Goal Setting and KPI Measurement as Tools for Broader use of Online Gamification

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Abstract. Gamification is used in various HR areas since the 90s. With technologically savvy generations coming to workplace gamification importance as learning, motivation and communication tools shall be growing. However, its spread across industries and its intensity of use is limited so far. The lack of measurement, publication and comparison of gamification outcomes and effectiveness in reaching its goals may be burden for management in gamification implementation. In the article, we describe situation, when gamification is used to present new employers value proposition (EVP) to potential candidates as a HR tool. Using goals and KPIs in measuring impact of the gamification helps to evaluate impact of the tool and may help HR to justify its use in front of the company management in future as well. To conduct the research, we chose management best practice in goals setting and KPI measurement. Further, on case study "Online EVP gamification of New Generation Hospital" we prove that using gamification goals and KPIs gives management answers regarding its effectiveness. The conclusions expand the knowledge about measuring the effectiveness of online gamification.

Keywords: Gamification, goal setting, KPI.

JEL classification: *M12, M14, M54*

1   Introduction

Gamification has been defined as a HRM tool to increase engagement and motivation to learn, as well as the quality and quantity of what is learned since the 90s [1].

According to Gupta and Gomathi [2], the need to use gamification can be attributed to a change in the composition of the workforce, which is now dominated by echo

boomers/Gen Y, which grew under the influence of technology, e-commerce and to large extent dependent on it. However, despite the growing number of employees of the technologically savvy Generations Y and Z, this tool has not been significantly expanded. Studies speak of dozens, not thousands of gamified devices.

Sridevi and Jain noticed similar fact - the application of gamification has met with limited success in the organizations. According to them, researchers have attributed this failure to incomplete understanding of the concept [1]. Similarly, Gupta and Gomathi point out on the need to expand and build a strong theoretical basis for the concept of gamification in order to realize its full potential in academia and industry [2].

Moreover, the preparation of gamification, especially online gamification, is time-consuming and costly, as it comprises work of creatives, content writers, designers, programmers and substantial time of subject matter experts, usually internal HR or business team.

We believe, that the lack of measurement, publication and comparison of gamification results and effectiveness in achieving its goals hinders its wider dissemination. We expect that expanded knowledge on the data, KPIs and goals, that gamification fulfil will increase the interest of company boards in the implementation of this tool.

The aim of the article is to expand the knowledge about measuring the effectiveness of online gamification and to generalize the possible goals and KPIs of online gamification for wider use in other online gamifications and thus demonstrate its benefits and promote its use.

The contribution of this work is in analyses of the gamification data on a concrete example and on determining the degree of its effectiveness through meeting the gamification goals and KPIs. Doing so, we contribute to expedition and building of a strong theoretical base for the gamification concept.

2 Literature Review

Gamification is defined by many authors as real word activities, situations, which have game-based characters, design, aspects, principles, points, badges, leaderboards and so. Gamification can be understood as method of driving internal and external customers' engagement and motivation to influence business results [3].

Gamification can be performed online, through digital platform or in real world game-based interface. It can be used in each industry by all the different departments of the company: HR, financial, strategic, marketing, sales, purchasing etc. [4,5].

Gamification can have one or few following goals, that can be achieved: to make boring tasks more fun, increase employee's motivation, engagement, loyalty, promote positive organizational culture, create a friendly atmosphere in teams, etc.

Gamification can be used by HRM as a powerful tool for: recruiting and retaining employees, identifying their strength and weaknesses, designing and providing proper training for them, identifying employees with the highest level of performance, motivating, engaging and promoting, creating or modifying their career plans, identifying and predicting employees, who may leave the company, create the desirable

EVP (Employ Value Proposition) for them, promoting company as a brand through personnel marketing and employer branding, etc. [6,7,8].

2.1 Gamification in EVP/employer branding

EVP (Employer Value Proposition) and employer branding are methods used by HRM, that focus on existing and potential employees and try to deliver unique values based on compensation, benefits, career opportunities, work environment and corporate culture. With help of these methods HRM can:

in case of existing employees – increase employee engagement, satisfaction, referral rates and employee loyalty rate, decrease turnover rate, build trust between existing employees, prevent talented candidates from leaving and etc. [14].

In case of potential candidates – get more job applicants, build trust between potential candidates, attract talented candidates, increase offer-acceptance rate, brand awareness, perception as well as candidate engagement rate and etc.

As we can see both methods are phenomena, that complement each other. Even though the concepts have certain differences, they are closely related since both speak of an organization as a favorable place of employment. An employer's brand can be seen as a set of compelling reasons or promises why a brand is a „great place to work", while EVP is a set of concrete steps, that company has taken to make the promises a reality. With help of these methods, HRM can use existing employees as a powerful tool to influence, persuade, attract potential employees and visa versus.

By implementing and using gamification in designing EVP and employer branding, HRM can effectively design and define:

Employees' training, education and development programs – through gamification, HRM have the opportunity to identify the strengths and weaknesses of employees and later provide education, training programs tailored to the needs of employees, which can be considered a strong element of EVP. Helping them to transform their weaknesses into strength can make them happy, as well as satisfied and happy employees can be considered as „word of mouth" and a tool of employer branding by spreading positive information outside of company and raising awareness of potential employees [13].

Compensation and benefits – with help of gamification HRM can define an effective, sufficient package of compensation and benefits for employees by designing games, that allows them to identify and adapt individual or group preferences and the needs of employees to material or non-material elements. Tailoring and adjusting elements of compensation and benefits can be used as a powerful tool of EVP to motivate, engage existing employees, prevent them from leaving and attracting potential talented candidates [14, 15].

Employee career plans – gamification gives HRM opportunity to identify employees' career interests. With help of game, they can see which job position employees play, what results they have and where they need to develop. Managers can use collected data to design employees' career plans, based on the interests, skills, knowledge and abilities of specific employees. Tailored career plans can motivate and engage employees and attract potential candidates. [16,17].

2.2   Goals setting and Kye performance Indicators

The key performance indicators (KPIs) represent indicators, that allow companies, different departments (in our case HRM) to: measure and quantify whether their current performance is with accordance of their desired targets, goals, objectives, increase the level of performance and compare their results to their competitors' performance [18]. As an indicator can be considered only those, which have a direct link with the company's or departments' goals, targets and can be measured, quantified.

A KPI can only be effective and accurate if it: has as few indicators as possible, focuses on the essential indicators with direct link to goals and leaves the rest out, focuses on particular activity, goal and target, is as simple as possible (otherwise, it would be hard to communicate and focus on). Different goals and targets should be measured and evaluated by different KPIs [20].

KPIs can have financial and non-financial characters. In terms of gamification, HRM can consider as good indicators: ROI from EVP, employer branding, training and so, sales growth rate, absence rate, benefits related satisfaction calculated based on survey, employee productivity rate, employee engagement or innovative index, internal promotion rate, Net Promoter Score, turnover rate and so on [19].

3   Methods

We searched contemporary literature sources to review studies in application of gamification principles in HRM. We used induction and deduction methods to identify the extent of current knowledge about the use of gamification to create and communicate EVP as the core of the employer branding. Applying synthesis on the current knowledge we have identified and defined the gap in the research of gamification in HRM. We have identified the lack of knowledge about efficiency measurement of gamification and its impact upon reaching the company goals. Subsequently, we have formed the research design for the purposes of this study.

Main research goal: Introduce the methodology of measuring impact of online gamification on Employer branding concept to support its broader implementation within HRM.

Research question: What are the gamification KPIs measuring impact on the company goals in Employer branding concept?

The subject of our research was online gamification as the tool for communication EVP - the core of Employer branding. We have examined the subject in New Generation Hospital Bratislava-Bory, since the organization has recently introduced the HRM strategy and is currently focused on forming its human potential. NGH will employ 1400 employees, with the aim to cover 320 positions of doctors, 400positions of nurses, 500 other medical positions and 180 operational staff.

For measuring the impact of online gamification on Employer branding in this study, we have analyzed KPIs for online EVP gamification goals in NGH. For gathering data of responsiveness, we have used Google Analytics methodology in the period of eight months, November 2020-June 2021.

4   Results

Based on an examination of the findings of published studies, we find added value of gamification in HR processes, employer branding and EVP in particular.

The subject of the research published in this article are examples of gamification KPIs and their implementation in online EVP gamification of the New Generation Hospital Bratislava-Bory.

4.1   Gamification KPI

In business, gamification is used as a tool to achieve specific organizational goals. Goals are measured by using key performance indicators (KPIs). In order to measure the KPIs, it is necessary to collect data from gamification.

Although online gamification is tailored to the organization and shares common design principles. The design principles such as badges, buttons, decision points, etc., makes it possible to collect data on use of the online gamification.

In general, the online gamification collects data about the attractiveness of the gamification topic and player preferences he expresses during the game. The attractiveness of the gamification topic is expressed by data as number of overall and unique accesses to the game page (and calculated % of re-entries), number of overall and unique games starts, number of overall and unique games exits (and calculated % of game exits) and number of left contacts. Player preferences are expressed by number of various choice buttons presses such particular game selection, character selection and number and type of badges earned.

Gamification data can be further used to calculate gamification KPIs. Financial KPIs, that depict return on investment into the gamification are for example cost per one view of the gamification landing page (costs/number of people reached), cost per 1 engaged player (i.e., cost per gamification entry), cost per 1 contact (cost/interest gained directly from the gamification – e.g., in form of CV, or contact address). Non-financial KPIs demonstrate other type of data gained through gamification. In case of multiple game choices this could be area of interest to players (most played game and most completed game, character selection). In case of badges earned by players collection of data about characteristics of the players.

4.2   Case study – Employer Value Proposition Gamification of the New Generation Hospital Bratislava - Bory

EVP of the New Generation Hospital Bratislava-Bory. A New Generation Hospital (NGH) that will bring jobs for 1,400 new employees is being built in the capital of Slovakia, in Bratislava- Bory. The hospital will not only be innovative in technology and medical processes, but also has the ambition to bring organizational culture change to of healthcare. The main attributes of the hospital were the basis for the creation of its employer value proposition (EVP). The EVP was created for three main categories of employees - doctors, nurses and operations staff. As the new hospital is only in construction, the EVP of the future hospital is presented to the candidates through

various offline and online communication channels. The main online communication tool is the company's website, where information, links to podcasts, photo and video galleries, a real time camera from the hospital building, etc. are concentrated.

In February 2020 due to the spread of the COVID pandemic, personal contacts were restricted and thus substantial part of offline communication channels, such as personal meetings, workshops etc., were cancelled. Hospital management defined need for a new tool that will present the new employer and its EVP and generate interest in potential candidates to work in the new hospital. The decision was to implement online EVP gamification. The decision was made on 2 premises. Firstly, pandemics restricted personal contacts and management was looking for online tool. Secondly, online was already heavily used by hospital and management was looking for innovative tool. Gamification was recognized as tool fitting both premises, however without robust background on its effectiveness. As the production of the tool is costly, the implementation of the tools was approved under condition of measuring it impact.

Gamification goals and KPIs. To measure impact of the gamification tool, management defined 4 goals and assigned to each key performance indicators (KPIs), that measure it. The goals support company's talent management strategy and have were set in accordance with SMART method.

Table 15. NGH Online EVP gamification goals and KPIs.

GOAL	KPI
1. INTRODUCTION OF THE EVP All players will receive information about the key attributes of an EVP - a digital hospital with a strong patient focus and a motivating working atmosphere.	- Each games contains at least 3: ○ Innovations ○ Badges for patient care ○ Badges for soft skills - Min. 75% overall completion of the game.
2. GAIN PUBLIC INTEREST Increase traffic to hospitals website which is both the hospitals primary place to advertise job openings and a central location for employer information by at least 10% in the period under review.	Main KPI: - 10% increase of traffic to www.nemocnica-bory.sk measured by Google analytics Supportive KPI: - Monthly game page entry at least 600 - Monthly unique game launch at least 300
3. RECRUITING CANDIDATES Getting new job seekers who are attracted by hospitals EVP presented in the gamification	- At least 30 new CVs per month exclusively from gamification (pressing button directly from the game, not from career subpage)

4. FINANCIAL EFFICIENCY Financially efficient tool compared to alternative tools such as advertising, job fairs, etc.	- Cost of 1 delivered EVP information measured by game completion is less than 4 EUR

Source: Datastudio, 2021

Description of the online gamification. The online gamification is situated on the organizations' ´web page. The landing page invites potential candidates to try working in the new hospital via the game. The basis of the online gamification is the hospitals EVP, whose attributes have been embedded in 8 stories of two types of characters - doctor and nurse. In the gamification, the stakeholder meets different patients and colleagues and solves daily tasks and challenges. It's up to him how he handles them and what kind of behavior he displays during the tasks (teamwork, respect, responsibility, patience, stamina, etc.). In doing so, the character's decisions affect the mood of all the characters in the game and the overall plot. During the simulation, the player has the opportunity to get to know and discover several innovative procedures, and technologies of the new hospital. At the same time, it shows him his own qualities that he may not even know he has, but are observed and measured during the simulation by gaining badges (badge represents EVP culture aspects). At the end of the game, the gamification shows the summary of discovered innovations and whether the culture and working style of the new hospital would suit the player. The gamification ends with a "call to action" - an incentive to leave email contact or send CV.

Gamification data. The online EVP gamification was prepared with help of external provider within 5 months and launched in October 2020. Data presented in the table below were collected in the period of 8 months (November 2020-June 2021) via Google Analytics.

Table 16. NGH Online EVP gamification data November 2020-June 2021

	TOTAL	AVERAGE 11/20-6/21
GENERAL INDICATORS		
Game page access Total	6516	815
Game page access unique	6315	789
Repeat entries %	-	3,1%
Game starts Total	4226	528
Games starts unique	4086	511
Game exit Total	3735	467
Game completion %	-	87%
Left messages Total	383	48
Left messages as % of all games	-	7%
CHARACTER SELECTION		
Doctor	3272	409

Nurse	2363	295
GAME SELECTION		
Hospitalists	253	32
Emergency	1575	197
Surgeon	348	44
Ambulance	457	57
Medication	661	83
In patient nursing care	450	56
Delivery	416	52
New patient	404	51
BADGES SELECTION		
Sense and sensibility	1942	243
Heart on the palm	1543	193
Embodied willingness;	1561	195
Reading between the lines	1034	129
Breathing for team	1169	146
A helping hand	1205	151
Flexible	718	90
Member of family	379	47
Nerves of steel	378	47
X-ray view	278	35
Expert view	311	39

Source: Datastudio, 2021

Gamification Results. Overall, the online gamification of the new generation hospital EVP met all set goals (measured by KPIs) within the monitored time frame.

First goal, introduction of the EVP via the gamification was fully met. Each game contains at least 3 EVP elements of digitality, patient care and a motivating working atmosphere. The second KPI, overall game completion, which shows interest of the player in the content, was in average 87% and thus the goal was met as well.

Second goal, to gain public interest, was met. The main KPI measuring traffic to hospitals web site increased by 10.5%. From 1.11.2020 to 30.6.2021 overall 6 315 unique players opened the gamification page where new hospital introduces its EVP (175% KPI fulfilment) and the entire story has been played and completed 3 735 times (207% KPI fulfilment).

Third goal, recruiting new candidates, measured by unique contacts or CVs sourced exclusively through gamification button was met. During 8 months the hospital gained 383 unique contacts or CV via gamification, which was in average 48 per month (against KPI plan 30). However, gaining contacts or CVs purely after completing the game was not the key goal, only marketing best practice to finish the game with call for action. The key goal of the gamification was to gain interest in the EVP, get players (equals potential candidates) visit the hospital web page and search there for more employment related information.

Last goal, financial efficiency of the tool was measured by game completion, which equals delivered EVP information. In the period of 8 months the cost was 3,68 EUR (against KPI target maximum of 4 EUR). Moreover, as gamification is an online tool the financial effectiveness of online EVP gamification is automatically increasing in time with every new player.

5 Discussion

By literature review, we have found many authors explaining the types of use of gamification in HRM concepts. Most of the studies were researching gamification in recruitment concepts, which covers the impact on candidates. There were some studies focuses on gamification influencing retention, and engagement which is impact on employees. The principles of gamification in HRM have mainly been researched private sector companies. These have built valuable knowledge for understanding the contemporary tendencies in Employer branding concept as well as development of EVP being the core of managing attractiveness of an employer. Applying synthesis on the current knowledge we have identified and defined the gap in the research of gamification in HRM. We have identified the lack of knowledge about efficiency measurement of gamification used in HRM processes and its impact upon reaching the company goals. We have also moved the research into the healthcare service, since we have identified lack of research addressing specifics of management in healthcare service and increasing urgency for attractiveness of work in public healthcare service. Main research goal of this study was to introduce the methodology of measuring impact of online gamification on Employer branding concept to support its broader implementation within HRM.

The object of our research was the hospital of new generation, which is in the time of our research in its mature phase of establishment. The hospital is in heavy recruitment process, and being attractive for highly skilled specialists is one of the key pillars of its strategies. This might be considered one of the limitations of generalization of the study results. On the other hand, we find the object of the study relevant choice to research the HRM system in times of development of its competitiveness. The hospital HR leadership has decided to implement latest knowledge of HRM research and practice, and used gamification to form EVP and build attractiveness of Employer brand. For each online EVP gamification goals there was set of KPIs measuring the impact. Context to the indicators is given in chapter Description of the game. For gathering data of responsiveness, we have used Google Analytics methodology in the period of eight months, November 2020-June 2021. The results of measurement has shown that all set gamification goals measured through KPIs have been delivered. As additional result, 22 months prior to hospital opening and without running the main job advertisement campaign hospital have gained 130% of applicants for positions in the hospital.

Moreover, gamification has become a unique communication platform during the COVID pandemic, in which there are limited opportunities for employers to present.

Based on positive results of it, the hospitals management approved further investment in board game version for new employees' adaptation.

The research question of this study was to examine the impact of using gamification principals on the company goals in Employer branding concept. We have proven, there is significant impact of the gamification, which is measurable by KPI's quantified by analytical methodology. We have concluded, that gamification is helping in building attractiveness of employment in health care service, boosted by shift to digital environment as the new environment for future labor market.

Our research has several barriers and limitations to the application of its results. The study has been done in the emerging hospital of new generation, therefore we cannot generalize the findings for any kind of hospital or for private business or organizations in different forms or industrial sectors. We have also not proven the impact of gamification on attractiveness targeting retention of employees. The respondents in this study were in status of potential candidates. The potential of gamification tools for gaining more precise data from the players has not been fully covered by this research.

It is a challenge for the future research to all relevant data obtainable by both parties, employer and the candidate, with the intention to precise the people-organization fit. Google analytics in DataStudio does not provide data on demographics of players. Data as education, or age would help to analyze the results more precisely. Being this an innovation there is still potential for improving the tool

6   Conclusion

The main goal of the paper was to introduce the methodology of measuring impact of online gamification on Employer branding concept to support its broader implementation within HRM. As the result of our research we provide an example of the online gamification of the new generation hospital Bratislava-Bory EVP proved, that the setting SMART gamification goals measured by KPIs is feasible. In the study it proved the use of the gamification concept is feasible in the conditions of health-care service. In the paper, we have answered the research questions by following findings.

Firstly, if HR tools are backed up by SMART objectives measuring its effectiveness through KPIs, it is possible to measure their effectivity. It is especially important for tools dealing with soft HR topics that are abstract to many managers – e.g., theme of employer value proposition. The use of relevant data to support decisions is key in any business.

Secondly, online gamification provides data that can be analyzed and evaluated in KPIs.

Thirdly, the exact goals and KPIs depend on the type and purpose of the gamification. In general, they can include player engagement, level of the topic introduction, number of achieved tina contact or response, and financial efficiency.

The conclusions expand the knowledge about measuring the effectiveness of online gamification and in results part of this article we generalize the possible goals and KPIs of online gamification for wider use in other online gamifications. As goals setting and KPI measurement are key management tools for decision making and effectivity

measurements, we believe their application and use in when deciding about gamification use by companies may be valuable.

Further research of the topic may follow in the area of offline gamification. We believe, the above principles could be used also for offline gamifications. However, the data collection might be more problematic, than in the online environment.

Acknowledgement

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APPENDIX

Table 17. General Data by Months

	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	**TTL**	**AVG**
Game page access TTL	1076	626	715	752	1163	769	391	1024	**6516**	**815**

Game page access unique	1047	605	700	722	1124	739	381	997	**6315**	**789**
Repeat entries %	2,7%	3,3%	2,1%	4,0%	3,4%	3,9%	2,6%	2,6%	**-**	**3,1%**
Game starts TTL	538	584	630	558	813	514	310	279	**4226**	**528**
Games starts unique	520	565	618	528	796	496	302	261	**4086**	**511**
Game exit TTL	435	577	533	537	593	435	252	373	**3735**	**467**
Game completion %	81%	99%	85%	96%	73%	85%	81%	94%	**-**	**87%**
Left messages TTL	44	56	48	63	57	52	25	38	**383**	**48**
Left messages as % of all games	8,2%	9,6%	6,7%	8,4%	4,9%	6,8%	6,4%	3,7%	**-**	**7%**

Source: Datastudio, 2021

Table 18. Characters Selection by Months

	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	**TTL**	**AVG**
Doctor	438	422	481	407	622	410	215	277	**3272**	**409**
Nurse	257	354	304	310	460	286	165	227	**2363**	**295**

Source: Datastudio, 2021

Table 19. Games Selection by Months

	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	**TTL**	**AVG**
Hospita-lists	32	27	38	20	49	45	20	22	**253**	**32**
Emerg-ency	208	225	271	118	330	173	118	132	**1575**	**197**
Surgeon	54	50	46	24	63	55	24	32	**348**	**44**
Ambulance	74	75	75	24	83	53	24	49	**457**	**57**

Medication	82	109	92	46	128	92	46	66	**661**	**83**
In patient nursing care	64	77	54	36	94	49	36	40	**450**	**56**
Delivery	48	63	58	34	80	60	34	39	**416**	**52**
New patient	30	68	63	34	80	49	34	46	**404**	**51**

Source: Datastudio, 2021