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Identifying and Modeling Factors Affecting Success or Failure of Gamification in Organizational Training

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Abstract

Purpose: The importance of training in organizations cannot be overlooked. This has motivated organizational decision-makers to look for new ways of achieving proper training in order to reach their organizational goals. Nowadays, one of the new approaches to realize the training and gaining an effective output is gamification. Many factors can influence the use of this new approach to organizational training. Therefore, the present research seeks to identify and model the factors affecting the success and failure of gamification in organizational training. Method: Accordingly, a qualitative research method is used in this research. Also, three processes are conducted to collect the data needed to answer the research question.Findings: In the first step, a semi-structured interview is used to identify the factors affecting the gamification of organizational training. In the second step, the Interactive Management (IM) method is used to identify and extract the most important factors among the identified factors of the previous

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step.Conclusion: Finally, Interpretive Structural Modelling (ISM) software was used to model the factors and determine the causal relationships among them. The results demonstrate seven important factors: staff demographic characteristics, availability of infrastructure and facilities, staff information literacy, staff attitudes toward gamification, management attitudes towards gamification, gradual inclusion of gamification in the training process, and rich (learning) content.

Keywords: Gamification, Organizational training, Interactive management.

Introduction

Todays' organizations valorize training (Murray & Donegan, 2003; Yeo, 2003; Chow and Tsui, 2017; Lau, McLean, Hsu & Lien, 2017; Hanaysha, 2016), and know it as a key to their success in achieving their goals (Serrat, 2017). Perhaps, this over-emphasis on training comes from its advantages for organization and its resources. As an example, proper training can lead to development, innovation, and consequently the improvement of organizational performance (Lau et al., 2017; Hanaysha, 2016; Chow & Tsui, 2017). As long as staff are willing to learn, an organization has flexibility in environmental changes and can continue performing in a competitive world (Elkjaer, 2018; Scaringella & Burtschell, 2017). Besides, as much as the workforce of an organization learns faster than its rivals, its superiority to (Koohborfardhaghighi, Lee & Kim, 2017) its competitors would be guaranteed (Chow & Tsui, 2017; Serrat, 2017; Jerez-Gómez, Céspedes-Lorente & Valle-Cabrera, 2005).

Yet, training in organizations has also challenged besides advantages. Some of these challenges refer to "motivation" and "engagement" (Scaringella & Burtschell, 2017). Studies show that staff have lack of motivation and inclination to either participate in a training course or to engage in a training process in spite of their participation. With the advent of new information and communication technologies, the challenge of motivation and engagement in traditional training methods has become more problematic (Vaibhav & Gupta, 2014). Recently in organizations, staff use digital applications that speed up their works, and provide immediate feedback to their performance (Morey, Gammack & Thornquist, 2016; Veltsos, 2017). That is why organizations have to use new trends in training processes.

Gamification is one of the new and technological approaches for training. This approach has proved its effectiveness in increasing motivation, engagement, learning, and social interactions in different fields of studies including healthcare, business and marketing, military, and education (Hamari, Koivisto, & Sarsa, 2014; Zhang and et.al., 2016; Baker, Wentz & Woods, 2009; Stanculescu, Bozzon, Sips & Houben, 2016; Meske, Brockmann, Wilms & Stieglitz, 2016). The most general definition of gamification is "the use of game design elements in non-game contexts" (Deterdingand et.al., 2011). That means gamification is the process of using game thinking and

mechanics -entering game elements into routine and dull activities- in order to turn boring activities into entertaining ones. Therefore, it helps resolve problems and engage users with the system (Zicherman, 2011). Moreover, other researchers extend Deterding's definition of training context. According to their definition, gamification is a way to use the elements of a or the game in an educational environment to reduce or solve the challenge of unengaged and reluctant learners (Dichev & Dicheva, 2017; de-Marcos, Garcia-Lopez & Garcia-Cabot, 2016). As it is understood from definitions, the goal of gamification is to improve an activity so as to make a funny experience and lead to desirable user behavior (Kim & Werbach, 2016). Thus, gamification can be an approach to increase user interaction (Hamari, 2013), and a solution to organizational challenges (Stanculescu and et al., 2016).

Some research done in this field shows that gamification has significant effects on different aspects of training process, including the number of course participants, the number of hours learners engaged in training activities, the quality of assignments and amount of content learning, as well as satisfaction and pleasure level from participating in the training course (Pineda-Corcho & Moreno-Cadavid, 2017; Barata, Gama, Jorge & Gonçalves, 2016; Yumang and et.al., 2016; Barna & Fodor, 2017). For instance, researches of Stanculescu et al., (2016), and Elm and et.al (2016) are examples of gamification with the purpose of knowledge management in organizations, all of which show a significant turnover of information among staff. Furthermore, creativity is one of the things that can be grown by gamification in organizations (Kumar & Raghavendran, 2015). People seem to offer creative solutions in a game environment more easily (Kapp, 2012).

As can be seen, gamification can bring many advantages to organizations and staff. But the question is which factors can make these advantages possible, and affect the success or failure of gamification in a training process. In other words, what are the factors that contribute to realize these advantages and reduce the challenges? The present research seeks to answer this question by identifying and modeling factors affecting success and failure of gamification in the training process.

Related Works

Despite the fact that gamification is a relatively new concept in the field of education, many studies have been done about it. For example, Vaibhav and Gupta in 2014 conducted an online language training course for two distinct groups. During this course, the control group spent the course in a traditional way while the experimental group spent a gamified one. The researchers' goal of conducting this experiment was to increase the durability and engagement of learners throughout the course. The results of this study show that if the learning process is gamified, the number of learners involved in the learning process will increase substantially. In this study, 79% of the participants in the experimental group experienced an improvement in their learning(Vaibhav and Gupta ,2014).

Similar to the research done by Vaibhav and Gupta, Fresno and et.al in 2017 gamified a parallel programming course to improve both engagement and learning. Hence, they developed software called "Tablón". Parallel programming is defined as “using two or more devices at the same time for carrying out the computations required to solve a problem”. This software was used by students for one academic year. The data obtained from the gamified software and the questionnaire show that gamification has increased engagement (even during off-course periods), competition, and trying to improve. Besides, users' opinions about the course were quite satisfactory (Fresno and et.al in 2017).

Also, Landers and Armstrong in 2015 tried to examine the effectiveness of gamification in various outcomes influenced by a training course, including the participants' response to the course, the level of learning, participants’ behavioral changes, and organizational outcomes. In this research, two courses (traditional vs. gamified) were presented to undergraduate students. They believe that for the success of gamification, the attitude and experiences of participants must be evaluated before the course is started. If the participant’s attitude is positive before using a gamified course, the change from a traditional educational approach to a gamified approach will be more successful. The result of the survey shows that the participants got more willingness and learning capacity in a gamified training course in comparison with a traditional one(Landers and Armstrong,2015).

Moreover, in 2017, Yildirim examines the effectiveness of gamification in the achievement of learners and their attitude towards

the lesson. To do this, he has used one gamified and one traditional course for students. This research used a qualitative method, as well as experimental design with pre-test and post-test and control group. Following the results of this study, the improvement of learners from pre-test to post-test in the experimental group was significantly more than the control group, and the experimental group had a more positive attitude toward the course compared to the control group. The results of this study also show that, although the participants welcomed the gamification method, gamification-based educational methods do not make differences in the viewpoints of students about the importance of the lesson. To summarize, the results of this research clearly show that the integration of gamification with training methods is highly recommended due to its dynamics (Yildirim ,2017).

Along with aforementioned studies, Fabricatore and López tried to increase the quality of learning experiences during a test in 2014. They investigated well-known games including Assassin's Creed II, Fable II, L. A. Noire, and identified the mechanics and patterns used in these games. Then, they implemented them in a training course for second and third year students. Students had to do the requested assignments. These assignments contained issues such as students' feelings, cognitive involvement and learning strategies, student behaviors to complete a level, level of communication perception and the difficulty of activities, as well as the level of understanding of progress and expertise. The result of this study shows that gamification has challenged learners and increased their motivation for complex and difficult activities. Besides, learners considered the process fun and challenging, and believed that gamification has improved their learning (Fabricatore and López, 2014).

In another study, Veltsos in 2017, gamified a business communication course aimed at increasing the engagement, motivation and autonomy of learners. One feature of this study is adding noise to the environment due to the fact that additional items, which distract the audience, is a significant part of the learning experience, and the learner must be able to focus on the main subject among sub-issues. Providing multiple paths and choices to create autonomy, and quick feedback to attract more engagement are other features of this research. In this research, learners were asked to play the role of trainee in business communication. All in all, the findings

show that gamification has succeeded in achieving research goals (Veltsos ,2017).

Schäfer also asked computer science students who were learning Scrum method to use Minecraft in two periods of training in 2017. The results of written evaluation after the course, besides oral test after the first round of software engineering, showed that game-based learning was motivating and helped participants to carry out their tasks in different fields in their project teams. At the end of the first round, learners stated that splitting a work into several tasks and assign them to group members and the communication between them was appropriately implemented during the course, and had a satisfactory outcome (Schäfer,2017).

In addition, Stansbury and Earnest carried out research on the impact of using game elements in training courses. Hence, they gamified an organizational psychology course in 2016 for undergraduate students. The main purpose of this study was to use meaningful gamification. In other words, ? goal was to put a or the users at the center of a meaningful learning experience, strengthen the relationship with real world issues and internal motivation. They wanted to take the user to a deeper level of thinking, resulting in long-term changes at behavior and internal motivation. In this research, a quantitative approach has been used and data have been analyzed at three levels of classroom, teamwork, and individual. According to the researchers, creating an active learning environment that enhances social collaboration through meaningful gamification would lead to a greater understanding of engagement, motivation and learning. The results of this study rejected the researchers' hypothesis that the participants in a gamified course would have higher educational output than the traditional one. However, learners who participated in the experimental group reported that the gamified course increased their motivation for learning compared to the traditional one (Stansbury and Earnest,2016).

With regard to the potential of gamification to increase motivation and engagement of learners in courses, organizations can also take the advantage of gamification in staff training.

As it is clear, the aforementioned studies investigated the effectiveness of gamification in training courses. In the following, some studies specifically identifying and examining the effective factors in gamification will be discussed. A research carried out by

Seaborn and Fels in 2015 in form of a systematic review of studies and researches in the field of interactive systems and human participation. The research shows that recently applied researchers suggest that the success of gamification highly depends on the internal motivation of individuals. According to the research, disregarding individual differences in internal motivation, as well as in designing goals and requirements and constraints are the challenges of gamification (Seaborn and Fels,2015).

Another study undertaken by Wilson, Calongne, and Henderson in 2015, looked at the results of two case studies which show a meaningful relationship between the user, game elements, and non-game tasks. Here relationship means the elements of game must be in line with the values, skills and motivational structure of an individual, in order to make an effective gamification design. The results of this research confirm findings of the previous study by adding that the best tasks for a gamified system are those which create inner value for the user. In addition, considering the motivational structure of people in the other two researches is also presented as a factor influencing gamification success (Wilson and et.al, 2015).

Scheiner, Haas, Bretschneider, Blohm & Leimeister conducted research in 2017 aimed at identifying the elements of effectiveness of gamification at Virtual Idea Communities (VIC). According to the results of this study, gamification of education faces challenges that can influence its effectiveness. One of these challenges happens when the content is not well integrated with the gamification process. Neglecting user's style and structure of motivation is the second factor in inhibiting the effectiveness of gamification in VIC, which has been mentioned in previous research as well. The reward system is another factor that can challenge gamification process. Following the results of this research, excessive emphasis on the reward system may lead to neglect of the main goal. The last challenge that can negatively affect gamification is the "Over-justification" effect. That is, overemphasis on extrinsic motivations has a negative impact on the user's intrinsic motivations (Scheiner and et.al , 2017).

Also, Chee and Wong in 2017, similar to the research done by Scheiner et al., considered “too focus on points and badges”, besides “aimless use of them”, as factors that led to the failure of gamification. Additionally, according to the two researchers, overemphasis on simplification of gamification design makes the designer ignore

feelings, emotions and experience of the game. Using external rewards instead of internal incentives is also a challenge that reduces intrinsic motivation. Furthermore, learning content can be a limiting factor restricting development and design of gamification. Like other researches, designers have to pay attention to user (‘s personality, desires, etc.) otherwise, the implementation will fail (Chee and Wong, 2017).

The importance of "content" and its integration with gamification is mentioned not only in research of Chee and Wong, but also in research of Schuldt and Friedemann in 2017. Their study also considers ignoring content as a gamification challenge. According to the researchers, this lack of integrity occurs since missions defined for users are not relevant to the content, and a user can level up without doing anything or earning a skill. Another example of this challenge is when learning is used as a punishment in the game (Schuldt and Friedemann, 2017). In such a way that a player fails or cannot get enough scores, he/she will be asked to solve a mathematical problem in order to compensate for the failure. This research, like the previous one, considers overemphasis on the points and reward system as one of challenges of gamification. According to the researchers, just adding points and badges avoid gamification design having positive effects. Besides, gamification should be appropriate and relevant to the organizational processes and structure. A closer look at the structure of the organization can show whether or not the hierarchy is flexible enough to be able to use gamification. This study also pointed out two other challenges in completing the results of the previous study, which have a deterrent role in the effectiveness of gamification. One is an incomplete implementation of gamification, and the other is imposing a gamification approach to people who are not enjoying games and are forced to interact with the elements of the game, which will ultimately have a negative impact on them (Heilbrunn & Herzig, 2016).

Moreover, Kim and Werbach in 2016 have looked at the factors influencing gamification from a different perspective, and considered ethical issues as obstacles to gamification effectiveness. Researchers categorized ethical issues into four categories: exploitation, manipulation, physical and psychological harm. Exploitation refers to a design with purpose of encouraging an employee to do more for the organization, without earning achievement. Manipulation means

violating individuals' autonomy by influencing their behavior. This means that the design is done in such a way that users do more than they need or do something unusual, unconsciously, while organization benefits from this. Harms also refers to a design which results in harm to the body or psyche, and negative effects on people(Kim and Werbach, 2016).

Increasing motivation and engagement of learners in the training process is the most important and common positive effect of gamification in training. From the perspective of previous research, lack of content integration with the system, overemphasis on the reward system and extrinsic motivation have also played a major role in preventing success of gamification. Seeing two sides of gamification (disadvantages vs. advantages) gives a comprehensive look to researches to conduct more accurate and innovative research, as well as decision makers and investors to implement this approach more effectively in the training process(Kumar, 2013; Perryer and et.al , 2016).

A thoughtful look into the aforesaid results indicates a number of major deficiencies in the studies related to the identification of factors affecting success and failure of gamification in training. First, among the many studies that have been done in the field of gamification, few have identified effective factors that contribute to the success or failure of gamification (Buckley and et.al, 2016). Second, many previous researchers have gathered their data using a quantitative approach (particularly experimental), and none of researchers use qualitative methods to answer the research questions. Third, none of the previous researchers has provided a model for identifying the significance and causal relationships of factors affecting success or failure of gamification. The present research seeks to take into account the research gap and identifies these factors in organizational training through applying a range of qualitative phenomenological methods - using semi-structured interviews, interactive management method, and interpretive structural modeling software- that will be described in the methodology section. These research methodologies allow further understanding of the nature and importance of these factors.

Research Method

In this research, two exploratory qualitative methods including phenomenology and interactive management (IM) have been used.

According to research purposes that investigate the participants' both knowledge and experience, phenomenology approach is used to identify the initial factors of the proposed model. For this reason, a semi-structured interview is also used since it provides a tool for collecting valuable information when there are few participants (Pathak & Intratat, 2012). Subsequently, IM and ISM were used as a suitable method for studying complex issues and determining the relationship between them, as well as the appropriate method for consensus among experts' point of view. IM refers to a specialized management system for defining and solving complex problems using the workgroup (Alexander, 2002).

Data Gathering

In the first phase, a semi-structured interview was used to identify the effective factors in the success/failure of gamification in organizational training. At this step, after reviewing the theoretical literature, a number of gamification and training experts were selected to conduct the interview. Purposive sampling was used to select the participants for interview. To this end, the participants were selected based on their knowledge and experience in gamification as well as organizational processes. The participants in this study were professors and practitioners in the field of gamification and organizational training, who have close experience in gamification, gamification in training, and organizational training.

The STAR[1] and 5W1H[2] models were used to organize the researchers' thoughts and formulate interview questions. In order to evaluate its validity, an interview was used as pre-test. Also, during the interviews, corrections were made on steps which needed modifications. In order to ensure the reliability of interviews, interviews and categories were sent to other experts. Interviews continued until the theoretical saturation werereached.

In second phase of data gathering for final selection of effective factors in the success/failure of gamification in organizational training, idea writing as well as ISM has been used to determine relationship between factors. In other words, after conducting the

1. Situation-Task-Action- Result
2. Five Ws (Who-What-Where-When-Why) and One H (How)

interviews, in order to review the opinions of experts, an IM session was held to allow experts to present their ideas about each of the factors identified in the previous phase. There were five training/gamification experts or both. Interpretative Structural Modeling is a methodology for identifying and summarizing relationships among the factors, and helps sort them (Singh, Shanka, Narain, & Agarwal, 2003). The interpretation of this method is due to the opinions of the attendees in the meeting and the relationship between the factors. It is also structured since it provides a general structure of a complex set of factors based on relationships. In addition, this is a modeling method because relations and general structures are plotted in the form of a model (Singh & Kant, 2007).

Data Analysis

To analyze data, the researchers first prepared data for analysis. Subsequently, with a general view of it, original thoughts and notes were written down on the margin of the text. The analysis and interpretation of the findings were also done based on Strauss and Corbin's codification (Strauss & Corbin, 1990), and the extraction of concepts was carried out in this way. The researchers extracted key points of the interview texts, and assigned a suitable concept to each one. Then, the concepts with common meaning were categorized as major factors. Besides, since the qualitative analysis of data is an interpretative process which may reflect the researchers' viewpoints, get feedback from colleagues for validating the findings.

Then, in the IM session, a list of affecting factors on success/failure of gamification in organizational training (extracted from interviews) was presented to the participants, and they were asked to identify the most important one based on their knowledge and experience. At this step, the experts were allowed to add items outside the list or modify them. In the end, after four rounds of discussions, fourteen factors were identified by the experts and finally, seven were finalized after the vote.

Lastly, the relationship between selected factors was determined through the ISM software. To this end, by entering information into the software and asking questions by it, the experts at the session discussed the significant effects of each of the identified factors on the other factor in a matrix process according to their experiences. Software questions are short and about one-sided effect of factors on

each other. After one-sided analysis of the significant effects of factors on each other singly, the causal relationship network between selected factors was drawn up by the ISM software. An example of these questions is: "Does staff information literacy have a significant impact on gradual inclusion of gamification?". The participants at the session reached a consensus after discussing this question and chose one answer between "yes" and "no".

Findings

The findings of this research are presented in three sections as follows: 1. Identification of factors affecting success/failure of gamification (findings from the interviews) 2. Final selection of factors affecting success/failure of gamification in organizational training 3. Identification of the relationship between the factors and their importance. The following is a description of each of the aforementioned sections.

1. Identifying the factors affecting Success/Failure of Gamification in Organizational Training

In order to identify factors affecting the success/failure of gamification, four steps were taken as follows: First, the audio of interviews were converted into text form. In the second step, the verbal evidence of research question was extracted from the transcribed text. In the third step, 26 initial concepts were extracted based on the verbal evidence and in the final step, ten major factors were categorized from initial concepts. Table 1 shows an example of verbal evidence and conceptualization:

Table 1. Example of verbal evidence and conceptualization (source: authors)

Verbal Evidence	Conceptualization
i8: One thing brought up at first is what kind of person the staff is. If they are grown men, you may not use gamification obviously, e.g. "Hooray! You became our commander" and so on. This has a totally opposite result and the user will be bored.	Understanding the characteristics of Users
i8: There is an issue that should be considered in organizational training. The problem is employees who do not have the same academic degree or experience. It would be hard to set up difficulty in a way that all employees experience the flow.	
i11: Attention to the staff of the organization (who want to be trained): - Their gaming history - Their concerns - Whether they play games or not - Their technological background (technology and systems they usually deal with)	- Considering technological background of users - Access to recent technologies - Paying attention to gaming history
i8: The budget is also important. It's very important that how much an organization can afford for this educational facility.	Financial support of the project
i2: Another way is soothing. Before the game takes place and the person feels that he is in minority, it is justified that this game is not supposed to take his career neither reduce his salary. It's not going to fire someone. Make some relief that no one feels failure in this gamification process.	Justifying employees about what gamification is
i3: Another issue is the fear of being observed. Their behavior is monitored and their performance is measured. They may be afraid of it, but this concern can be reduced by teaching or explaining that it is good for them.	
i6: If you enter gamification in form of performance evaluation, and do not reduce someone's salary, use it as a motivational tool to improve your organization. Gamification is like performance evaluation, but more fun. **i6:** It can cause problems if it is not designed simple enough, insults/humiliates someone, reduces salaries, or disorganize organizational chart.	

In the third step, identified concepts were categorized into major factors based on their conceptual relationship with each other. An example of categorization is listed in Table 2.

Table 2. Examples of factors extracted from concepts (source: authors)

Concepts	Major factors
Paying attention to gaming history	Staff Demographic Characteristics
Understanding the characteristics of users	
Regarding technological background of users	Staff information literacy
Access to recent technologies	
Comforting staff	Staff attitudes toward gamification
Justifying employees about what gamification is	
Justifying executives/senior managers to accept gamification implementation in the organization	Management attitudes toward gamification
financial support of the project	

As a result of the three steps mentioned above, ten effective factors in success/failure of gamification of organizational training were identified. These ten factors include: staff demographic characteristics, staff information literacy, staff attitudes toward gamification, management attitudes toward gamification, gradual inclusion of gamification in the training process, rich (learning) content, considering all training processes, the readiness of organization to accept gamification, the proper design and implementation of gamification, and the consistency of gamification approach with the organization's training goals.

2. The final selection of factors affecting the success/failure of gamification in organizational training

To select the most important factors in the success/failure of gamification in training, an IM session was held with experts and practitioners. At the session, the participants received a list of identified factors with each definition shown in Table 3, and were asked to present their ideas about identified factors based on their

experiences. It should be noted that at this step, the experts were allowed to add items out of the list or to combine and change them.

Table 2. Factors affecting success/failure of gamification in organizational training and definition of each (source: authors)

Effective factors	Definition
Staff Demographic Characteristics	Age, gender, education, region
Staff information literacy	Information literacy is related to literacy in technology and how to find information on web, as well as computer literacy which means how to work with computer. In other words, how familiar a person is with recent technologies.
Rich (learning) content	Content is more important than gamification and game elements, and in education more attention should be paid to educational content.
Considering all training processes	Gamification should not be used as an add-on to part of a process. And, designers have to merge and integrate it into the whole process. It means, for example in educational process, process of training, feedback, evaluation, etc., all of which must be covered in gamification.
Gradual inclusion of gamification in training process	It means staff is better to get gamified training gradually and not at once.
Staff attitudes toward gamification	Attitude refers to the mental image of staff from gamification. We also put the idea of gamification in a tangible context to give users an understanding of the elements of the game elements in education.
Management attitudes toward gamification	If decision makers of the organization have a positive view of gamification, they will support the project and provide funds and facilities.
The proper design and implementation of gamification	Culture includes the set of ideas, values, organizational procedures, common language, formal and informal interactions of employees, and the organization's learning styles.
Consistency of gamification approach with the organization's training goals	It points out that gamification is a good way to achieve the educational goals of the organization. The realization of this requires attention to the goals of organization and full understanding of the problem.
Readiness of organization to accept gamification	The organization must be prepared to accept the gamification approach in terms of structure, culture and facilities.

In this way, based on the IM methodology, the attendees at the session chose the factors that they consider to be the most important one in the success/failure of gamification in organizational training during four rounds. Experts at the session, while surveying these factors, defined each of them individually and expressed the reasons why they are most important. After completing these four rounds, the experts selected five factors which were the most important in the success/failure of gamification in organizational training. The factors selected by experts (during the four rounds of discussions), along with the number of votes are presented in Table 4.

Table 3. Final list of the most important factors affecting success/failure of gamification in the organizational training (source: authors)

Selected factors	Number of votes
Knowledge and awareness of staff about training based on gamification	0
Consistency of gamification approach with the organization's training goals	1
Feeling the need for change	0
Rich (learning) content	3
Keeping face-to-face interactions	0
Staff demographic characteristics	5
Staff attitudes toward gamification	4
Management attitudes toward gamification	3
Gradual inclusion of gamification in the training process	2
Staff information literacy	2
Considering organizational culture	0
Staff learning style	0
Availability of infrastructure and facilities	4
Considering the viewpoint of organization educationalist	1

As noted in Table 4, factors with two and more votes have been selected as the most important factors in the success/failure of gamification in organizational training. These factors include: rich (learning) content, staff demographic characteristics, staff attitudes

toward gamification, management attitudes toward gamification, gradual inclusion of gamification in the training process, staff information literacy, and availability of infrastructure and facilities. The definitions of each of these factors and reason of their importance are explained below.

1. Rich (learning) content

In a book entitled "Gamify Your Classroom", Farber points out the importance of learning content in the development of a training course in an interview with Mr. Bartle. In this book, Bartle says: To gamify a course, you must first make sure that the content is deeply understood (Farber, 2016). Moreover, in Bartle confirmation, one of the experts of our research emphasized on the famous statement "Content Is King", from Craig's (Craig, 2013) book. According to her statements about importance of learning content, no educational method produces a satisfactory result without proper consideration and codification of the content. Also, according to the viewpoints of other participants in the session, it should be ensured that gamifying a course would not cause to ignore the content.

> "We gamify a course. Now only a fun happens and the essence of the content is lost. We have to keep in mind that if we are gamifying a process, even if our learner does not notice- thinks he is playing-, but at the same time he learns. It is very important what content is arranged in this process."

2. Staff demographic characteristics

According to the experts attended the session, demographic characteristics refers to the personal characteristics of individuals including age, gender, personality, which should be fully taken into account in the design of a training course. One of the experts has explained the importance of this factor:

> "It is important to consider the age group of your employees is, their gender, and their specialties. In addition to the demographics characteristics, features related to learning style, such as verbal abilities, introversion / extraversion, personality type in general,

> may be effective. I think these features affect the design process."

3. Staff attitudes toward gamification

As noted in the literature review, Landers and Armstrong pointed out the importance of employees' attitudes toward gamification. That is, gamification will not be successful, and staff will resist it if attitudes are negative (Landers and Armstrong, 2015). In other words, staff should not be afraid of performing gamification in the organization (such as fear of losing work and punishment). One of the experts said about the significance of this factor:

> "Our target is the employees. We can consider two situations: a. If the attitude of the staff is positive, we do not see any resistance from them; 2. If they have negative attitude and feel that the gamification or change that has been occurred makes them to be observed, be controlled, feel that they are being abused, forcing them to be punished or lose their jobs, or whatever makes this negative attitude. We must have an estimate of the audience, be aware of it"

4. Management attitudes toward gamification

The attendees at the session agreed that a project in the organization could be implemented only when the decision makers of the organization agree with the new process. Due to the essence of gamification, which in the first place may be unfamiliar to the organization and its staff, gamification cannot enter the organization if the decision makers in the organization do not accept it. One of the experts explained the importance of this factor as follows:

> "I think that if he (the decision maker) had negative attitude, he would not support the project at all. And considering any project, no projects can be run properly unless we have manager's support."

5. Gradual inclusion of gamification in the training process

According to attendees at the session, as in the cognitive or social learning theory is mentioned, learning should go step by step. This theory was introduced by Albert Bandura in the late 1970s. In the theory of social learning, the process of learning takes place by observing each other's behavior in a social environment. In fact, social learning theory is based on the hypothesis that observations and imitations lead to learning behavior (Kapp, 2012). Experts at the session also believed that the adoption of gamification approach in training is better to be done step-by-step. Based on this theory, it is necessary to learn content in a few steps rather than at once. About gamification, as learners get to know new and different elements, the simultaneous integration of all elements in the learning process may confuse the learners. One of the experts argues about this factor:

> "Gamification is a change that cannot appear out of blue. It is necessary to enter in the training process gradually in order to create a positive attitude as well. Then we can achieve what we want to reach."

6. Staff information literacy

The United States National Forum defines information literacy as "... the hyper ability to know when there is a need for information, to be able to identify, locate, evaluate, and effectively use that information for the issue or problem at hand." (2012). Based on the consensus among the experts at the session, the weakness in information literacy, or the lack of knowledge and skills of learners in using and interacting with recent technologies, can be a source of fear of accepting those technologies. This fear will also appear as an obstacle to admission. The gamification does not differ in this case, too. One of the experts said:

> "Fears of technology acceptance neutralize interaction with technology. In other words, if I have high level of information literacy, I will not be afraid of using technology. But, if my information literacy is little, I may consider gamification as a very big and unsolvable matter and be afraid to get close to it. Knowledge is power."

7. Availability of infrastructure and facilities

Each project needs some facilities for its implementation. Perhaps one of the reasons for the importance of management attitudes to the success/failure of gamification is the financial support and the provision of the facilities and infrastructure. The gamification approach, due to its novelty, also needs proper facilities especially in the field of education. One of the experts at the session explained the importance of this factor referring to one of her personal experiences:

> "One example is the school principal who asks teachers to use cooperative learning, while there is neither large room, nor facilities. You do not provide anything, and you expect them to use cooperative learning. When the facilities are not provided, we cannot work with nothing"

After identifying and extracting the most important factors, it is time to identify causal relationships between them. This means, at this step it can be determined which factors affect others or be affected by others. To find the causal relationships of the abovementioned factors, they first entered the ISM software. Then, the relationships between those factors were extracted using the experts' opinions in the IM session and the software step by step. Figure 1 shows the causal relationship between the most important factors affecting success and failure of gamification in the training process in organizations.

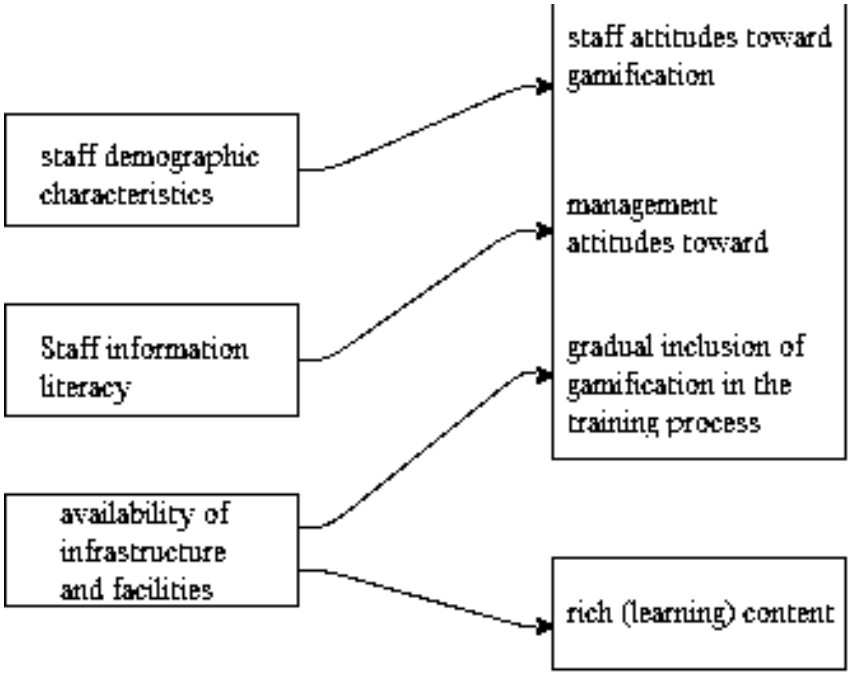

Figure 1. Causal relationship network of the most important factors affecting success/failure of gamification of training courses in the organization

As it is shown in Figure 1, the factors on the left side of the model have significant effects on each of the factors on their right side. The arrow marks show direction of these effects. It should be noted that the existence of two or more motivational factors in a rectangle indicates the interactive and two-sided relation between them. Accordingly, "availability of infrastructure and facilities" has the highest impact on other factors, so that the four factors (staff attitudes toward gamification, management attitudes toward gamification, gradual inclusion of gamification in the training process, and rich learning content) are directly affected by this one. Next, "staff information literacy" and "staff demographic characteristics" have a significant effect on the factors at the next column of the model (staff attitudes toward gamification, management attitudes toward gamification, gradual inclusion of gamification in the training process). Finally, factors such as "staff attitudes toward gamification", "management attitudes toward gamification" and "gradual inclusion of

gamification in the training process" have a reciprocal effect on each other.

3. Determining the importance and prioritizing the factors affecting success/failure of gamification in organizational training

Taking aforesaid steps helped to understand the causal relationships affecting factors on success/failure of gamification in organizational training. However, it remains unclear which factor is more important. To determine the significance of these factors, the following formula presented by the interactive management method was used (Rezaei-Zadeh, Hogan, O'Reilly, Cleary & Murphy, 2014):

> Importance of factor = the number of its votes+ the level score in the model + the number of factors affected by it

The number of votes is available in table 5. Also, level score of the model and number of factors affected by it can be deduced from Fig. 1. The level score is in a way that the most effective factor is placed at the highest level. To calculate the level score, look at Figure 1 to see what level is assigned to each factor. The level score starts with one and rises from right side of model towards the left side. For example, in this study, given the fact that the factors are in total two levels, "staff demographic characteristics", "staff information literacy" and “availability of infrastructure and facilities" are at Level 2 and other factors are at Level 1. To calculate the "number of affected factors", we also look at Figure 1 and count the factors influenced by the intended factor. For example, four factors are affected by "availability of infrastructure and facilities". Table 5 shows the importance of each factor, from the most to the least significant, respectively.

Table 4. Calculating the importance of factors affecting success/failure of gamification in training process (source: authors)

Factor	Importance
Staff demographic characteristics	5+2+3=10
Availability of infrastructure and facilities	4+2+4=10
Staff information literacy	3+2+2=7
Staff attitudes toward gamification	2+1+4=7
Management attitudes toward gamification	2+1+3=6
Gradual inclusion of gamification in training process	2+1+2=5
Rich (learning) content	0+1+3=4

As it is shown in Table 5, two factors "staff demographic characteristics" and "availability of infrastructure and facilities" are the most important and effective factors that influence the success/failure of the implementing gamification in organizational training. Then, "staff information literacy" and "staff attitudes toward gamification" are of higher importance although they are at different levels and one is affected by another. This confirms that Figure 1 cannot indicate whether a factor is more important or not alone. Also, rich content is a less important factor among the seven ones.

Discussion and Conclusion

In this research, seven factors which have the most impact on the success/failure of gamification in organizational training have been identified. Based on the findings of this study, "staff demographic characteristics", "availability of infrastructure and facilities", "staff information literacy", "staff attitudes toward gamification", "management attitudes toward gamification", "gradual inclusion of gamification in the training process" and "rich (learning) content" are most important factors in the success/failure of gamification in organizational training. Furthermore, among these seven factors, according to the formula mentioned in the previous sections, "staff demographic features" and "availability of infrastructure and facilities" are the most important ones, while "rich (learning) content" is the least important factor. Farber, 2015; Kumar; 2013; Van Bree; 2011; Kappen and Nacke; 2013; Heilbrunn & Herzig; 2016; Perryer, Celestine, Scott-Ladd & Leighton 2016; Stanculescu et al. 2016; Buckley, Doyle & O'Mahoney, 2016 have emphasized the importance of "staff demographic characteristics" as well.

To support "rich (learning) content", Hamari, Koivisto, & Sarsa, 2014; Seaborn & Fels, 2015; Farber, 2015, believe that in gamification design content should be fully understood and considered, since a gamification design may be inappropriate for a particular course and have opposite effect. Also, neglecting the content may result in low learning efficiency. Despite the fact that the abovementioned studies emphasize the importance of learning content in gamification process, this factor is known as the least important one in the present study. One possible cause for this is that in the present research, attention and focus is mostly on the prerequisite factors of implementing gamification for organizational training that somehow

were identified before designing the course. Perhaps, the result might be different if the research studied the process of gamifying an organizational training course – simultaneous with implementation or after that. A quick review of researches which point out content as a major challenge indicates that these studies identified gamification challenges in the design and implementation process.

Staff and management attitudes toward gamification are mentioned less than previous ones. Some research also emphasize the importance of management and staff attitudes, and believe that managers and staff should have right understanding of gamification to make this process done successfully (for example, see Sarangi & Shah, 2015; Kumar, 2013). To the extent that the researchers studied, gradual inclusion of gamification, and availability of infrastructure and facilities, which are important factors, have not been mentioned in previous studies and are the findings of this research. The lack of facilities and infrastructure for any project in the field of either education or non-education will prevent the project from being implemented and promoted. Also, this is not merely a matter of gamified training courses. In the opinion of the authors, perhaps this has led studies of gamification in training not to mention this factor particularly.

Thus, the first difference of present research with previous studies is that it has examined affecting factors on success and failure of gamification approach in the context of training in organizations. The findings will help organizational training specialists to identify factors influencing the successful use of gamification, and use this new approach in the training process more accurate and effective.

The second difference between the findings of the present research and other previous studies is that present study identified the importance and priority affecting factors on success and failure of adopting gamification in organizational training (using formula mentioned in the methodology section). Identifying the importance of the factors in general and identifying the importance of two factors "staff demographic characteristics" and "availability of infrastructure and facilities" in particular shows that one cannot expect the effectiveness of training if these two factors are not considered before other ones when using gamification in organizational training.

The third and the last difference is in identifying causal relationships among factors affecting success/failure of gamification in the organizational training. Identifying these relationships can also

show the effectiveness range of each factor, which means what a factor affects and what it is affected by. Attention to the effectiveness range of each factor (causal relationships) and its importance can play an important role in the success of gamification in organizational training.

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