studies mentioned in Table 4. However, it seems that the Iranian customer has a behavioral difference from the findings of other studies in some factors of the assortment of the refrigerator. A noteworthy point in this section is the difference between field findings and the background of foreign studies in some factors. Therefore, this should be seriously considered in the design of training and empowerment courses, especially in areas where behavioral expectations and preferences are taken into account, and mere adaptation from predominantly non-indigenous sources can deviate from the long-term training effectiveness.

The engagement of distributors in the game was fully observed and consistent with Xi and Hamari's findings and Lone et al. (2018). This level of engagement is due to the interaction between users, which yields higher feelings of freedom and involvement in the gamified system (Xi & Hamari, 2021). The distributors are known as one of the organizational groups that show less engagement and motivation than other occupations in traditional training courses due to the time pressure of FMCGs distribution and sometimes the floating employment relationship. However, the successful gamification experience of this research in training the distribution manpower can be a base for designing other training workshops. In addition to engagement, the instant effectiveness of gamification is another result of this study, which is consistent with Sailer and Homner (2020) findings.

### **Applied implications**

Based on the results of this research, we can advise the HR managers of organizations to hope for positive results and effectiveness by introducing new methods such as gamification into the field of education. On the other hand, by implementing these methods, the efficiency of such training can be improved while spending fewer resources (without physical classrooms and equipment) and allowing to receive educational content in a more flexible time. Besides, HR managers, educational institutions, and all involved in the design and implementation of in-service training are recommended to follow the proposed methodology.

### **Limitations**

This research, like other social science studies, has faced limitations. Given the time of the game on a working day, the participants were busy with their daily tasks, which may have affected their accuracy and, as a result, the responses they submitted. Another point to pay attention to is the variety and difference in stores. What has been presented in this study as educational research is based on the standard and ideal mode, and the results may be somewhat different from reality. It should not be overlooked that the issue of assortment is vast and complex, and its comprehensive and complete training in the form of a game does not cover the organization's primary goals.

On the other hand, it seems that the personality and behavioral characteristics of the participants may be effective in their motivation and learning, which has been ignored due to administrative limitations. However, today it is common to use smartphones and apps installed on them, but the difference in the participants' skills in working with the software and game may have affected the results. On the other hand, the impossibility of running the game in a controlled environment to avoid engagement in answering (although consultation and getting help in learning is effective) has been another limitation of the research.

### **Ethical considerations**

Some researchers were concerned that replacing incentives with explicit rewards may reduce work motivation in the long run. In addition, some claim that gamification can trivialize serious issues, reinforce the wrong mindset and again contaminate motivation (Korn & Schmidt, 2015). Besides, if gamification is used to conceal a user's performance monitoring, its use must be considered unethical.

### **Limitations and future trends**

The present study used the game in offline mode. It is recommended to use the online game to increase the excitement of the game, increase the speed of data collection, and increase

the sense of competition among the participants. In addition, researchers are advised to study gamification and its relationship to knowledge management in the assortment. This way, people's experiences can be collected and published through games. Moreover, considering the effect of demographic and psychological characteristics and their effect on learning, the impact of these two variables on learning in-game environments could be a basis for future research. To analyze the learning process more deeply, more advanced statistical techniques can be used to evaluate the immediate and long-term effects of the process. It is also possible to use experimental and control groups and pre- and post-tests to evaluate the effectiveness of gamification in education.

## Contribution

This study implemented gamification in a training course at the business level and is based on a combined method and in this sense, it has a contribution in providing the practical model of gamification in practice. In addition, the content design of the game is based on up-to-date and purposeful scans.

## Abbreviations

FMCg: Fast-Moving Consumer Goods; HR: Human Resources; PGD: Persuasive Game Design; MDA: Mechanics, Dynamics, and Aesthetics; IMI: Intrinsic Motivation Inventory; SLR: Systematic Literature Review; PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

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## Authors' contributions

The authors are responsible for the whole manuscript. The authors read and approved the final manuscript.

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## Declarations

## Competing interests

The authors declare that they have no competing interests.

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