Alena I. Morozova, Aleksandr G. Rozhkov

GAMIFICATION TOOLS AND PRACTICIES OF RUSSIAN COMPANIES

Alena I. Morozova[1], Aleksandr G. Rozhkov[2]

GAMIFICATION TOOLS AND PRACTICIES OF RUSSIAN COMPANIES[4]

In this paper we explore the concept of gamification and its business applications in the Russian companies. Gamification has been introduced in 2003 and since that time it has acquired a wide recognition as an efficient tool to enhance front-office and back-office business processes increasing performance and boosting engagement of the participants. Gamification refers to the use of game elements and designs in non-game environments. As a result customers and employees involved stay more focused and motivated to accomplish the chosen goal. We explore gamification practices of the Russian companies including application areas, funding and perceived efficiency of these initiatives. As the result we outline four groups of practices observed on the market.

---

[1] Herzen State Pedagogical University of Russia, senior PR manager, alena.vdzr@mail.ru
[2] National Research University Higher School of Economics, arozhkov@hse.ru

Gamification concept and applications

The concept of gamification was introduced by the English programmer and game designer Nick Peeling in 2003, in his framework for the creation of software with game elements [Werbach and Hunter, 2012]. Some researchers believe that gamification was first discussed in the 1980s in the studies of games' impact on learning and student motivation [Deterding et al., 2011]. The first international conference "Gamification Summit" was held in 2010 showing the growing interest and recognition both from the academic community and business. In 2011, the word "gamification" was included in the Oxford Dictionary that defines it as "the application of typical elements of game playing (e.g. point scoring, competition with others, and rules of play) to other areas of activity, typically as an online marketing technique to encourage engagement with a product or service". From 2011 on, gamification studies have been mainly focused on the practical application of this toolkit in particular areas that results in a growing number of papers in this field (Fig. 1). Overall over 3000 publications were made since 2011. As it was mentioned before, most of the articles focus on the gamification applications in different industries from computer interface to medicine and education.

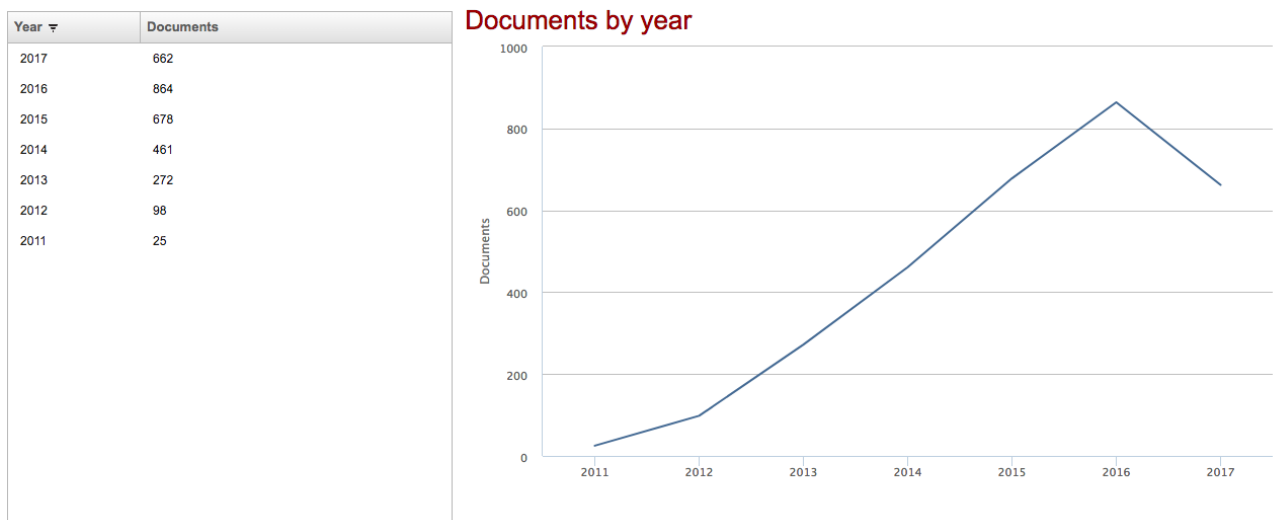| Year	Documents
2017	662
2016	864
2015	678
2014	461
2013	272
2012	98
2011	25

Documents by year

Fig. 1 - Publications on the topic of "gamification" in Scopus (Source: www.scopus.com)

Though the number of purely theoretical or conceptual papers has been low, there is a certain number of the definitions of gamification (Tab. 1).

Tab. 1. Gamification definitions

Year	Author	Definition	Business application
2011	Deterding S.	Use of game elements in non-game practice.	-
2011	Petkov P.	Persuasive technology that attempts to influence user behavior by activating individual motives via game-design elements	Consumer behavior research and adjustment
2011	Zichermann G.	The process of game thinking and game mechanics to engage users and solve problems.	Customer attraction and interaction, loyalty programs, behavioral economics
2012	Werbach K.	The use of game elements and game design techniques in non-game contexts.	Customer engagement, business tasks, motivation

The essence of gamification shared by all researchers is the use of game elements in the non-game environments. Another important aspect is the implementation of game mechanics that gives a process a certain structure necessary to achieve goals that are beyond the game plane [Deterding, 2011, p. 9]. In case of a wide-range implementation gamification can be considered a business strategy that enhances all business processes of the company [Zekermann, 2014, p. 63]. Overall the number gamification business applications is quite extensive including customer value creation [Huotari and Hamari, 2012], workplace engagement [Werbach, 2012], online user experience [Anderson and Rainie, 2012] and loyalty programs [Zichermann, 2011].

Gamification tools and mechanisms and implementation

Gamification tools and mechanisms belong to the three levels: game dynamics, game mechanics and game aesthetics [Werbach, 2012].

Game dynamics describes the processes occurring in the game over time, namely: how the role of the participant changes in the game, what are the short-term and long-term gamification goals. In order to manage game dynamics designers use a set various restrictions, create a story plot, design progress line and participant relations. Game dynamics elements are necessary to give the general framework of the system and blueprint overall process.

Game mechanics refers to a set of mechanisms, rules, elements that allow implementing the dynamics and aesthetics of the game and enabling the actual process. Elements of game mechanics include goals, rules of the game, feedback, win conditions.

Gaming aesthetics is an emotional structure of gamification that determines how participants perceive the game and themselves in it. Aesthetics is realized through imagination, the general atmosphere in and around the game, as well as through graphic design, a specific visual representation of awards, achievements, levels, etc. Elements of game aesthetics include: points, badges, levels, leaderboards, avatars, and awards.

Gamification deals primarily with internal motivation associated with three human needs: freedom of choice, progress, communication. [Werbach, 2015, p. 55] Levels and accumulation of points are indicators of progress. Providing players with the choice of goal achievement and various opportunities as they move forward in the game gives players the satisfaction of exercising their free will. Such social interaction, as publications in social networks or badges that can be bragged, meets the need for communication. But concentration on internal motivation does not mean at all that there should be no external motivation, there must be a balance between these elements.

The basic principles of building a gamification system include volunteer participation, pleasure from the game, a wide choice of methods to achieve the goal, competitiveness, interaction with other players and feedback. Overall gamification systems are rather complex, so it is quite often that poorly designed solutions only distract internal and external customers from the main goal of the business process. So a robust gamification system would combine both detailed analysis of the business processes and human psychology to engage and motivate participants.

Proposition 1: Small-scale (test) gamification projects with minor budget will be less satisfactory for the companies.

Proposition 2: Gamification project success / company satisfaction will increase with the increase of experience of gamification use.

Business applications of gamification

Gamification can be used both to achieve marketing goals of the company: marketing, sales, crowdsourcing and for internal such as HR, knowledge management etc. Thus, with the help of gamification, we can build interaction with both external and internal clients. For the internal processes gamification enables both creative problem solving and efficient routine task completion.

It is extremely efficient for training newly hired staff [Routledge, 2016] as well as organization-wide employee training [Kappen, Nacke, 2013] in combination with serious games and simulations. Beside that gamification can be used for a variety of marketing goals such as customer attraction and loyalty development, market research and crowdsourcing. Social networks make it easy to include game elements, since they already have built-in components (likes, outreach, the ability to subscribe to a community, etc.) that allow you to engage the user in interaction [Zichermann, 2011] Structural features of social networks allow users to track feedback on their actions on the network and see their degree of activity.

One of the key questions for any project is how efficient it is in achieving the goals, what results does the company get for the budget spent. Gamification efficiency is a rather controversial topic as some of the researchers suggest to determine the effectiveness of gamification by using the service quality model and compare before and after values of quality parameters [Aparicio et al, 2012]. Others suggest to focus more on the customer experience and use customer engagement [Routledge, 2016] or satisfaction [McGonigal, 2011] as the KPI of a gamification system

Proposition 3: Most companies would not use efficiency indicators for their gamification projects.

Research methodology and sample

In order to explore gamification tools and practices used by the Russian companies and test the propositions offered the research design was developed. The first stage includes literature review and secondary data analysis. Expert opinions were collected through gamification events and online communication. Finally a questionnaire was developed to obtain information on the gamification practices of the Russian companies, namely: satisfaction with gamification projects, tools implementation, use of performance indicators, goals of the gamification projects, and implementation process, etc.

Research sample of the project includes 43 companies from Moscow and St. Petersburg that implement gamification tools and techniques in their business-processes. Data collection was conducted in Spring 2015. Surveyed companies differ in size and industry specification, as well as their age.

According to expert estimates, most gamification projects are delivered in Moscow and St. Petersburg and both cities account for 150 to 300[5] companies (according to different estimates) that at least once used gamification their business. Let's take as the general totality the arithmetic mean between the extreme estimates of the number of such companies - 225 companies.

To determine the sample size that represents the opinions and positions of the general population, we use the following formula:

$$n = \frac{z^2 * p * (1-p)}{e^2} \qquad (1)$$

where n is the required sample size; Z - normalized deviation, determined based on the chosen level of confidence; p is the expected frequency of the result; e - confidence interval.

We shall make a sample adjustment for a small population by the formula:

$$n_c = \frac{n}{1 + (n-1)/N} \qquad (2)$$

where n_c is the corrected sample size; n is the sample size without correction, N is the size of the population.

We get the target sample size of 42 companies that are representative with a confidence level of 85% and a confidence interval of 10%.

Due to the inaccessibility of our survey respondents and geographical limitations, we chose as a method a survey conducted via email and social networks. The survey consists of collecting primary information by asking different types of questions to respondents. The main tool for implementing the survey method was a questionnaire with Likert scale questions and also several open questions.

---

[5] This estimate was relevant at the time of data collection (2015).

During the data collection companies were screened for gamification experience. Since there is no list of all companies using gamification, the selection of companies and contact persons was performed with "snowball" technique using the available information on this topic in the Internet and the media, as well as thematic communities in social networks such as Vkontakte, Facebook, LinkedIn. Respondents are the company executives / heads of departments that use gamification methods in their activities (general directors, marketing directors, marketing department heads, personnel department heads, etc.).

The received information was processed using the statistical software package SPSS using the following methods: linear regression analysis, cluster analysis. The analysis of open questions was carried out by the method of content analysis.

Description of the results

Most of the companies participating in the survey belong to medium-sized businesses (46.5%). To small business belongs 37.2%. The smallest category is large and transnational business (11.6% and 4.7% respectively).

Most participating companies operate in the information technology industry (58.1%) with education (14%), services (11.6%), and other (production, construction, industry, banking, financial sector, telecommunications, trade, media, advertising, publishing – 16.3%) composing the rest of the sample.

Age distribution of the companies is skewed to the right, most companies operate on the market over 10 years (46.5%). The second largest group - companies operating in the market for 4-6 years (32.6%). Companies operating on the market for 3 years or less are compose only 4.7%.
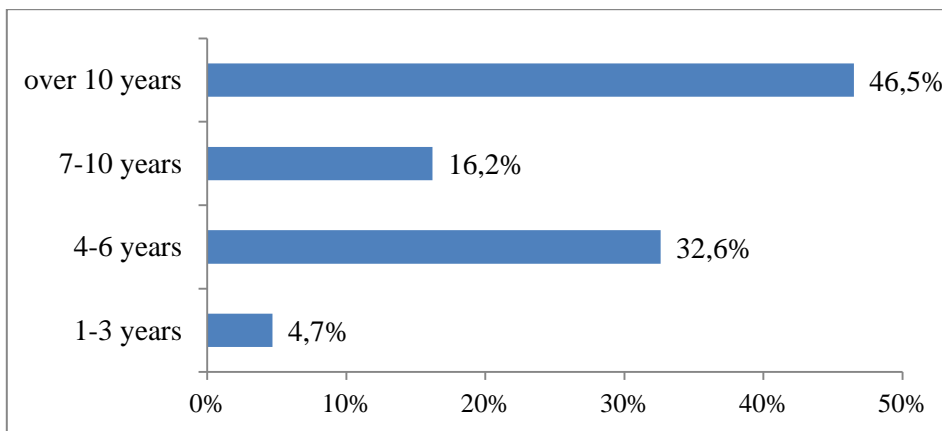
Fig. 2 - Age of companies (%)

The majority of the respondents who answered the questionnaire belong to the management positions (91.7%), with almost one third of the general directors and owners.

Use of gamification in the companies: goals and instruments

At the present moment the gamification initiatives of the respondents are mostly focused on the employee engagement including gamified interactions are team games for personnel and the points and bonuses for the workplace achievements (73.8% and 64.3% respectively). Gamification solutions for the end customers are the least popular (Fig. 3). The "Other" category includes "playing in virtual reality", "scoring points and bonuses not only in the workplace", "learning games", "badge and achievement" system for employees for achievements in various spheres of work and life in the company".
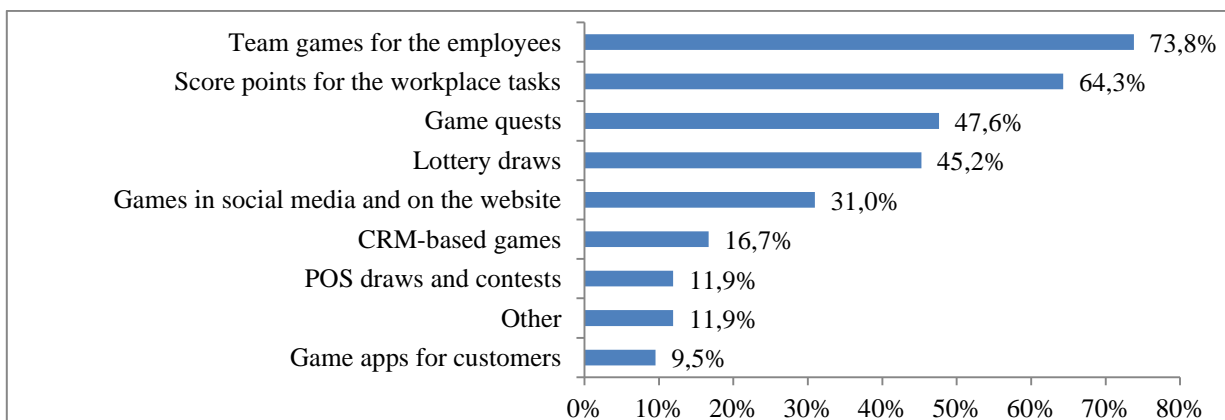

Fig. 3 - Distribution of gamification solutions used by companies (% share of respondents)

9

Based on the current state the respondents plan to increase customer engagement with gamification tools and techniques (Fig. 4).
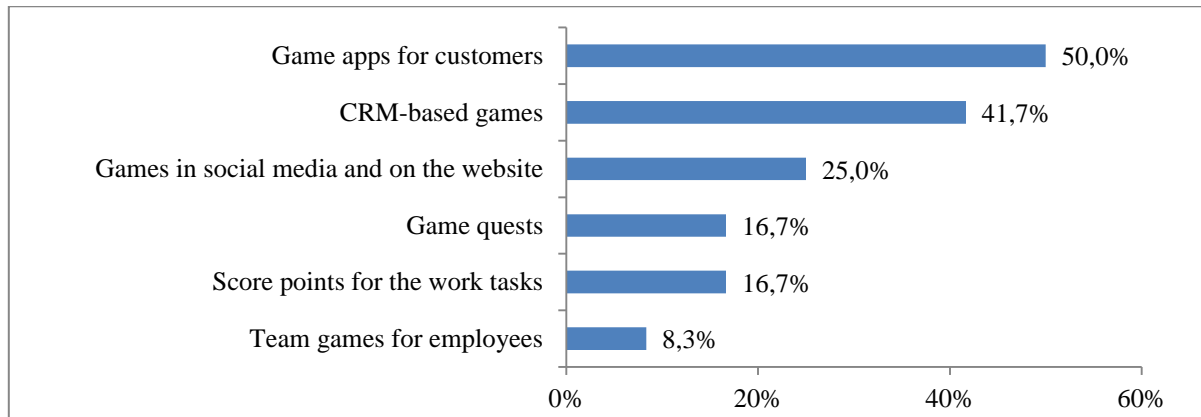

Fig. 4 - Distribution of types of gamification interaction that companies plan to start using (% of responding respondents)

While the gamification tools and techniques used are rather diverse there are two major goals for gamification use: internal marketing activities (increasing staff loyalty, adapting new employees, increasing labor productivity, improving the quality of service); and external marketing (increasing customer loyalty, obtaining information about the consumer, increasing sales, attracting new consumers, promoting the company's brand).

Only 4.7% of respondents noted that they do not have a specific goal of their gamification project. The first three places among the goals of gamification belong to internal marketing: staff loyalty increase (62.8%), new employee adaptation (48.8%) and increase in employee performance (34.9%). Thus, our proposition that internal marketing is more popular compared to external marketing in gamification projects is supported. Customer loyalty and customer data collection were the most popular (30.2% each) in the "external marketing" category. Customer data collection is surprisingly popular, contradicting to some of the researchers who label this task secondary or auxiliary. Sales increase is far less popular compared to the previous goals accounting only for 20.9% (Fig. 5).
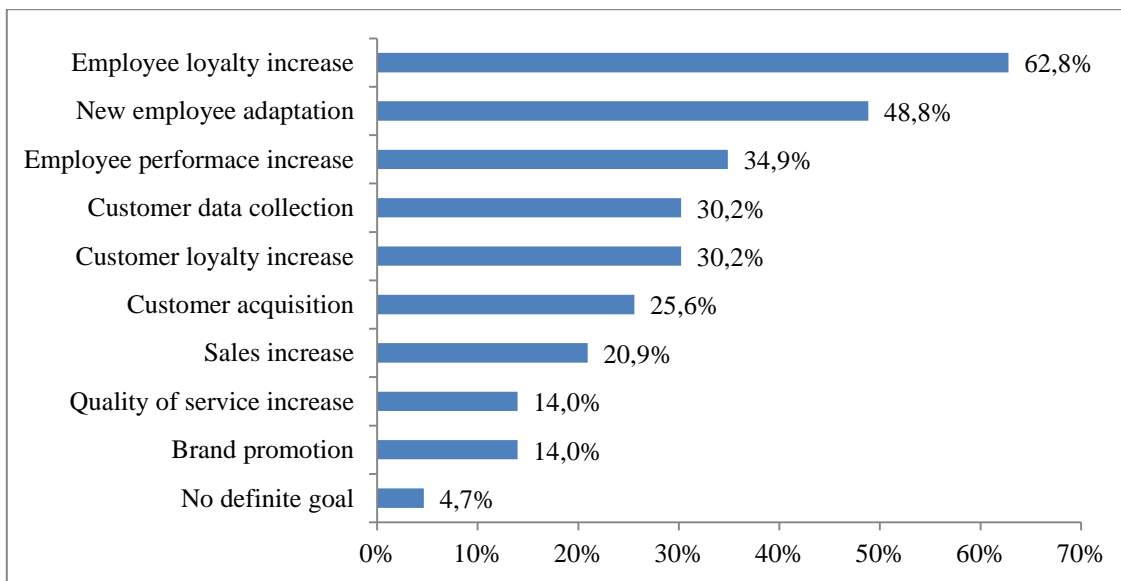
Fig. 5 – Gamification goals distribution (% of respondents)

The goal of a gamification project can be attributed to external or internal marketing, some of the companies combine those two. The largest group consists of companies that use gamification for internal marketing purposes (44.2%). Over 30% of companies combine goals of both internal and external marketing. Only 20.9% of the sample use gamification for the purposes of external marketing (Fig. 6).

Fig. 6 – Gamification goals distribution by group (%)

Half of the companies use gamification for 1 year, a quarter for 2 years. Only 16.3% of companies use gamification less than a year (Fig.7).

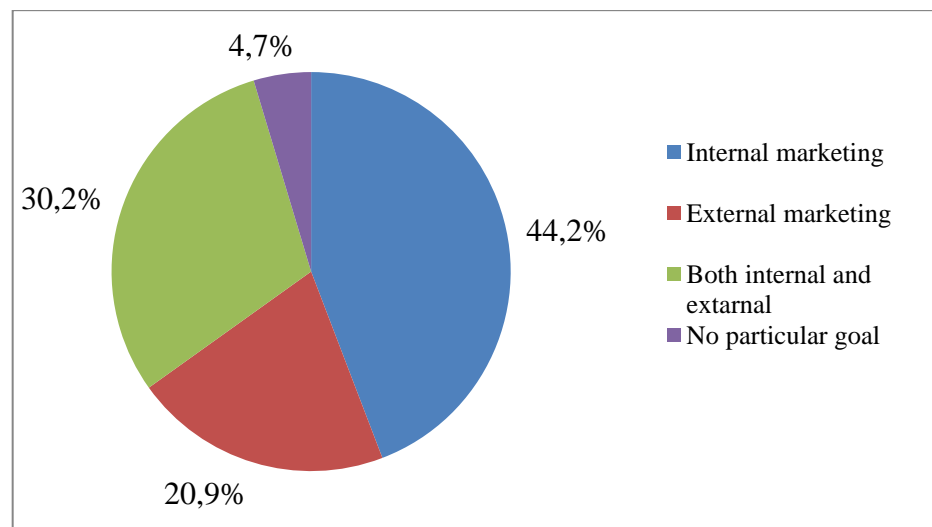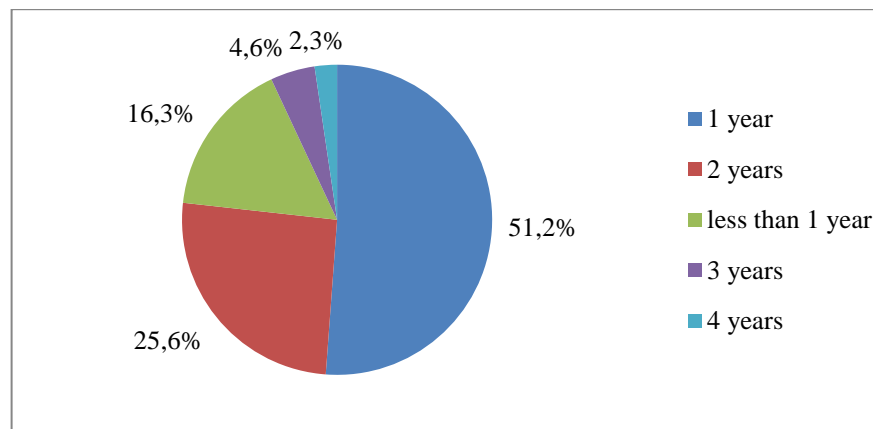Fig. 7 - Distribution of companies by duration of gamification projects (%)

Another important aspect in the implementation environment is the financial component. We specifically formulated the question in such a way as to depart from the exact sums that the company would not disclose. The starting point for assessing financial costs is the company's marketing costs. Thus, we asked respondents to estimate whether the gamification costs exceeded the marketing costs, whether they were comparable to them, or whether they were smaller. According to the results of the survey, we see that only 2.4% of companies spend on gamification more than other marketing costs, and only 28.6% of respondents noted that the cost of implementation is comparable to other marketing costs. Most companies spent less on the implementation of gamification, compared to other marketing activities (59.5%) (Fig. 8).

Fig. 8 – Budgeting of gamification projects (%)

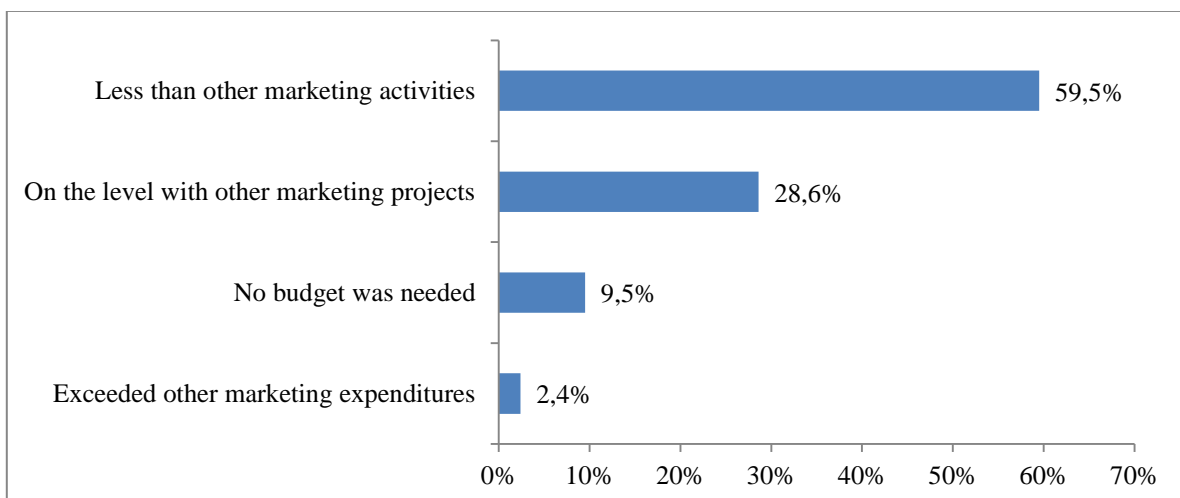Most companies do not use performance indicators (69.8%), which confirms our hypothesis that most companies do not use performance indicators to evaluate the results of using gamification techniques (Fig. 9).
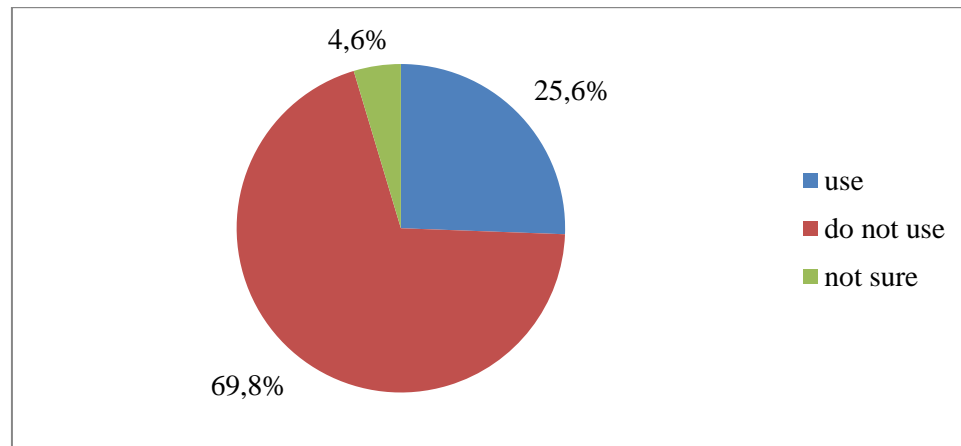

Fig. 9 - Using performance indicators (%)

The answer to the question "Which indicators are used" was answered only by half of those who noted that they use performance indicators. Among the answers to this question were the following: level of target completion, dynamics of the business KPIs before and after implementation, dynamics of satisfaction, sales volume increase, customer conversion on the website, increase in the employee retention.

Segmentation of the companies using gamification: cluster analysis

In order to segment the companies depending on the practice of their use of gamification, we conducted a hierarchical cluster analysis by two variables: the goal of introducing gamification (by groups) and satisfaction with its results (by groups). In order to bring the variables to a single type of scale (interval), a variable standardization procedure (z-standardization) was performed.

At the first stage of the cluster analysis, we found the optimal number of clusters to which the sample should be divided using between-groups linkage method. The distance between clusters in this method is considered as the mean value of the distances between all possible pairs of observations, and in each case, participation takes one observation from one cluster and another observation from the other. The Squared Euclidean Distance was used to calculate distances between observations.

According to the Table 2 we observe several significant jumps in the agglomeration coefficient (column "Coefficients"). This jump means that prior to it, observations that are located at small distances from each other were combined into clusters, and after it the unification of more distant observations begins. Starting at step 34, the first significant jump in the coefficient occurs: from 0 to 1.052. It should be concluded that the optimal number of clusters should be nine. However, such a large number of clusters will not suit us due to the relatively small number of respondents in the sample. Another jump in the coefficient occurs at step 39. Thus, the optimal number of clusters for our study is four.

Tab. 2 – Agglomeration Schedule

Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
1	20	43	,000	0	0	21
2	40	42	,000	0	0	4
3	30	41	,000	0	0	38
4	9	40	,000	0	2	18
5	6	39	,000	0	0	34
6	24	38	,000	0	0	18
7	35	37	,000	0	0	9
8	33	36	,000	0	0	11
9	15	35	,000	0	7	22
10	32	34	,000	0	0	12
11	25	33	,000	0	8	17
12	1	32	,000	0	10	27
13	14	31	,000	0	0	26
14	19	29	,000	0	0	22
15	27	28	,000	0	0	16
16	3	27	,000	0	15	28
17	25	26	,000	11	0	35
18	9	24	,000	4	6	24
19	17	23	,000	0	0	24
20	21	22	,000	0	0	36
21	2	20	,000	0	1	35
22	15	19	,000	9	14	38
23	12	18	,000	0	0	28
24	9	17	,000	18	19	30
25	10	16	,000	0	0	30
26	4	14	,000	0	13	31
27	1	13	,000	12	0	37
28	3	12	,000	16	23	33
29	8	11	,000	0	0	31
30	9	10	,000	24	25	36
31	4	8	,000	26	29	32
32	4	7	,000	31	0	34
33	3	5	,000	28	0	37
34	4	6	1,052	32	5	40
35	2	25	1,052	21	17	41
36	9	21	1,052	30	20	39
37	1	3	1,052	27	33	39
38	15	30	1,368	22	3	40
39	1	9	2,027	37	36	41
40	4	15	3,175	34	38	42
41	1	2	4,301	39	35	42
42	1	4	5,938	41	40	0

At the second stage, the clusters of respondents were clustered in four clusters. As a result of the analysis of clustering results (see Tab.3), we named all four clusters by segmentation criteria and

segment descriptors:

1. Targeted implementation. Companies in this cluster use gamification for a single business goal in the field of internal or external marketing. Most of the companies operate on the market for more than 10 years, have 1-2 year experience in gamification techniques, and spent less on the implementation of gamification than other marketing costs. Level of satisfaction with the project results is medium or high. Most of these companies plan to increase the use of gamification techniques in their activities and believe that gamification in the company's activities should be used every day.

2. Target testing. Companies assigned to this cluster use gamification for one kind of purpose (internal marketing, or external marketing) This segment includes medium sized companies that are present on the market from 4 to 6 years and have experience in using gamification techniques a year or less. A significant portion of these companies spent an amount comparable to other marketing costs for the introduction of gamification and not satisfied with the result. Most companies here do not plan to use gamification techniques anymore and believe that gamification is only to be used when implementing special projects.

3. Integrated testing. Companies in this cluster use gamification for both internal and external marketing and are not satisfied with the result. Most of the companies exist on the market from 4 to 6 years, have experience in using gamification techniques for a year or less, and have spent less to implement gamification than other marketing costs. Most companies here plan to use gamification techniques in the same volume and think that gamification should be used from time to time.

4. Integrated implementation. Companies belonging to this cluster use gamification for both internal and external marketing and are satisfied with the result at an average or high level. This segment includes companies, most of which belong to medium and large businesses, exist on the market for more than 10 years, have experience in using gamification techniques from 1 to 2 years, and spent an amount comparable to other marketing costs for implementation. Most of these companies plan to increase the use of gamification techniques and believe that gamification in the company's activities should be used from time to time. This segment is dominated by companies that have sought the assistance of specialists in the implementation of gamification, and use performance indicators to evaluate the results.

We see that the "Targeted Implementation" and "Targeted Tests" segments behave in a

similar manner when setting gamification goals. They concentrate on selecting one target group, but differ in the satisfaction rating from the project. The segments "Integrated testing" and "Integrated implementation" also behave identically when choosing a goal and differ in the assessment of satisfaction. As goals, they choose a set of goals for internal and external marketing, than they differ from the first two segments. Satisfied with the results of the application of gamification, are the segments "Targeted Implementation" and "Integrated Implementation". Both these segments use gamification techniques for a longer period than the "Targeted Testing" and "Integrated Testing" segments, so we can say that they do not just test this tool, but implement it in their business practice.

Thus, we classified the companies and identified the characteristics characteristic for each segment, obtaining a more detailed profile of companies using gamification.

Tab. 3 - Clusters' description

Questions	Responses	«Target implementation» group	«Target testing» group	«Integrated testing» group	«Integrated implementation» group
What goals did you set for the gamification project?	internal marketing	71%	57%	-	-
	external marketing	29%	43%	-	-
	Internal and external marketing	-	-	75%	100%
	no particular goal	-	-	25%	-
Project satisfaction level	1-4 points	-	100%	100%	-
	5-6 points	52%	-	-	71%
	7-10 points	48%	-	-	29%
What is the size of your business?	small	48%	29%	38%	14%
	medium	37%	71%	38%	57%
	large	10%	-	12%	29%
	transnational	5%	-	12%	0%
How long has your company been on the market?	1-3 years	5%	14%	-	-
	4-6 years	19%	43%	75%	14%
	7-10 years	19%	29%	-	14%
	> 10 years	57%	14%	25%	72%
How long has your company been using gamification?	< 1 year	5%	43%	37%	-
	1 year	52%	43%	50%	57%
	2 years	38%	14%	-	29%
	3 years	5%	-	-	14%
	4 years	-	-	13%	-
Do you use any efficiency KPIs for gamification?	yes	19%	29%	13%	57%
	no	76%	57%	87%	43%
	other	5%	14%	-	-

Tab. 3 Clusters' description (contd)

Questions	Responses	«Target implementation» group	«Target testing» group	«Integrated testing» group	«Integrated implementation» group
Did your company invite externals consultants?	Hired a provider/ integrator	14%	29%	12%	14%
	Hired consultants	5%	-	-	14%
	Hired a new employee	5%	-	-	29%
	Did not have a specialist	76%	71%	88%	43%
What was your budget for gamification?	Exceeded other marketing activities	5%	-	-	-
	On the level with other marketing activities	18%	43%	14%	57%
	Less than other marketing activities	67%	43%	72%	43%
	No budget was needed	10%	14%	14%	-
How often do suggest to use gamification tools?	on daily basis	48%	14%	13%	43%
	for special projects only	10%	43%	24%	-
	From time to time	42%	14%	50%	57%
	No need to use	-	29%	13%	-
Do you plan to continue using gamification?	Plan to increase	65%	14%	25%	71%
	Will keep it on the same level	30%	14%	37%	29%
	Plan to cut	5%	14%	13%	-
	Do not plan to use	-	58%	25%	-

Conclusions and future research

We have implemented a quantitative study - a questionnaire survey of senior employees of companies in Moscow and St. Petersburg, on gamification use in their business practices. Total of 43 questionnaires were collected. Almost a third of the respondents are general directors and owners of companies. Most of the sample companies operate on the market for more than 10 years (46%)

and belong to the information technology sector (58.1%).

As a result of the research and analysis of the results obtained, the hypotheses on the dependence of the evaluation of the efficiency of gamification from the period of its use were confirmed, that most companies (69.8%) do not use performance indicators to evaluate the results of using gamification techniques and more often use gamification techniques in internal marketing, than in external marketing.

Surprisingly gamification techniques are mostly used by 'older' companies operating on the market for over 10 years, 'younger' companies are not satisfied with their gamification experiments. that companies most often set themselves the goal of increasing sales, and that most companies rate gamification as an effective tool.

As it was expected, most companies do not use performance indicators. However, the majority of companies set a whole set of goals and, in general have particular results to be achieved. The most popular types of gamification interaction are team games for staff and scoring points and bonuses for staff achievements in the workplace. The most promising types are game applications and games built into CRM-systems.

The implementation process peculiarities were also identified. The majority of the companies start gamification projects with internal teams. At the same time, most companies do not assign significant budgets for gamification projects: in most cases these costs are less than other marketing costs. On average satisfaction with the gamification projects is rather low (6.07 points out of 10) however most companies plan to either increase the gamification use, or leave it on the existing level. This allows us to conclude that there will an increase in the scope and number of gamification applications in the near future.

Based on the results obtained, a number of recommendations can be made for companies to prepare and implement the introduction of gamification in the marketing practice of companies and recommendations for assessing the effectiveness of the application of gamification.

References

Anderson, J., & Rainie, L. (2012). Gamification and the internet: experts expect game layers to expand in the future, with positive and negative results. Games For Health: Research, Development, and Clinical Applications, 1(4), 299-302.

Aparicio, A. F., Vela, F. L. G., Sánchez, J. L. G., & Montes, J. L. I. (2012, October). Analysis and application of gamification. In Proceedings of the 13th International Conference on Interacción Persona-Ordenador (p. 17). ACM.

Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011, September). From game design elements to gamefulness: defining gamification. In Proceedings of the 15th international academic MindTrek conference: Envisioning future media environments (pp. 9-15). ACM.

Huotari, K., & Hamari, J. (2012, October). Defining gamification: a service marketing perspective. In *Proceeding of the 16th International Academic MindTrek Conference* (pp. 17-22). ACM.

Kappen, D. L., & Nacke, L. E. (2013, October). The kaleidoscope of effective gamification: deconstructing gamification in business applications. In Proceedings of the First International Conference on Gameful Design, Research, and Applications (pp. 119-122). ACM.

McGonigal, J. (2011). Reality is broken: Why games make us better and how they can change the world. Penguin.

Petkov, P., Köbler, F., Foth, M., Medland, R., & Krcmar, H. (2011, May). Engaging energy saving through motivation-specific social comparison. In CHI'11 Extended Abstracts on Human Factors in Computing Systems (pp. 1945-1950). ACM.

Routledge, H. (2016). Why Games Are Good For Business. Palgrave Macmillan UK.

Werbach, K., & Hunter, D. (2012). For the win: How game thinking can revolutionize your business. Wharton Digital Press.

Werbach, K., & Hunter, D. (2015). The gamification toolkit: dynamics, mechanics, and components for the win. Wharton Digital Press.

Zichermann, G., & Cunningham, C. (2011). Gamification by design: Implementing game mechanics in web and mobile apps. " O'Reilly Media, Inc.".

Authors:

1. Morozova Alena, Herzen State Pedagogical University of Russia (St. Petersburg, Russia). Senior PR manager;

2. Rozhkov Alexander, Higher School of Economics (Moscow, Russia). Faculty of Business and Management, Associate Professor

E-mail: arozhkov@hse.ru

Any opinions or claims contained in this Working Paper do not necessarily reflect the views of HSE.