



HAL
open science

No game, no gain. How different gamification types motivate people to use a website

Anastasiia Shpiliak

► To cite this version:

Anastasiia Shpiliak. No game, no gain. How different gamification types motivate people to use a website. Business administration. 2019. dumas-02360905

HAL Id: dumas-02360905

<https://dumas.ccsd.cnrs.fr/dumas-02360905>

Submitted on 13 Nov 2019

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License



No game, no gain.

**How different gamification types motivate
people to use a website.**

Presented by: SHPILIAK Anastasiia

University advisor: GIANNELLONI Jean-Luc

Research thesis

No game, no gain.

**How different gamification types
motivate people to use a website.**



Presented by: SHPILIAK Anastasiia

University advisor: GIANNELLONI Jean-Luc

Preface:

Grenoble IAE, University Grenoble Alpes, does not validate the opinions expressed in theses of masters in alternance candidates; these opinions are considered those of their author.

In accordance with organizations' information confidentiality regulations, possible distribution is under the sole responsibility of the author and cannot be done without their permission

SUMMARY

Previous research has proven gamification to be an effective tool for many spheres, including digital marketing and website development. Nevertheless, the notion of gamification and the variety of ways of its implementation are not concrete enough to make certain claims regarding its efficacy. Authors use different elements, in order to gamify different processes, which leads them to controversial results. To address this problem, this research is focused on a concrete use of well-defined gamification types, namely, content and structural gamification, in a website creation and promotion context. The thesis considers the influence of the gamified website on the on the development of intrinsic motivation of a user, and his engagement with the website, which thus may cause the change of a behaviour of a website user.

RÉSUMÉ

Des recherches antérieures ont démontré que la gamification est un outil efficace dans de nombreux domaines, y compris le marketing numérique et le développement de sites Web. Néanmoins, la notion de gamification et la variété des modalités de sa mise en œuvre ne sont pas assez concrètes pour prétendre à certaines revendications quant à son efficacité. Les auteurs utilisent différents éléments, afin de gamifier à différents processus, ce qui les conduit à des résultats controversés. Pour résoudre ce problème, cette recherche est axée sur l'utilisation concrète de types de la gamification bien définis, à savoir le contenu et le jeu structurel, dans un contexte de création et de promotion de sites Web. La thèse porte sur l'influence du site Web joué sur le développement de la motivation intrinsèque d'un utilisateur et sur son engagement sur le site Web, ce qui peut donc entraîner le changement de comportement d'un utilisateur du site Web.

MOTS CLÉS : gamification, website, intrinsic motivation, engagement, behaviour, site web, motivation intrinsèque.

ACKNOWLEDGMENTS

I would like to thank Professor Jean-Luc Giannelloni for his guidance, advice, support and understanding, as well as for the inspiration to work on the subject. I am grateful to all the professors of Grenoble IAE, who shared their priceless expertise with me this year, helped me to gain new skills and knowledge, without which I would not have been able to finish this work.

I want to thank my groupmates, who have always supported me in the times of preparation and studies. I'm thankful to family and close friends for their belief in me and support. I thank my colleagues, who helped me with the understanding of web development and digital marketing spheres, which was crucial for giving practical value and managerial implications to my work.

TABLE OF CONTENTS

ANTI PLAGIARISM STATEMENT.....	5
TABLE OF CONTENTS	8
CHAPTER 1 – THE CONCEPT OF GAMIFICATION.....	13
I. The definition and characteristics of gamification.....	13
A. Game as opposed to play.....	14
B. Game elements.....	16
C. Non-game context.....	19
D. Design.....	20
II. Gamification types: structural and content.....	21
III. Meaningful gamification and its principles.....	22
CHAPTER 2 – THE EFFECTS OF GAMIFICATION.....	25
I. Gamification and motivation.....	25
A. The effect of gamification on motivation.....	25
B. Basic human needs.....	26
C. Intrinsic and extrinsic motivation.....	26
D. Causality orientation and its moderating effect.....	28
II. The influence of gamification on engagement and behaviour.....	29
CHAPTER 4 – CONCEPTUAL MODEL AND HYPOTHESES.....	33
CHAPTER 5 – STUDY.....	36
I. Design and procedure.....	36
II. Measurements.....	39
A. Causality orientations.....	39
B. Basic needs satisfaction and intrinsic motivation measurement.....	42
C. Engagement measurement.....	44
D. Time spent on a page and pages visited.....	46
III. Data analysis.....	46
BIBLIOGRAPHY	52
WEBOGRAPHY.....	57
TABLE OF FIGURES.....	58
TABLE OF CONTENTS	59

INTRODUCTION

“Gamification is 75% Psychology and 25% Technology.”

– Gabe Zichermann

There has been a lot of buzz around gamification for the last 8 years. Just like every breakthrough discovery, this concept has been an object of both enthusiastic endorsement and severe critics. Some researchers call it an innovative way to transform the most routine processes into pure fun and provide blissful productivity (McGonigal, 2011), while other make bold claims, that “gamification is bullshit” (Bogost, 2015). It is right to accept both opinions since there is still no unified point of view on this phenomenon and its effects on various life aspects.

The widespread use of gamification starting from the year 2011 can be explained by several antecedents. First of all, the digitalization of services and business processes made marketers and product managers find new ways to engage customers and stimulate their conversion. Second, the generation of active internet users grew up playing online and video games, thus, they are familiar with game mechanics. Third, the development of cheaper technology, eminent successes, personal data tracking, the prevalence of game medium has a positive influence on the growing importance of games (Deterding, 2012). Moreover, Seaborn and Kels (2015) also indicate the development of game studies and the frameworks of the nature, impact, and design of games as an important antecedent of a rapid popularization of gamification.

Initially, gamification was leveraged by marketers and website product managers, in order to increase customer engagement. Thus, most of the gamification research begun in the fields of business and media science (Sailer et al., 2013). Afterward, it started to be implemented to increase employee engagement (Robson et al., 2016), manage teams (Vegt et al., 2015) develop software (Garcia et al., 2017), educate people (Nicholson, 2014), collect data (Cechanowicz, 2013), influence environmental behavior (Morganti, 2017), enhance learning (Boskic and Hu, 2015), motivate for physical workout (Sailer et al., 2013).

Gamification has found a wide acceptance in the sphere of education, where the use of gamification refers to digital game-based learning (GBL) most of the times (Seaborn, 2015). In particular, gamification is used for scholastic development in both formal and informal settings (Seaborn and Fels, 2015). There are several purposes of implicating gamification in educational sphere, namely, to support the learning activity of students (Foster et al., 2012), to improve the existing tutorial system (Li et al., 2012), encourage student participation (Denny, 2013), motivation

and encouragement (Domínguez et al., 2013), the will to perform tasks and homework (Goehle, 2013), and participate more during the classes (Snyder and Hartig, 2013).

Online communities and social networks let people meet, group according to their interests, create discussions, exchange opinions and build relationships around certain topics (Seaborn and Fels, 2015). They benefit from gamification use as well: the implementation of game elements promotes better engagement and collaboration of the user, the tracking of his behavior (usually with the use of badges and points) (Bista et al., 2012). Though, researchers report different effects of gamification on the user's engagement and participation (Seaborn and Fels, 2015). The difference in the effects can be explained by different application purpose, different game elements used and different spheres of use of social networks or communities.

Gamification has been widely used in health and wellness spheres. It may find its use in both personal and professional settings (for instance, both fitness mobile apps and hospital management processes may be modified). The main purposes of gamifying these environments are to engage participation and desired behavior (Seaborn and Fels, 2015) since to achieve the desired health result it is important to be engaged and stick to the necessary regime. Researches prove, that the use of level, points, avatars, badges, may stimulate people to perform necessary actions (like pass analysis, take medicine) and even smile more, which leads to better life quality (Seaborn and Fels, 2015).

Software development has been benefiting from gamification during the last years, but mostly in a way, that the software itself was gamified. Nevertheless, gamification may be applied to the process of software development as well. It has a number of benefits in this case, namely, gamification may allow organizations to reward developers for their work, and make work funnier, which would stimulate the engagement and motivation of developers, and, in turn, better the overall quality of their work (Garcia et al., 2017).

The less popular spheres of gamification use are crowdsourcing and sustainability, but in these spheres, the effects of game element implementation are not clear. Some researchers report positive effects on participation, higher speed and quality of response (Liu et al., 2011), performance. Therefore, these fields do not profit most from gamification, and more research on the optimal use of this technique is required.

It is evident that gamification is playing a key role in various spheres, as well as it may benefit and optimize many processes. Numerous research has focused on the way gamification should be implemented, the frameworks of different game elements use, the effects of gamification on a person's attitude and behaviour. We believe, that the variety of controversial conclusions regarding the efficacy of gamification different researchers have ended up with is due to the fact, that

gamification as a construct can not be defined in details, and thus has a different effect depending on the elements used in the process, the sphere where it was implemented, the study context etc.

Therefore, we want to focus on this research on the influence of different gamification models and the effect they have on the most important in marketing aspects: consumer behaviour. We propose to test the efficacy of gamification in digital marketing, namely, website development since this is the sphere, where gamification was initially used and has been successfully recognized as a worthy tool. One of the most important online behaviour key performance indicators is the time spent on the website and the number of pages visited by a website user. In order to receive consistent results with practical implementation perspective, we have decided to test the effect of different gamification types, namely, structural and content gamification.

Thus, the research question of this work can be formulated in the following way:

“Does visitors' behaviour on a gamified website change with the nature of this gamification? More specifically, to what extent can different gamification types increase the time the user spends on a website and the number of pages he visits?”

In order to have a clearer understanding regarding the details of the construct of gamification and its effect, in the part devoted to the theoretical background, we consider the definition, characteristics, types of gamification, its influence on motivation, engagement and behaviour change. The second part focuses on the methodology of the research, namely, the study design, sample, construct measurements and data analysis.

PART 1 :

-

THEORETICAL BACKGROUND

CHAPTER 1 – THE CONCEPT OF GAMIFICATION

Throughout the years, gamification has been explained in different ways from various perspectives. Researchers agreed on the most general definitions and characteristics of gamification, which are relevant to the use of gamification in any sphere.

I. THE DEFINITION AND CHARACTERISTICS OF GAMIFICATION

According to its name, gamification draws inspiration from games. Still, contrary to popular opinion, these two constructs are not the same thing. The concept of gamification emerged from numerous interrelated concepts and the findings of computer-human interaction studies, like funology, ludic qualities of games, serious games, the alternative gamification terms, like “productivity games”, “behavioral games”, “game layers”, “surveillance entertainment”, “game layers”, and “applied gaming”, other concepts like alternate reality games, augmented reality games, games with a purpose, persuasive reality games (Seaborn and Fels, 2015). Since not all of these concepts could represent the use of gamefulness outside of games, there was a need to define a separate concept of gamification. One of the first and most widely recognized definitions of gamification is “the use of game design elements in non-game contexts” (Deterding and Khaled, 2011).

There is a number of other various definitions, which emerged as the research on gamification has evolved. One of them comes from the service system design sphere, and it is formulated by Huotari and Hamari (2012). This definition postulates that gamification is “a process of enhancing a service with affordances for gameful experiences in order to support user's [sic] overall value creation” (Huotari and Hamari, 2012). Thus, this definition emphasizes user experience.

Werbach and Hunter (2012) adopt a more practical product, service or systems design approach and define gamification as “[the] use of game elements and game design techniques in non-game contexts”. The difference in this definition from Deterding's (2011) lies in the business context. Werbach and Hunter (2012) claim that gamified systems should not necessarily be game-like. On the other hand, they operate human psychology in the way games do. Thus, the authors consider gamification to be an important motivating tool, especially in business and education.

According to Deterding et al. (2011), gamification implies the involvement of gamefulness, gameful design and gameful interaction, which are united by a concrete intention. Gamefulness stands for the lived experience, gameful design refers to the creation of gameful experience and gameful interaction refers to the tools, objects and contexts, that draw on the gamefulness

experience (Seaborn and Fels, 2015). Moreover, the game elements should be used in a system, which is not a fully-fledged game, which poses many questions regarding the number of game elements which should be used to turn a system in a fully-fledged game (Seaborn and Fels, 2015).

Seaborn and Fels (2015) concluded these various definitions of gamification and synthesized them into a standard one: gamification is “the intentional use of game elements for a gameful experience of non-game tasks and contexts”.

It is important to keep a clear distinction between gamification and a game. Gamification is not like a serious game, which should have a purpose or an alternate reality game, or any other fully-fledged game (Seaborn and Fels, 2015). Gamification is not a product, rather, it is a process of implementing game elements in order to change processes and the way they are influencing people (Landers et al., 2018). Thus, gamification aims at changing and influencing people’s behaviour and attitudes, no matter whether it results in higher performance, better engagement, increased participation or improved compliance.

Deterding (2011) defines the purpose of gamification to make technology more engaging and to encourage the use of a product or a service. According to Landers et al. (2018), the core of gamification are design processes, which change the existing real-life processes in a way, that people would enjoy the new modified version of the process as they would have lived through a game-like experience.

Deterding et al. (2011) have defined four characteristics of gamification, namely, a game (as opposed to play), game elements (meaning, gamification does not imply the creation of a complete game), design and non-game context. According to Deterding et al. (2011), “a game characteristic” is an element or many elements, found in most games, but not necessarily all of them, which are important in the process of gameplay and can be associated with games. Let’s consider each of the characteristics of gamification more precisely.

A. Game as opposed to play

Salen and Zimmerman (2004) defined a game as “a system in which players engage in an artificial conflict, defined by rules, that results in a quantifiable outcome”. A game is a basis of gamification, as its elements extracted and implemented in other contexts. In order to better understand the essence of games, Deterding (2011) defined a number of features, typical to every game. The main game features are listed below:

- A game has SMART goals. SMART stands for specific, measurable, achievable, realistic and time-bound. This definition of a goal means that a person understands and can achieve it in a defined

time. In games, a player understands, what he should do to win, how his success is measured and what time he has to achieve the goal.

- Games imply clear actions and choices. A player understands, what options he has when playing, and can easily make a choice. Moreover, every available action or choice is connected to the SMART goals of the game, thus, it may help or prevent the user from achieving the goal. These connections and clear understanding of what an action or a choice lead to making the game process so exciting.

- Games give user feedback. In order for a player to understand, what is his progress and next steps, a game provides him with a lot of feedback regarding what he's doing, what actions were successful and what was not, what is the status of the current game

- Games get more complicated to increase the skills of a player. To hold a healthy interest of a player in a game and keep the balance between his skills and game complexity, games tend to get more and more complicated with every new level/stage. The more the user advances in the game, the more skilled he gets and the easier it becomes for him to win it, which could lead to the loss of interest. Because of that, games have multiple layers and become more and more challenging.

- Games often involve social comparison. This feature is usually implemented through leaderboards, even if the game is played by an individual and not in a group.

Therefore, in order to keep the effects the game has on a person in non-game contexts, it is worth to stick to these characteristics and preserve them in a gamified processor environment. Nevertheless, the full transmission of these features to a work process is complicated, since games are more focused on the emotions and a work process is more focused on tasks and goal achievement (Webb, 2013).

On the other hand, a play is a different construct, which is connected with free and explorative activities. As Nicholson (2012) mentions, "game" is different from "play" in a way, that game has a goal and rules to achieve it, whereas a play is a broader category, which concerns a process, rather than an object. The process of play brings people enjoyments, while a goal and a scoring system, available in games, become an extrinsic motivation source. Nicholson (2012) also suggests a "playification" term, meaning the application of play in non-play contexts. He states, that the meaningful gamification means the implementation of play rather than scoring.

On the other hand, Landers et al. (2018) emphasise, that gamification is more similar to game design, rather than games, thus, the goal of this design process is not always to make users have fun or to create a playful game. Thus, we may state, that gamification does not intents to create a playful experience, but playful behaviours may often be the outcome of gamification since the process of playing is tightly connected with experiencing the game itself.

B. Game elements

While play and scoring characterise a game, elements are what composes it. In general, game elements can be defined as the small parts the game consists of. The use of only several game elements distinct gamification from a serious game.

Researchers indicate different approaches and frameworks to the definition and classification of gamification elements. For instance, Werbach and Hunter (2012) have defined the most commonly used game elements, namely, points, badges and leaderboards, which are named "The PBL Triad". Robinson and Belotti (2013) developed a preliminary taxonomy of gamification elements for varying anticipated commitment. This classification is based on low, medium, high and variable user commitment requirements, which are measured by the time spent using the software. This taxonomy consists of three groups: general framing, general rules and performance framing, social features, intrinsic incentives, extrinsic incentives, resources and constraints, feedback and status information. The classification explains every game element and anticipates the user commitment its utilization requires.

Another important framework named Mechanics, Dynamic and Aesthetics (MDA) was developed by Hunicke et al. (2004). It describes game elements from a perspective of game development. Mechanics stand for the game rules and components, dynamics mean the way a user behaves with the mechanics, and aesthetics describe the emotion user feels while experiencing the game. These three constructs are interconnected, as the mechanics should initiate the dynamics, which provoke positive aesthetics.

Hendrikx et al. (2013) take a procedural content generation perspective and classify game elements into six groups: game space (indoor maps, bodies of water), game scenarios (puzzles, stories), game bits (textures, sounds buildings), derived content (news, broadcasts, leaderboards), game design (system design, world design), game systems (ecosystems, urban environment).

Calvillo-Gómez, Cairns, and Cox (2015) have presented another framework, called the Core Elements of Gaming Experience (CEGE). According to this theory, game elements are the game-play and the environment. A game-play is the rules and scenarios of the game, which define its idea, while the environment is the way the game is being presented to the player, the sounds and graphics used to implement it.

Bedwell et al. (2012) viewed games in a learning context and developed a system of attributes, namely, adaptation, challenge, control, fantasy, and progress. This framework was used further by researchers for the development of theories of gamified learning.

Another context of consideration of game elements is enterprise-related gamification, in which game elements are classified into core gameplay (for instance, social, collection, survival, trading) and key game mechanics, for example, status, leaderboards, points (Raftopoulos et al., 2015).

Dignan (2011) has developed a conceptual framework called “game frame”, consisting of ten building blocks, which make up a gamified activity, or a “behavioural game”. Thus, the building blocks represent the game elements. There’s also a definition of game elements from the service marketing perspective, explaining how they can augment the value, proposed by the service (Huotari and Hamari, 2011).

All of these frameworks and theories define game elements based on various classification criteria, goals, fields and approaches. Landers et al. (2018) state, that “in gamification research, game elements are operationalized as causes of effects of interest in processes that have been gamified”. Thus, for research, any of the frameworks regarding game elements can be used as the theoretical base.

It is important to mention and explain the main principle of the different game elements, which are the most frequently mentioned by researchers in various classifications, frameworks and taxonomies (Sailer et al, 2017; Sailer et al., 2013).

1. *Points* are a way of progress measurement, they can be accumulated as a result of completing tasks and performing well, thus they are a reward and feedback tool. Points have several goals, including the numerical representation of player’s progress, the continuous and instant communication of feedback to a player (Werbach and Hunter, 2012), measurement of player’s in-game behaviour and the reward for accomplishments and achieved goals (Sailer et al., 2013). Dignan (2011) calls points magical and describes them in the following way: “we see them as a reward, even when they are worthless because they are a form of validation”. There are different point types, for instance, redeemable points, experience points, reputation points etc (Werbach and Hunter, 2012). Zichermann and Linder (2010) propose the marketing strategy, based on the rule of “making points the point”, which means, to create one main goal for a player - get the biggest number of points, as it may encourage the user to perform well without actual benefits granted. Though, this strategy is often criticised, especially if it is used in a not appropriate environment, like at work in order to stimulate employees.
2. *Badges* are the visual symbols, which represent achievements (Werbach and Hunter, 2012). A player can earn and collect badges to confirm his achievements, symbolise his merits in the gamified environment, show the accomplishments of levels and goals (Sailer et al., 2017).

The conditions, based on which a player receives a badge, may involve a collection of a specific number of points, or the performance of specific game activities (Werbach and Hunter, 2012). Badges may represent a goal to achieve, if the player is aware of the conditions to do it, or simply symbolize player's virtual status (Werbach and Hunter, 2012), provide feedback and inform players regarding their performance, as well as points (Rigby and Ryan, 2011). Since collecting badges is not compulsory, they do not have a narrative meaning, but they may influence the game flow and player's actions by leading them to choose certain routes and undertake certain challenges (Sailer et al., 2017). Apart from that, badges may have a social influence on players and co-players, especially if owning them symbolises belonging to a group or if they are difficult to earn (Hamari, 2013).

3. *Leaderboards* are shown in a format of a list of game participants, or players, in an order according to their relative success, defined by a certain success criterion. Leaderboards help to define, what player performs best in a certain activity (Crumlish and Malone, 2009). They show relative progress of a person, comparing to the other players. Still, the influence of leaderboards on motivation is a controversial point. Werbach and Hunter (2012) claim, that if the difference between a player and his closest competitor is small (a couple of points or levels), the player will be more motivated to overscore his competitor. On the other hand, if the player is on the bottom of the leaderboard or if the gap between him and the next player is too big, it may be demotivating. Therefore, the competition may have a positive effect if the players are more or less on the same competence and performance level with their competitors. (Landers and Landers, 2014).
4. *Performance graphs and progress bars* show relative information about a user's performance, in comparison with his previous performance. Progress bars are the graphical representation of the user's achievements, the completed tasks and the tasks still he has to go through. The difference between leaderboards and progress bars is that the latter do not compare player's performance with other players' performance but rather shows his progress over the time, therefore, the graphs are based on personal, and not social standard (Sailer et al., 2017). According to motivation theory, performance graphs and progress bars focus on improvement and thus foster mastery orientation, which stimulates learning in particular (Sailer et al., 2013).
5. *Meaningful stories* are the game elements, which are not connected to the player's performance, (Sailer et al., 2017) thus, they do not provide any feedback to him. The stories create a narrative context of all the activities and characters in a gamified environment and give meaning and purpose to other game elements, like points, badges and various

achievements (Kapp, 2012). There are different ways of communicating the story, namely, the title, or the storylines themselves, which are typical to modern role-play video games (Kapp, 2012). Thus, stories are an important game element, since they may alter the meaning of routine, boring non-stimulating processes by adding the narrative overlay, therefore, inspire and motivate players (Sailer et al., 2017).

6. *Avatars and profile development* are the visual representations of players in a game or gamified environment (Werbach and Hunter, 2012). In games, usually, a player can either choose or create an avatar (Kapp, 2012), for example, in Sims a player can choose many details (from height to nose shape and socks colour) of the person, or an avatar, whom he's creating. Avatars may be represented in a simpler way as well, like in a 2D dimension with less customizable details. The main goal of an avatar is to identify the player from other players or other avatars, thus, a user may create or adopt another identity (Sailer et al., 2017).

These elements have a different purpose, different implementation and different influence on basic need satisfaction, yet, they are present in most of the taxonomies and classifications.

In this research, we view gamification of software in general context, thus, it is optimal to consider the most common and widespread classifications and definitions of game elements instead of focusing on industry-specific or narrow approaches. For instance, research by Garcia et al. (2017) shows, that the most applied in software engineering game elements are reward systems based on points and badges, rankings, social reputation elements and dashboards, which complies with the notion of the "PBL triad" mentioned before and the list of most common game elements by Sailer et al. (2017).

C. *Non-game context*

In most cases, games are used for entertainment purposes. The idea of gamification is the use of game elements in the context, where they are usually not used, thus, for the purposes, other than simple entertainment. In fact, gamification does not limit the use of game elements in a certain context or for certain purpose, as games are more and more used to increase engagement or improve user experience (which are not the initial purposes of games). The only condition of gamification is the fact that game elements should not be used in the game or game processes.

Therefore, there is no need for a strict definition of the contexts of game elements use, which would correspond to gamification. Rather, based on the different context we may figure out different gamification types, like learning gamification, training gamification, news gamification (Deterding et

al., 2011). As a consequence, as long as the game elements do not result in a game and are used in an environment, other than games, it is an attribute of gamification.

D. Design

Researchers define various constructs, which comprise a game: not only elements but also mechanics and patterns. Nevertheless, the main building blocks of a game environment are the elements of game design. Human-computer interaction literature indicates several game-based practices and technologies. Nevertheless, the term “gamification” refers first of all to design elements, no other tools or game engines (Deterding et al., 2011). Researchers indicate five different levels of game design element abstractions. They are listed as follows from the most concrete to the most abstract one:

- (1) Interface design patterns (levels, leaderboards and badges).
- (2) Game mechanics or game design patterns.
- (3) Design principles or heuristics: the guidelines, which advice on how to approach a design problem or evaluate a certain design solution.
- (4) Conceptual models of game design units, for instance, the MDA framework, Malone’s challenge, fantasy, and curiosity.
- (5) Game design methods, as well as game design specific practices (for instance, value-conscious game design, playtesting and design processes like play-centric design) (Deterding et al., 2011)

The understanding of these levels lets researchers understand the process of game creation and, accordingly, gamification design, as well as distinguishing the difference between the application of game elements from different levels of concreteness/abstractness and the outcomes of such gamification.

These four characteristics, described by Deterding (2011), shape the definition of gamification and define its building blocks, though ignore the user experience. Werbach (2014) made an important comment, that we may have an impression, that every single implementation of a game element in a non-gaming context could be called gamification, which is not always the case. Instead, Werbach (2014) proposes to define gamification as “the process of making activities more game-like”. Therefore, the game design elements should be intentionally selected, applied and implemented with a purpose in mind.

Thus, when defining gamification, we should keep in mind the building blocks it is constructed of, namely, game design elements, and their implementation in the contexts, other than games, but also remember about the playful game-like experiences it should provide to the user.

II. GAMIFICATION TYPES: STRUCTURAL AND CONTENT

We have already indicated the different game design elements, which can be implemented in the process of gamification, the classifications and taxonomies of these elements. According to the way these elements are combined and implemented, there are different gamification types. Researchers indicate two types, or as some authors state, forms (DeMers, 2017), or subcategories (Cudney et al. 2015) of gamification: structural and content gamification (Elshiekh and Butgerit, 2017; Kapp, 2013). Nicholson (2012) gives another name to these types and calls them the meaningful (content) and meaningless (structural) gamification.

Structural gamification aims at the modification of the mechanics of the process and implementation of game elements in order to make it more game-like, while the content is not a subject of modifications and is preserved in its initial format (DeMers, 2017). It means, that the structure around the content is being changed, but the content stays the same and does not become game-like. The examples of the structural gamification are the use of the famous “PBL Triad” elements, meaning points, badges and leaderboards, or the use of elements like levels and achievements, which would motivate users to go through the content (Elshiekh and Butgerit, 2017). Structural gamification focuses on the organisation of content, without necessarily making it “fun” (DeMers, 2017). For instance, the structure can be changed from linear to a loose one, which may comply better with the mindset of a user.

On the other hand, content gamification is an application of game elements and game thinking to content (Elshiekh and Butgerit, 2017). It is aiming at making content more game-like, and not the process. This should involve changes to the content such as providing a challenge, story, mystery, curiosity and characters to content (Capp, 2014), using avatars, incorporating sound, music, graphics to the game (Boskic and Hu, 2015). The user may not always be aware of the rules and objectives of the process, but he engages more with the content.

The difference between the content and structural gamification is especially visible on an example of an educational platform or course gamification. In the case of structural gamification, users experience a game-like learning process, thus, they are motivated to explore the available content thanks to external factors, like levels, deadlines, rewards, statuses, leaderboards. For example, for every correct answer to a question, a person may get points, which let him earn a new status or achieve a new level.

In the case of content gamification, the structure of the course remains the same, but the content which the user learns becomes game-like. For example, the math theories may be represented in a story format with the use of graphics or sounds, or the avatar may be telling the

content to a user, which would engage the person into learning. There are other simple ways of content modification, like transformation into a question-answer format, creation of a challenge for a user, which would make him more interested to learn and discover new content. These things invoke intrinsic motivation.

It is still not clear and not defined, what type of gamification is more efficient. Many researchers argue, that the combination of both structural and content gamification may bring the best results and stimulate motivation in the most efficient way (Boskic and Hu, 2015; Kapp, 2013). Regarding the influence on motivation, structural gamification may significantly foster extrinsic motivation (Elshiekh and Butgerit, 2017), since it uses external factors to engage a user in a certain action. On the other hand, content gamification may create value for the user in the form of information, which would stimulate his intrinsic motivation (Elshiekh and Butgerit, 2017).

Therefore, the effect of the structural and content gamification is not well-researched, though this classification is logical and groups gamification elements in complete systems with a definite purpose, which lets to research the systematic effect which a combination of several elements would have.

III. MEANINGFUL GAMIFICATION AND ITS PRINCIPLES

As mentioned before, there are two types of gamification, structural and content one, to which Nicholson (2012) gave a different name: meaningless and meaningful gamification. Nicholson (2014) has described a notion of meaningful gamification (which in other sources is named “content gamification”) as the gamification, which appeals to the intrinsic motivation of the person instead of offering extrinsic incentives. According to the author, meaningful gamification can benefit the person, since intrinsically motivated people act upon their internalized motivations, therefore, they have a more positive outlook towards the activity than as if they were extrinsically motivated (Deci and Ryan, 2004).

Nicholson (2014) argues, that in order to achieve a long-term change in the individual’s behaviour it is worth applying meaningful gamification, thus, appealing to intrinsic and not extrinsic motivation. He explains, that gamification should be like a layer, which can be removed so that a person can be left in the authentic real-world environment, and in this case, gamification should resemble a journey. If the purpose of gamification implication is short-term, external incentives can be applied.

Therefore, Nicholson (2014) developed a framework for the meaning gamification called RECIPE. The framework comprises six elements: play, exposition, choice, information, engagement, and reflection.

- (1) *Play*, which is already mentioned as the basic gamification characteristic by Deterding (2011) is meant to facilitate the freedom to explore and to fall within boundaries. According to Huizinga (1995), play is “something that people engage with outside of the real world”. The difference between play and games has been described in the previous chapter, thus, as Maroney (2001) has summarized, “a game is a form of play with goals and structure”. Thus, when players agree to play the game, they accept the rules which ideally should not be changed. In the case of pure play, people may establish their own rules and constraints, as long as it is fun. In the case of gamification, as long as the play is fun, people will not need any external rewards, as they will follow the fun part of the process. Still, it is important to remember, that play should be optional in a gamified system (Callois, 2011). This condition is logical since if someone is forced into a game, it is not a playful experience anymore.
- (2) *Exposition* stands for the creation of stories for users, that are integrated with the real-world setting and also the allowance for users to create their own stories. In other words, exposition is a narrative layer created with the use of game design elements (Nicholson, 2014). The narrative is important since it allows a user to see the connection between the past and the present, as well as the present and the future. This way, a user can simulate real-world actions while being immersed in a gamified environment. As an option of exposition, a user may create his own story. This would satisfy the need for autonomy, which, according to self-determination theory, would keep the user more motivated, and contribute to his psychological welfare (Deci and Ryan, 2004).
- (3) *Choice* means creating systems, which let users make decisions, thus, it means giving power to people. Choice also refers to the satisfaction of the need for autonomy, contextualized by self-determination theory (Deci and Ryan, 2004). A person, who has a choice, would have a more positive sense of self-being. Thus, it is important to let users make meaningful choices within the gamification system (Nicholson, 2004). The concept of choice as an element of meaningful gamification corresponds with play: users should choose whether they want to engage into playful behaviour or not and change the rules of play if they want to (Nicholson, 2014).
- (4) *Information* stands for the usage of game design and display concepts, which would let users learn more about the real-world context. More specifically, the user should know, why and how he should perform certain actions, not only how many points he can gain and to what level it can take him. Information also contributes to the satisfaction of the need for competence, which is one of the three human basic needs, postulated by self-determination theory (Deci and Ryan, 2004). The more information the user has, the more skills he can gain and, thus, become more competent. Information also fosters the long-term behaviour

change, since people understand, why they should perform a certain action and not just meaninglessly follow the chase after points or badges.

(5) *Engagement* means the engagement of participants to discover and learn from the others, who are interested in the real-world setting. Thus, gamification may allow users to engage with the interaction with other people in a meaningful way, which would satisfy the need for relatedness, defined by the self-determination theory (Deci and Ryan, 2014). Engagement can be a result of the integration of peer groups in a system or creating a connection between different players (Nicholson, 2014).

A user may also engage with the gamified environment. This gameplay experience can be described by the notion of flow, in which a player is fully engaged with the system. The flow often involves the increase of the difficulty of the challenge as the user proceeds further, thus, engagement is reached when the challenges match the skill level of the player (Nicholson, 2014). As a consequence, the more the users are engaged with the environment, the more skilled they become and the more they are ready and willing to engage with the other players.

(6) *Reflection* is the assistance of users in their search of other interests and past experiences, which may deepen their engagement and learning. In other words, reflexion is the moment, when a user analyses his game experience and constructs parallels with real life. According to Rodgers (2002), reflection after action helps people find meaning in what they are doing, which corresponds with the purpose of the information in a gamified system. During the reflection process, a user is connecting the experience within a gamified system with his background. Thus, if gamification system has a reflection component focused on real-world impact built in as part of the experience, it will demonstrate the importance of the purpose of the gamified system (Nicholson, 2014)

The framework of the effective meaningful gamification explains, how it should foster intrinsic motivation, especially in the comparison with extrinsic incentives. The division of gamification on these two types is the key to understanding the different mechanisms of the influence on a person's motivation. Thus, this research will focus on the consideration of the effects of meaningful and meaningless gamification and their consequence on the way people are motivated and the way it changes their behaviour.

CHAPTER 2 – THE EFFECTS OF GAMIFICATION

In the previous chapter, we have introduced the concept of gamification, its elements, characteristics and types. In the second chapter, we focus on the effects, which gamification in its various forms can have on important constructs, like human's motivation, engagement and behaviour.

I. GAMIFICATION AND MOTIVATION

The widespread use of gamification in various non-game contexts can be explained by its efficacy in achieving several business goals, like engaging and motivating people. Therefore, there is a certain connection between gamification and human motivation, namely, many authors prove, that gamification fosters human's motivation to keep performing an action.

A. *The effect of gamification on motivation*

As Sailer et al. (2017) mentions, most of the researches prove, that there's a positive influence of gamification on initiation or continuation of goal-related behaviour, known as motivation. Motivation is the psychological process, which directs and energises behaviour (Reeve, 2004). The connection between gamification and motivation is reasonable and logical, since when people play a game, they are intrinsically motivated, as they get positive emotions, have fun and experience joy while engaging in the process of play. As gamification strives to approach other processes to the gaming experience, it is possible to state, that it may boost a person's intrinsic motivation and increase the satisfaction from the process.

Nevertheless, the question of how gamification motivates is still not well-learned. As Sailer et al. (2017) underline, it is complicated to research the influence of gamification as one generic construct, since it may exist in a form of various combinations of different elements. Thus, he researched the influence of every particular game element on motivation. Still, the same combination of elements may be implemented in different ways and may have different effects in various contexts. This brings a lot of limitations to the researches on how gamification motivates and how every game element influences motivation. A proposed optimal solution is to research the defined "gamification models" in a well-defined context with definite implementation. This way, the results may be applicable to other similar cases with more certainty.

Researchers indicate several perspectives, which can be considered to explain the influence of gamification on motivation. Amongst these perspectives, there is the behaviourist learning perspective, the trait perspective, the cognitive perspective, the perspective of interest, the

perspective of self-determination, and the perspective of emotion (Sailer et al., 2017). Previous researches focused on the connection between one perspective and the motivational power of every game design element since these facts could be empirically supported. In this research, we propose to focus on the self-determination theory, since it focuses on the satisfaction of basic psychological needs and the differences between intrinsic and extrinsic motivation.

B. Basic human needs

According to self-determination theory, there are three basic human needs, which are mentioned below.

- (1) Need for autonomy. It is expressed by the ability of a person to make any choice and perform any actions without being forced to do it. According to Vansteenkiste et al. (2010), autonomy represents psychological freedom and volition to perform any task. Thus, decisions should be made based on one's values and interest (Deci and Ryan, 2012) and independently from external enforcement or pressure (Vansteenkiste et al., 2010).
- (2) Need for competence. It refers to the feeling of success and efficiency when interacting with the environment (Rigby and Ryan, 2011). Everyone strives to feel competent when interacting with the environment and achieve the desired consequences.
- (3) Need for social relatedness. Simply put, this is the need to care and to be cared of. According to Deci and Ryan (1985), relatedness refers to the feeling of belonging, attachment, care regarding another person or group of people. This need represents the basic intention for an individual to be united and connected with the social environment (Deci and Ryan, 1985).

Self-determination theory postulates that the satisfaction of the basic psychological needs increases the intrinsic motivation and mental well-being of a person since the need satisfaction causes psychological growth, internationalisation and well-being (Deci and Ryan, 2000).

C. Intrinsic and extrinsic motivation

Since the satisfaction of basic needs influences motivation, this construct becomes central in the self-determination theory. The most predictive and explanatory power as to how people behave is based not in the amount of motivation but in the nature of its particular type (Deci and Ryan, 2008). In terms of the self-determination theory, researchers consider two types of motivation: intrinsic and extrinsic one.

On the one hand, intrinsic motivation is driven by intrinsic regulations, which originate from the feelings of pleasure, interest and satisfaction the person experiences in the activity (Deci and Ryan,

2004). Since intrinsic motivation is fully autonomous, it is considered to be the ideal type of motivation to drive actions (Vansteenkiste et al. 2009).

On the other hand, extrinsic motivation is based on external factors, not connected to the activity concerned (Deci and Ryan, 2004). The external factors are various regulations that create an outside pressure, which makes someone perform the desired behaviour. The examples of these regulations are a reward for successful performance (for example, money, status, verbal feedback) or punishment if the task is failed, feelings of shame and anticipated consequences (Van Roy and Zaman, 2017).

Both intrinsic and extrinsic motivations aim at stimulating one's performance, yet, they do it from different perspectives. Extrinsic regulations are a base for the development of controlled motivation, while intrinsic regulations are the foundation of autonomous motivation (Vansteenkiste et al., 2009). Autonomous motivation is believed to improve a person's psychological well-being, curiosity, persistence and better learning outcomes in different contexts (Ryan and Deci, 2000). Controlled motivation, however, is believed to quickly fade if the extrinsic regulations disappear (Richter et al., 2015). On the contrary, the intrinsic regulations tend to stay, since they come from the person (Van Roy and Zaman, 2017). Moreover, Cerasoli et al., (2014) have figured out in their research, that the quality of the effort people contribute into completing a task is higher if they are intrinsically motivated.

Another argument in favour of intrinsic motivation is that extrinsic rewards may reduce intrinsic motivation in many domains (Ryan and Deci, 2000) but not vice versa. It means, that the person may be no longer intrinsically motivated to engage in an activity if there are some extrinsic factors which push her to do so. This can be explained by the cognitive evaluation theory, which states, that the effect extrinsic rewards have on intrinsic motivation is mediated by the perception of a person, which can be informational or controlling (Ryan and Deci, 2000). Thus, if a person believes, that an extrinsic factor is limiting her autonomy or questioning her competence, her innate wish to perform the task will be weaker, as these basic psychological needs will not be satisfied.

All these arguments led researchers to the conclusion, that autonomous, or intrinsic motivation is the desired type of motivation, unlike the controlled, or extrinsic one (Deci and Ryan, 2008; Vansteenkiste et al., 2009).

There are several types of research, which focus on the consideration of gamification effects though self-determination paradigm. For instance, Ryan et al. (2006) found, that competence, autonomy, and relatedness may predict independently the future game-playing behaviour of a person. This work shows, that applying the need satisfaction concept in the game context is relevant

and may bring interesting findings. Further, the studies have focused on the manipulation of several game elements or features (like autonomy-inducing or control-inducing) and their influence on the basic need satisfaction (Peng et al., 2012). The study proved, that several game elements directly influence the satisfaction of the needs for autonomy and competence. There are some studies, which, on the contrary, could not prove the effect of several gamification elements on the basic need satisfaction. For example, Mekler et al (2015) claim, that elements, like points, badges and leaderboards evoke only extrinsic motivation, which can better performance but will not satisfy basic needs and cause intrinsic motivation. Sailer (2017) has researched the influence of different game design elements on the satisfaction of the needs of autonomy, relatedness and competence and proved, that several game design configurations satisfy these needs.

Therefore, the research, which focused on the self-determination theory in a gaming context, mostly considers separate game design elements or the general not defined concept gamification but does not focus on defined meaningful combinations of game elements, or different gamification types and their effectiveness in terms of basic need satisfaction.

Merkler et al. (2017) figured out, that the effect of gamification elements, like feedback, on need satisfaction is moderated by the person's perception of her actions as self-determined or not. For instance, autonomy-oriented people interpret feedback as informational, rather than controlling, while control-oriented people experience external factors as a source of pressure, and therefore, feel less competent and autonomous. These effects are called causality orientation and it is proven to moderate the effect on basic need satisfaction.

D. Causality orientation and its moderating effect

As mentioned above, causality orientations theory postulates, that the extent to which individuals experience their acting as self-determined is different for every individual (Vansteenkiste, Niemiec, and Soenens, 2010). According to the theory, there are autonomy-oriented and control-oriented people.

The people, who belong to the first type, tend to act according to their own values and interests, consider external events informational (thus, supporting their self-determination) and not controlling and are likely to regulate their behaviour autonomously (Vansteenkiste et al., 2010). These individuals seek to engage in actions and behaviours based on their choice and self-determination and perceive actions as originated from the self (Hagger and Chatzisarantis, 2011). Autonomy-oriented people show a high level of intrinsic motivation when it comes to making decisions by themselves (Hagger and Chatzisarantis, 2011).

Control-oriented people, on the other hand, rely on external events when making decisions, and perceive these external events as pressuring; their behaviour is regulated with an experience of control (Brühlmann, 2013). This type of people tends to believe, that the events, actions and behaviours originate outside the self. Therefore, control-oriented people are better motivated by extrinsic factors, like rewards or deadlines (Hagger and Chatzisarantis, 2011).

There is also the third type of people, namely, impersonally oriented individuals. They are likely to consider events as beyond interpersonal control, and thus, they experience the feelings of ineffectiveness, passivity and helplessness (Brühlmann, 2013).

Unlike personal traits, causality orientations are more dynamic and shaped by socialization experiences (Asendorpf and Van Aken, 2003). According to the causality orientation theory, all three causality orientations may exist in one person, but each of them is expressed to a certain extent and usually, there is a dominant one amongst the three. Moreover, either autonomous or controlling causality type may become dominant depending on the given circumstances. Therefore, causality orientation is moderating the effect of external events on self-determination and, consequently, on intrinsic motivation.

Regarding the nature of the effect, Hagger and Chatzisarantis (2011) discovered, that the autonomy-oriented people are protected from the negative effect of completion-contingent rewards on intrinsic motivation. Control-oriented people, thus, perform the desired behaviour as long as they are given a reward or have a threat. Therefore, autonomy-oriented causality orientation is believed to have a positive effect on intrinsic motivation, contrary to control-oriented causality orientation.

According to Deci et al., 2001, an externally-oriented (thus, in the terms of causality orientation theory, control-oriented) person is more likely to be motivated by extrinsic rewards, while internally-oriented (autonomy-oriented) a person is more susceptible to intrinsic motivational factors. Causality orientation may be influenced by situational factors, but as proven by research, this concept is stable on its own (Deci et al., 2001).

II. THE INFLUENCE OF GAMIFICATION ON ENGAGEMENT AND BEHAVIOUR

Engagement is one of the most often mentioned outcomes of intrinsic motivation. It has been proven to be an important attribute of the consumer-brand relationship. Engagement emerges from enthusiasm and concentration, which are often present during the process of playing virtual games (Reeves and Read, 2009). This way, engagement is an important construct to be considered in gamification research.

In terms of software and informational technologies, we consider “online engagement”, which, depending on the purpose of a program, may be the key indicator of its efficiency. There are platforms, which are designed for one-time use, like, online surveys, or platforms, which imply a long-term use, like, online courses or health programs (Looyestyn et al., 2017). User engagement is especially important for the second type of platforms. While speaking about engagement, it is important to consider not only the time the user spends but the quality of interaction (Looyestyn et al., 2017). This is well-shown by an example of online surveys, in a way, that an engaged user would write a bigger and more meaningful open-ended question answer comparing to a non-engaged one (Huotari and Hamari, 2012). In the context of online media, engagement can be defined as the collection of experiences that a reader has with a publication (Mersey et al., 2010). Nakamura and Csikszentmihalyi (2003) prove that people engage more into an activity, if they find it enjoyable, or if they see value in it.

Fredricks et al. (2004) have formulated three different perspectives of engagement definition: emotional, behavioural and cognitive. Emotional engagement depicts the affective and emotional relationship of a user (in the case with online engagement) and a program. The reactions vary from positive ones, like interest, well-being, happiness, to negative ones, like fear, anxiety, disgust. engagement stands for the involvement and participation of a person with a program and the positive attitude he experiences during this interaction. Cognitive engagement involves the effort the user makes, in order to understand the purpose and mechanics of the program, as well as the goals he has to complete, and reach a high level of comprehension of the program.

When considered in an online context, engagement can be expressed and measured through the time spent on a platform, and the number of actions completed on the platform (Kuo and Chuang, 2016). Thus, we may say, that the more a user is engaged with a website or software, the more time he will spend using it, which shall result in the more actions performed, more interactions, and positive emotions which a user experiences after the use of a program.

In the gamification context, researches have mostly focused on the learning engagement of students in a classroom or other learning environment (Da Rocha Seixas et al., 2016; Simoes et al., 2012; Kuo and Chuang, 2016), online engagement of software users (Kankanhalli et al., 2012; Looyestyn et al., 2017), and engagement in terms of customer-brand relationship and loyalty (Hardwood and Garry, 2015). According to Xu (2011) gamification may foster extrinsic motivation, which would provide short-term engagement. It is logical to suppose, that intrinsic motivation, caused by gamification, may contribute to long-term engagement. As Looneyestyn et al. (2017) prove, gamification should increase engagement with online programs. Hamari et al. (2014) prove, that

gamification may affect both psychological and physical outcomes, by transforming a software/online program into a fun and engaging one.

Therefore, the connection between gamification and engagement has been proven by several types of research, but not the distinct influence of intrinsic motivation caused by a certain gamification type, which creates space for our research.

One of the outcomes of engagement is a change in behaviour and attitudes. The indicators of behaviour change are numerous and vary on the context, and the process, which was involved in the experiment.

Since in this research we focus on the online programs, the main indicators of the behaviour change in this context are the frequency of website visits, the number of pages visited, the time spent on a website, the number of interactions (purchases, likes, comments, responses etc.) (Mercey et al., 2010; Bonnardel et al., 2011; Leslie et al., 2015).

Therefore, engagement is an important consequence of intrinsic motivation and an antecedent of a behaviour change. Namely, in the context of an online program, the more the person is engaged, the more time she will spend while using the program and the more she will interact with it, which will result in a change of key website metrics.

PART 2
-
RESEARCH PROJECT

CHAPTER 4 – CONCEPTUAL MODEL AND HYPOTHESES

Previous researchers have already used self-determination theory in order to explain the effect of gamification on motivation. It is claimed, that gamified environments and processes better satisfy basic human needs, which leads to the fostering of person's intrinsic motivation, thus, the person is more engaged in the gamified environment or activity and can perform the desired behaviour and provide desired outcomes.

Most of the researches (Ryan et al., 2006; Peng et al., 2012; Sailer et al., 2017; Merkler et al., 2017) focus on the ability of certain gamification elements to satisfy basic human needs, and thus, to stimulate intrinsic motivation of the person; other researches (Mekler et al., 2015) focus on the effect of gamification elements on extrinsic motivation. Therefore, the results provide the motivating potential various gamification elements. While these outcomes make a big contribution to the gamification research, it is important to take into account, that gamification involves the use of several elements as a system, and that the implementation and context of the use of these elements may be different. Therefore, according to the various combinations of game elements, the effect of the gamified process or the environment may differ.

As a consequence, we believe that it is worth considering the impact of different gamification types (namely, structural and content) on motivation. It is proven by the researchers, that these gamification types have different implementation and involve the utilisation of different game elements, and at the same time are coherent enough to be distinct while being implemented in various fields.

Having reviewed the literature on content and structural gamification, as well as the literature on the satisfaction of basic needs by various game elements, we have summarized the game design elements, which are a part of either structural or content gamification, and their positive influence on the satisfaction of the needs for autonomy, competence and relatedness. The results of this synthesis are present in Table 1.

Since content gamification is believed to be the base of meaningful gamification, which is meant to foster intrinsic motivation (Nicholson, 2012), and structural gamification is implying many extrinsic stimulating factors, we suppose, that content gamification will be a more efficient choice comparing to structural gamification.

H1: Content gamification has a more powerful impact than structural gamification on (a) the time spent on a page, (b) a number of pages visited.

Table 1. The classification of game elements according to gamification type and basic need satisfaction

Gamification type/ Basic need	Autonomy	Competence	Relatedness
Structural	alternative activities, privacy control, notification control.	progressive information, intuitive controls, points, levels, leaderboards, badges, achievements, progress bars, performance graphs.	groups, messages, connection to social networks, chats, teammates
Content	profiles, avatars, configurable interface, meaningful stories	positive feedback, optimal challenge,	blogs, meaningful stories

Moreover, researchers believe, that the use of both structural and content gamification at the same time may be the most efficient, which is a solid reason to consider this condition in the research. Therefore, to research the impact of different gamification types on user behaviour, we choose to consider three conditions: structural gamification, content gamification, and the combination of structural and content gamification. This is the basis of the second hypothesis, which postulates, that the use of both content and structural gamification at the same time may have a more powerful effect on the behaviour of a user.

H2: The combination of structural and content gamification has a more powerful impact on (a) the time spent on a page, (b) number of pages visited.

Self-determination theory points our two motivation types, intrinsic and extrinsic, and we will consider only intrinsic motivation, as it contributes to the psychological well-being of a person, raises the quality of the effort put into action performance and better stimulates engagement with the gamified environment. In this research we postulate, that intrinsic motivation is the desired type of motivation, thus, to achieve it, the three basic needs should be satisfied (according to the self-determination theory). We believe, that the basic need satisfaction mediates the effect of various gamification types on intrinsic motivation.

H3: Basic need satisfaction mediates the effect of gamification on intrinsic motivation.

According to the causality orientations theory, humans may be either autonomy-oriented or control-oriented, which influences the extent, to which they perceive their actions as self-determined. This construct has an important moderating effect on the effect of gamification on the basic need satisfaction (specifically, the need for autonomy).

H4: Causality orientations have a positive (negative) moderating effect on the influence of structural, content, or both gamifications on basic need satisfaction if the person is autonomy-oriented (control-oriented).

According to the self-determination theory and research on intrinsic motivation, the basic need satisfaction leads to intrinsic motivation, which in turn leads to engagement. Therefore, intrinsic motivation is mediating the effect of basic need satisfaction on engagement.

H5: Intrinsic motivation is mediating the effect of basic need satisfaction and engagement.

As defined by the research on online user’s behaviour, high engagement with a program makes the user spend more time browsing it and, in turn, interact more with software, thus visit more pages of the software. This relationship is the basis of the last hypothesis.

H6: Engagement is mediating the relationship between intrinsic motivation and (a) the time spent on a page, (b) number of pages visited.

The relationships between various variable are illustrated on the conceptual model, which is shown on the Figure 1.

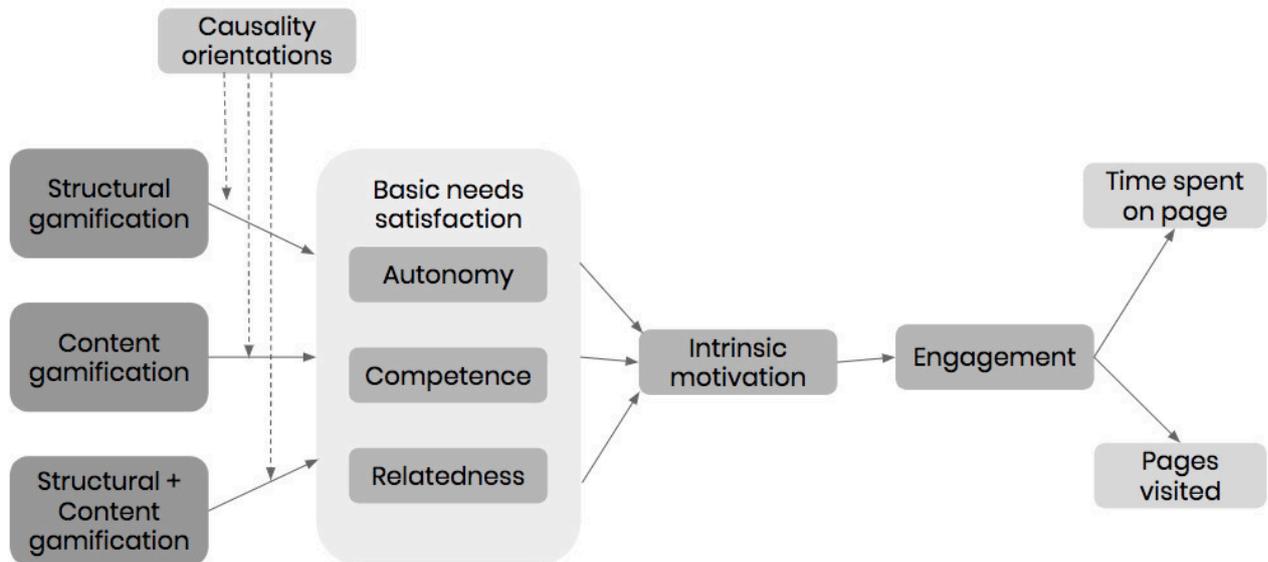


FIGURE 1. CONCEPTUAL MODEL OF THE RESEARCH

CHAPTER 5 – STUDY

In order to test the hypotheses, supposed by the conceptual model, we have developed a plan of a study, which would provide the data, that after further analysis may prove or discard the hypothesized effects.

I. DESIGN AND PROCEDURE

To check the formulated hypotheses, we plan to conduct one online-study. It is important to view different gamification types in the same context of implementation, in order to avoid bias. Since gamification is widely used in the development of software and digital products, we propose to consider different gamification types in the context of an informative web-platform, the main goal of which is informing users and providing them with content and not at selling products. Visually, the platform resembles a blog, where users can find articles on various topics, written by different authors. The goal of the platform is to engage users so that they would consume more content and interact with a platform.

To conduct the experiment, we plan to develop three different versions of a platform. The first version will be developed comprising structural gamification, thus, the logic of user flow will be changed. To implement this, we plan to implement the system of points (one article read equals to one point) and badges, which will be awarded according to the number of points collected, and the activity on the platform (comments, article shares, likes). The users will be able to access their personal statistics with progressive bars, which would demonstrate, how many articles are read and in what domains the reader is most interested (and thus, in these domains he has the most expertise and can be awarded a badge). To add a social element, we propose to implement communities, thus, the people who earn a certain number of points in a specific category will be organised together, so that they could communicate and exchange opinions.

The second version of the platform will implement the content gamification. According to the game elements, used for this gamification types, and to the principles of meaningful gamification, we plan to keep the structure of a classic blog-like website but modify the content itself. For instance, the published articles will be organised into cycles with several parts, and together form one complete story. These cycles will not be restricted by a rubric (like tech, art, gastronomy or sport) but rather by the main idea/character/theme of a publication. For example, there may be a cycle of articles regarding Notre Dame de Paris - an article about its music (in “Art” rubric), an article about the explications of the incident with the fire (in “Politics” rubric), an article about the models of fundraising for renovation (in “Economics” rubric) and an article about the renovation projects (in

“Architecture” rubric). To provide users more autonomy, we plan to implement the feature of creating their own collections of articles (the concept, similar to Pinterest boards) and to customise their profile by choosing either a picture or an avatar for themselves, writing a custom description and choosing nicknames.

The third version of the platform comprises both structural and content gamification, which means, that the game elements, which should be used for the two previous versions, will be combined in the third ones. For instance, users will be able to earn points and badges and get into various communities. At the same time, users may access to gamified content, like article cycles, and create their own selections of materials, which would be thus available to the public if the user enables this option. The users, whose selections are the most popular, will get an appropriate badge. Users will be able to modify their profile and express themselves, by choosing their picture or avatar, name or nickname and a personalized description. Users will have access to progressive bars with the statistics regarding their reading success and expertise, and, moreover, they will have options to share their achievements in social media.

The platform will be filled with content, available in 16 different rubrics (culture, tech, health, sport, gastronomy, environment, politics, economy, fashion, music, photography, craft, travelling, entrepreneurship, music, architecture). The content will be created by competent authors so that it would be meaningful and useful to read for a general audience. The profiles of the authors and other users, likes and comments will be real and clickable, to create the real-life experience to the experiment participants. Also, all the three conditions will have a small onboarding, explaining the users, what are the points, badges and progress bars, what are they awarded for (in case of structural and combined gamification), what are the article selections and cycles (in case of content and combined gamification), and how the platform works in general.

The three different conditions will be assigned randomly to all participants. One participant gets one condition accordingly. The participants will be invited in smaller groups to the company office, to observe an informal presentation of the product, and while waiting for the beginning of the presentation, they will be asked to browse the platform for as long as they want, in order to test the product and see how it works. The participants will have at least 30 minutes to do it, which is a reasonable time restriction.

At first, they will pass the onboarding on the platform, then the participants will have an opportunity to choose the topics, which interest them, and then access to content. The participants will all use laptops, in order to have the same user experience. The platform is connected to the Google Analytics system, which will provide data regarding every session, namely, the number of

pages visited and the time spent on a website. Since users will use their laptops and will have internet access, as soon as they feel bored and no longer motivated to use the platform, they will be asked to close the browser tab with the platform.

After the user closes the tab, he will be asked to fill out a questionnaire, which comprises questions that measure his causality orientation, basic need satisfaction, intrinsic motivation and engagement. The questionnaire will be made using Google Forms, a free and user-friendly tool. After the participants fill out the survey, the team will proceed to the product presentation and a social event afterwards.

In order to have more information on long-term engagement, we plan to propose participants too keep using the platform in their daily life, provided the new relevant content would appear every day. We plan to collect only the data regarding the time spent on a page and the number of pages visited during 7 days after the platform presentation. The participants will not be asked to fill out any additional surveys in order to minimize the pressure on them and create maximally realistic conditions, which would provide unbiased results. The participants will keep using the same version of a platform, with either structural, content, or both gamification types implemented. Measuring the effect in the long term is important, in order to see the durability of the effect of gamification and compare it with the short-term effect.

To ensure that the participants have clearly understood the conditions of the study, and to prove, that the independent variable manipulation is the main source of effect on the dependent variable, and not the spurious effect or an uncontrolled variable, we plan to include a manipulation check. The goal of the manipulation check in our study is to be sure, that the users are conscious that they are using a platform with a certain type of gamification. Due to this reason, we propose to include the following question with multiple selection answers:

Please, select all the elements that you have noticed on the website:

- *points*
- *badges*
- *progressive bars*
- *communities*
- *leaderboards*
- *article cycles*
- *article collections*

- *avatars*
- *stories*

If the user selects only (or most of) the elements, which belong to structural gamification (points, badges, progressive bars, communities) or to content gamification (article cycles, article collection, avatars), or both types (all of the mentioned elements), then it is clear, that he has understood the gamified platform well. If the user selects the elements, which were not available on the platform he has been testing then the manipulation was not successful.

In order to conduct the study, we plan to gather a group of personal contacts and people, interested in the concept of a platform, and ask them to test the product. In general, we plan to recruit 150 participants. The sample consists of people, who are active internet users and content consumers. The proportion of male and female participants is equal, the age of participants varies from 18 to 50 years old. There are no serious age restrictions since people of all ages use the Internet and read materials online.

II. MEASUREMENTS

In order to measure the concepts, included in the conceptual model, we adopt the most commonly used scales given the context corresponds to the conditions of the study we propose in this research.

A. *Causality orientations*

In order to measure causality orientations, we plan to use the Dutch General Causality Orientations scale (Deci and Ryan, 1985). The scale comprises 12 different vignettes which describe hypothetical situations concerning social interactions or achievements (e.g. applying for a job or interacting with a friend). Participants have to choose one of the three possible answers marked a, b, c, in which one is autonomy-oriented, the other one is control-oriented and the third one is impersonal. Participants rate, to what extent they would act, think or feel as mentioned in the particular response using 7-point Likert scale with the marks "Very unlikely" for 1, "Moderately likely" for 4 and "Very likely" for 7. After the participants reply to the 12 questions, the average of their answer will be computed and this number will indicate, whether the predominant orientation is autonomy, control or impersonal. The full list of vignettes with the answer options is available below.

Causality orientations measurement scale

1. You have been offered a new position in a company where you have worked for some time.

The first question that is likely to come to mind is:

- a) What if I can't live up to the new responsibility?
- b) Will I make more at this position?
- c) I wonder if the new work will be interesting.

2. You have a school-age daughter. On parents' night the teacher tells you that your daughter is doing poorly and doesn't seem involved in the work. You are likely to:

- a) Talk it over with your daughter to understand further what the problem is.
- b) Scold her and hope she does better.
- c) Make sure she does the assignments, because she should be working harder.

3. You had a job interview several weeks ago. In the mail you received a form letter which states that the position has been filled. It is likely that you might think:

- a) It's not what you know, but who you know.
- b) I'm probably not good enough for the job.
- c) Somehow they didn't see my qualifications as matching their needs.

4. You are a plant supervisor and have been charged with the task of allotting coffee breaks to three workers who cannot all break at once. You would likely handle this by:

- a) Telling the three workers the situation and having them work with you on the schedule.
- b) Simply assigning times that each can break to avoid any problems.
- c) Find out from someone in authority what to do or do what was done in the past.

5. A close (same-sex) friend of yours has been moody lately, and a couple of times has become very angry with you over "nothing." You might:

- a) Share your observations with him/her and try to find out what is going on
- b) Ignore it because there's not much you can do about it anyway.

c) Tell him/her that you're willing to spend time together if and only if he/she makes more effort to control him/herself.

6. You have just received the results of a test you took, and you discovered that you did very poorly. Your initial reaction is likely to be:

- a) "I can't do anything right," and feel sad.
- b) "I wonder how it is I did so poorly," and feel disappointed.
- c) "That stupid test doesn't show anything," and feel angry.

7. You have been invited to a large party where you know very few people. As you look forward to the evening, you would likely expect that:

- a) You'll try to fit in with whatever is happening in order to have a good time and not look bad.
- b) You'll find some people with whom you can relate.
- c) You'll probably feel somewhat isolated and unnoticed.

8. You are asked to plan a picnic for yourself and your fellow employees. Your style for approaching this project could most likely be characterized as:

- a) Take charge: that is, you would make most of the major decisions yourself.
- b) Follow precedent: you're not really up to the task so you'd do it the way it is been done before.
- c) Seek participation: get inputs from others who want to make them before you make the final plans.

9. Recently a position opened up at your place of work that could have meant a promotion for you. However, a person you work with was offered the job rather than you. In evaluating the situation, you're likely to think:

- a) You didn't really expect the job; you frequently get passed over.
- b) The other person probably "did the right things" politically to get the job.
- c) You would probably take a look at factors in your own performance that led you to be passed over.

10. You are embarking on a new career. The most important consideration is likely to be:

- a) Whether you can do the work without getting in over your head.
- b) How interested you are in that kind of work.
- c) Whether there are good possibilities for advancement.

11. A woman who works for you has generally done an adequate job. However, for the past two weeks her work has not been up to par and she appears to be less actively interested in her work. Your reaction is likely to be:

- a) Tell her that her work is below what is expected and that she should start working harder.
- b) Ask her about the problem and let her know you are available to help work it out.
- c) It's hard to know what to do to get her straightened out.

12. Your company has promoted you to a position in a city far from your present location. As you think about the move you would probably:

- a) Feel interested in the new challenge and a little nervous at the same time.
- b) Feel excited about the higher status and salary that is involved.
- c) Feel stressed and anxious about the upcoming changes.

B. Basic needs satisfaction and intrinsic motivation measurement

In order to measure the level of satisfaction of the needs for autonomy, competence and relatedness, we plan to use the Intrinsic Motivation Inventory (IMI) scale (Ryan & Deci, 2000). The most deployed version of the scale has seven subscales, namely, interest/enjoyment, perceived competence, effort/importance, pressure/tension, perceived choice, value/usefulness and relatedness. In our study, we will use only four subscales, due to the constraints on survey length and respondent fatigue.

Therefore, we keep the interest/enjoyment, perceived competence, perceived choice and relatedness subscales. The interest/enjoyment subscale, which is present in the IMI scale, is the part, which measures intrinsic-motivation self-report. Perceived competence, perceived choice and relatedness measure, accordingly, competence, autonomy and relatedness satisfaction. The adopted scale thus comprises 28 items, which are the statements regarding the activity they have performed

(in our case, browsing the platform). We have changed the statement details, in order to adopt them to the context of the study. The participants should rate the extent, to which they agree with every statement, using a 7-point Likert scale (where 1 = not at all true; 4 = somewhat true; 7 = very true). Some of the items are marked with (R), which means they are reversed. The adapted scale, which we are planning to use in the study, is presented below.

Intrinsic motivation and basic need satisfaction measurement scale

Interest/Enjoyment

1. I enjoyed using this website very much
2. Using this website was fun to do.
3. I thought using this website was boring. (R)
4. Using this website did not hold my attention at all. (R)
5. I would describe using this website as very interesting.
6. I thought using this website was quite enjoyable.
7. While I was using this website, I was thinking about how much I enjoyed it.

Perceived Competence

1. I think I am pretty good at using this website.
2. I think I did pretty well at using the website, compared to other students.
3. After using the website for awhile, I felt pretty competent.
4. I am satisfied with my performance at using the website.
5. I was pretty skilled at using the website.
6. I could not use the website very well. (R)

Perceived Choice

1. I believe I had some choice about using the website.
2. I felt like it was not my own choice to use the website. (R)
3. I did not really have a choice about using the website. (R)
4. I felt like I had to use this website. (R)

5. I used this website because I had no choice. (R)
6. I used this website because I wanted to.
7. I used this website because I had to. (R)

Relatedness

1. I felt really distant to other website users. (R)
2. I really doubt that other website users and I would ever be friends. (R)
3. I felt like I could really trust other website users.
4. I'd like a chance to interact with other website users more often.
5. I'd really prefer not to interact with other website users in the future. (R)
6. I do not feel like I could really trust other website users. (R)
7. It is likely that other website users and I could become friends if we interacted a lot.
8. I feel close to other website users.

C. Engagement measurement

Mersey et al. (2010) claim, that engagement is a “qualitative, holistic feeling of readers, which we cannot measure directly”. Engagement can be measured, using behavioural indicators, or its level can be evaluated and reported by the participants themselves. We choose the second method, given the fact, that behavioural indicators will be measured in any case.

To measure engagement with the web-platform, used in the study, we have adopted a scale, developed by Demangeot and Broderick (2016). These researchers consider four different facets of engagement, namely, activity, interaction, communication and behavioural engagement. The developed scale also included the antecedents of engagement, namely, perceptions of informational exploration, experiential exploration, and sense-making (Demangeot and Broderick, 2016) but we have decided to remove them from the scale, which we have adopted for our study, given the time constraints and the volume of the final questionnaire. Moreover, the items in the scale were adopted, so that they would represent the platform tested in our research and fit in the overall functional context.

The final scale has four engagement facets representing the constructs, and the scale consists of 15 items. The table contains the information on standard loadings of every item, provided by the scale authors. The indication (R) stands for the reverse-scored items. The participants will be asked to

rate the extent, to which they agree or not with the statement, on a 7-point Likert scale (where 1 = not at all true; 7 = very true).

Table 2. The measurement of engagement with an online program

Construct	Item	Stand. loading
Activity engagement	The navigation was stimulating	0.79
	The navigation was enjoyable	0.81
	The navigation was exciting	0.82
Interaction engagement	Interacting with the website gave me answers to my questions	0.71
	I felt as if I was actually getting answers to what I was after on this website	0.65
	This website didn't understand what I'm interested in (R)	0.71
	This website didn't understand my needs (R)	0.79
Communication engagement	If the website had a function enabling me to register for e-mail alerts, I would register	0.87
	I would refuse to let this website contact me for new publications and authors (R)	0.57
	I would like this website to keep in touch with me through e-mail. 0.90	0.90
	I would register to receive newsletters from this website	0.94
Behavioural engagement	I will visit this site first when I want to read articles	0.78
	I plan to use this website in the future	0.90
	I intend to continue using this website in the future	0.95
	I expect my use of this website to continue in the future	0.92

We propose to include the items of the scales mentioned above in the final questionnaire, which we plan to propose to users.

D. Time spent on a page and pages visited

These indicators will be measured, using the Google Analytics tool. The time, spent on a page, will be measured in seconds, from the time a user enters the website, till he quits it. The number of pages visited is a single number, which depicts the number of different pages on a platform a user has clicked on.

The various constructs and items, which comprise measurement scales, will be tested so that we can make sure that the adopted scales can be used for construct measurement. The testing process is a part of the data analysis process which is described below.

III. DATA ANALYSIS

The first step after data collection is the cleaning of the database and the conduction of descriptive analysis, in order to receive the general information about the database. The next step is the validation of measurement scales, which we have decided to use in this study.

The validation of measurement scales will be performed using structural equation modelling. The first step is testing the convergent validity, which checks the shared variance between each of the variables. The convergent validity should be greater than 0.5, in this case, we may claim, that construct variance is explained by the items of the scale and that it is not a measurement error. Afterwards, we plan to use the Cronbach's alpha, in order to check the consistency of measurement scales. The value of Cronbach's alpha coefficient should be greater than 0.7 (Fornell & Larcker, 1981). The last step of the scale validation is discriminant validity, which proves, that the scales are measuring the concepts which they are supposed to measure. The condition of discriminant validity is that the average of extracted variance should be bigger than squared correlations between constructs.

After the scale validation, we analyse the results of the manipulation checks by using the descriptive analysis and summarising, whether the user selects the features, which belong to one of the three conditions.

In order to test the mediation and moderation effects, we will imply the analysis of variance, since we are analysing multiple categories. The analysis of variance tests the differences in means of various constructs and, thus, it may be used to check the connections between variables in our study

(namely, to test the moderation and mediation effects). The analysis of variances should be performed using the SPSS (“ANOVA” method).

Since in the proposed model we plan to test sequential mediation between three constructs (the connection between the basic need satisfaction, intrinsic motivation, and engagement), we plan to use macro-analysis in the process of data analysis. For this type of sequential mediation, we propose to use model 6 of the macro process. Model 6 implies the control of the indirect effect of individual mediators while controlling for other variables (Teixeira and Palmeira, 2016).

We plan to use the macro process to test the moderation effect as well. In order to test the effect of moderation of causality orientation on the influence of gamified web-platform on basic need satisfaction, we will use macro process model 1.

CONCLUSION

A large body of research has pointed out the benefits of gamification. Gamification has proven itself to be effective for customer attraction and retention, however, in the spheres, other than marketing, it is still not widely used and remains a subject of criticism. The main argument critics use is that gamification proposes the motivational efficiency of game elements, thus underestimating users and undermining the complexity of games.

For instance, Bogost (2011) emphasises the unfair deals in which valuable customer information and engagement is exchanged for simplistic, empty imitations of games. He claims, that gamification “proposes to replace real incentives with the fake ones”, though this point may concern only extrinsic rewards, which artificially motivate people, and not the game mechanics, aimed at fostering the intrinsic motivation. Robertson (2012) notices the use of “pointsification” as design panacea. Gartner (2012) has been criticising the efficiency of gamification by showing a report, which stated, 80% of current gamified applications would fail to meet business objectives, and the main reason was poor design. Gartner commented this fact with the following phrase in his report: “The focus is on the obvious game mechanics, such as points, badges and leaderboards, rather than the more subtle and more important game design elements, such as balancing competition and collaboration, or defining a meaningful game economy, as a result, in many cases, organizations are simply counting points, slapping meaningless badges on activities and creating gamified applications that are simply not engaging for the target audience. Some organizations are already beginning to cast off poorly designed gamified applications.”

Based on these critics, we may state, that gamification is not an algorithmic process of adding a defined set of game elements (such as points, badges, leaderboards) to a process, but rather an approach for designing processes, which implies different realisations depending on the situation and goals which are aimed to be achieved.

The problem that many researchers and practitioners face is the lack of consistency in the definition of gamification and its effects. Since it can be applied using various game elements, and in various contexts, it is impossible to predict the impact of gamification on human’s behaviour and attitude. As Cugelman (2013) points out, the majority of gamification studies are held in a particular context, like in the internal organizational processes, online learning, work environment etc., which leads to the fact, that gamification may be effective only in certain contexts, which are already more or less adapted to this novelty. What is more, various studies are demonstrating different results of

gamification impact, both positive and negative. This leads to the fact, that research should be more precise regarding the environment and procedure of gamification.

To address this problem, in this research we have summarised the theoretical information regarding the definition of gamification, its characteristics, the role of play in the gaming process, various game elements and mechanics, emphasized the two types of gamification: structural and content gamification. Since the classification of gamification into these two types is consistent but not enough researched, we have focused on the impact the different types and their combination have on humans' motivation, engagement and behaviour.

The research question we have worked on is "Does visitors' behaviour on a gamified website change with the nature of this gamification? More specifically, to what extent can different gamification types increase the time the user spends on a website and the number of pages he visits?" To address the question, we have considered the concepts of structural and content gamification, basic need satisfaction, intrinsic motivation, causality orientation, engagement, time spent on a web page and the number of pages visited.

In terms of motivation, we have considered the self-determination theory as a strong theoretical framework. This decision was based on the polar influence of structural and content gamification on extrinsic and intrinsic motivation accordingly. Thus, we consider the satisfaction of three basic human needs, which leads to intrinsic motivation and engagement. The context of gamification implementation is an online web-platform, since the sphere of software and digital marketing benefits from gamification to a greater extent than the others.

The three conditions (structural, content gamification and the two at a time), implemented in a web-platform, hypothetically satisfy basic psychological needs of competence, autonomy and relatedness to a different extent, and thus, have a different effect on intrinsic motivation development. In turn, intrinsic motivation is supposed stimulates user engagement, which is believed to result in the time, spent on the informational platform, and the pages visited by the user. We are considering these two metrics, since the user may spend much time on the platform without making actions, and this is measured by the number of pages a user visits. If the user is intrinsically motivated to use the web-platform, he will be more engaged, thus, will spend more time visiting various pages.

We have also considered the moderating effect of causality orientation, which may be either autonomous, controlled or impersonal. Causality orientation is believed to moderate the effect of the gamified website on basic need satisfaction (in particular, the need for autonomy).

To test the hypotheses and the proposed model, we have developed a study proposition, which implies the data collection and analysis, which, in turn, should let us test hypotheses and answer the research question.

This thesis has significant research contributions, for instance, the systematic literature review on gamification, its effect on intrinsic motivation through the prism of self-determination theory, the influence of causality orientation on the gamification effect and the effect of gamification on online behaviour. This research has also synthesized the knowledge regarding the typology of gamification and connects content gamification with meaningful gamification since these concepts are very close but defined by different authors. The research proposes a new approach of comparing not only structural and content gamification but the combination of the two as well. It includes a classification of game elements, which belong to either content or structural gamification, and at the same time including the basic needs, satisfied by a certain element.

This study has several managerial implications. First of all, it comprises the practical principles of gamification use, as well as the examples of the implementation of different game elements in different contexts. Second, the clear definition of gamification types and the classification of various gamification elements, which belong to different gamification types and satisfy different basic needs, can be used in practice, in order to reach the effect of synergy and stimulate the intrinsic motivation of the user. This research may be useful for marketing managers, web developers, product owners, who plan to gamify their web-product.

The study may have several limitations, which we plan to eliminate or to minimize their effect. The first possible limitation is the difference between the user experience due to the different devices and systems used. In order to eliminate this potential threat, we plan to adapt the platforms to different devices and conduct testing and ask participants to use their laptops and not mobile devices. The second limitation concerns the biased results, which may be received if the person enjoys or not enjoys the available content. In order to avoid this limitation, we plan to provide content on various topics and ask the participant at the beginning of his user journeys which topics he prefers.

The thesis projects numerous research avenues. First of all, the study, planned in the thesis, may be conducted, in order to get the results of the hypotheses. Second, there is room for research in the field of gamification typology. The literature lacks the explicit explanation regarding the effects of these two types and their combination, as well as the complete definition of the game elements and mechanics, which should be included in every gamification type. Researchers may also focus on the

moderating effect of other constructs, like the attitude towards games and the gaming experience of the person.

To conclude, gamification is a phenomenon, which has been actively discussed for 8 years already, and it keeps bringing more and more results to both researchers and practitioners. Due to its universality, the concept may be implied to various concepts, which leads to new discoveries.

BIBLIOGRAPHY

- ASENDORPF, Jens and VAN AKEN, Marcel. Personality–relationship transaction in adolescence: Core versus surface personality characteristics. *Journal of Personality*. 2003, 71(4), pp. 629–666.
- BEDWELL, Wendy et al. Toward a Taxonomy Linking Game Attributes to Learning. *Simulation & Gaming*. 2012, 43(6), pp.729-760.
- BOGOST, Ian. *Why gamification is bullshit*. In S. P. Walz, & S. Deterding (Eds.), *The gameful world: Approaches, issues, applications*. (MUN LIBRARY-EBRARY): Mit Press, 2015.
- BONNARDEL, Nathalie et al. The impact of colour on Website appeal and users' cognitive processes. *Displays*, 2011, 32(2), pp. 69–80.
- BOSKIC, Natasha, and HU, Sharon. Gamification in higher education: how we changed roles. *European Conference on Games Based Learning*. 2015, pp. 741–748.
- BRÜHLMANN, Florian. *Gamification From the Perspective of Self-Determination Theory and Flow*. 2013.
- CALVILLO-GÁMEZ, Eduardo et al. Assessing the core elements of the gaming experience. *Human–Computer interaction series game user experience evaluation*. 2015, pp. 37-62.
- CALLOIS, Roger. *Man, play and games*. Champaign, IL: University of Illinois Press. 2001.
- CECHANOWICZ, Jared. et al. Effects of gamification on participation and data quality in a real-world market research domain. *Proceedings of the First International Conference on Gameful Design, Research, and Applications – Gamification*. 2013
- CRUMLISH, Christian, and MALONE, Erin. *Designing social interfaces: Principles, patterns, and practices for improving the user experience*. Sebastopol: O'Reilly Media, Inc. 2009.
- CUGELMAN, Brian. Gamification: What It Is and Why It Matters to Digital Health Behavior Change Developers, *JMIR Serious Games*. 2013.,1(1):e3
- DA ROCHA SEIXAS, Luma et al. Effectiveness of gamification in the engagement of students. *Computers in Human Behavior*, 2016, 58, pp. 48–63.
- DECI, Edward, and RYAN, Richard. *Intrinsic motivation and self-determination in human behavior*. New York: Springer. 1985.
- DECI, Edward, and RYAN, Richard. The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*. 2000, 11, pp. 227-268.
- DECI, Edward, and RYAN, Richard. Facilitating optimal motivation and psychological well-being across life's domains. *Can. Psychol./Psychologie canadienne*. 2008, 49(1), pp. 14–23.
- DECI, Edward, et al. A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*. 1999, 125, pp. 627-668.
- DECI, Edward, et al. Extrinsic rewards and intrinsic motivation in education: Reconsidered once again. *Review of Educational Research*. 2001, 71(1), pp. 1–27.
- DEMANGEOT, Catherine and BRODERICK, Amand. Engaging customers during a website visit: a model of website customer engagement. *International Journal of Retail & Distribution Management*. 2016, 44(8), pp. 814–839.
- DEMERS, Michael. Structural Gamification of a University GIS Course. *Geogames and Geoplay*. 2017, pp 195–208.

- DENNY, Paul. The effect of virtual achievements on student engagement. In: *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. Presented at CHI13'. ACM. 2013, pp. 763–772.
- DETERDING, Sebastian, et al. From game design elements to gamefulness: defining “gamification”, in *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments (MindTrek '11)*. Tampere, Finland. Sep 28-30, 2011. ACM Press, pp. 9-15.
- DETERDING, Sebastian, et al. Gamification: Toward a definition. In: *Proceedings of the 2011 Annual Conference Extended Abstracts on Human Factors in Computing Systems*. ACM, New York. 2011.
- DETERDING, Sebastian, et al. Gamification: Toward a Definition. In: *Proceedings of CHI 2011 Workshop Gamification: Using Game Design Elements in Non- Game Contexts*. 2011, pp. 6–9.
- DETERDING, Sebastian. Gamification: designing for motivation. *Interactions 2012*, 19, pp.14–17.
- DIGNAN, Aaron. *Game Frame: Using Games as a Strategy for Success*. Free Press. NY. 2011.
- DOMINGUEZ, Adrian et al. Gamifying learning experiences: practical implications and outcomes. *Comput. Educ.* 6, 2013, pp. 380–392.
- ELSHIEKH, Rania and BUTGERIT, Laurie. Using Gamification to Teach Students Programming Concepts. *Open Access Library Journal*. 2017, 4, pp 1-7.
- FORNELL, Claes and LARCKER, David. Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*. 1981, pp. 382-388.
- FOSTER, Jason et al. Gamification as a strategy for promoting deeper investigation in a reverse engineering activity. In: *Proceedings of the 2012 American Society for Engineering Education Conference*. 2012, pp. AC 2012–AC 5456.
- FREDRICKS, Jennifer et al. School engagement: potential of the concept, state of the evidence. *Review of Educational Research*, 2004, 74(1), 59e109.
- GARCÍA, Félix, et al. A framework for gamification in software engineering. *Journal of Systems and Software*. 2017, 132, pp 21–40.
- GOEHLE, Geoff. Gamification and Web-based Homework. *Primus: Probl. Resour. Issues Math. Undergrad. Stud.* 2013, 23, pp. 234–246.
- HAGGER, Martin and CHATZISARANTIS, Nikos. Causality orientations moderate the undermining effect of rewards on intrinsic motivation. *Journal of Experimental Social Psychology*. 2011, 47(2), pp. 485–489.
- HAMARI, Juho. Transforming homo economicus into homo ludens: A field experiment on gamification in a utilitarian peer-to-peer trading service. *Electronic commerce research and applications*. 2013, 12(4), pp. 236-245.
- HAMARI Juho, et al. Does gamification work? - a literature review of empirical studies on gamification (forthcoming). *Presented at: 47th Hawaii International Conference on System Sciences*; January 6-9, 2014; Hawaii, USA.
- HARWOOD, Tracy and GARRY, Tony. An investigation into gamification as a customer engagement experience environment. *Journal of Services Marketing*, 2015, 29(6/7), pp. 533–546.
- HUNICHE, Robin et al, A Formal Approach to Game Design and Game Research. *Proc. AAAI workshop on Challenges in Game*, AAAI Press. 2004.
- HUOTARI, Kai and HAMARI, Juho. “Gamification” from the perspective of service marketing. *Proc. CHI 2011 Workshop Gamification*. 2011.

- HUOTARI, Kai and HAMARI, Juho. Defining gamification – a service marketing perspective. In: *Proceedings of the 16th International Academic MindTrek Conference*. Presented at MindTrek'12. ACM. 2012. pp. 17–22.
- HENDRIKX, Mark, et al. Procedural content generation for games: A survey. *ACM Transactions on Multimedia Computing, Communications, and Applications (TOMM)*. 2013, 9, 1.
- HUIZINGA, Johan. *Homo ludens: A study of the play element in culture*. Boston: Beacon. 1955.
- KAPP, Karl. *The Gamification of Learning and Instruction Fieldbook: Ideas Into Practice*. John Wiley & Sons. 2013.
- KAPP, Karl. What L&D Professionals Need to Know about Gamification. *Training Industry Magazine, Spring*. Berlin. 2014.
- KANKANHALLI, Atreyi et al. Gamification: A new paradigm for online user engagement. *International Conference on Information Systems, ICIS 2012 4* : 3573-3582. 2012.
- KUO, Ming-Shiou, and CHUANG, Tsung-Yen. How gamification motivates visits and engagement for online academic dissemination – An empirical study. *Computers in Human Behavior*. 2016, 55, pp. 16–27.
- LANDERS, Richard et al, Gamification Science, Its History and Future: Definitions and a Research Agenda. *Simulation & Gaming*, 2018, 49(3), 315–337.
- LANDERS, Richard, and LANDERS, Amy. An Empirical Test of the Theory of Gamified Learning: The Effect of Leaderboards on Time-on-Task and Academic Performance. *Simulation & Gaming*. 2014, 45(6), pp. 769-785.
- LESLIE, Eva. et al. Engagement and retention of participants in a physical activity website. *Preventive Medicine*. 40(1). 2005, pp. 54–59.
- LI, We et al. GamiCAD: a gamified tutorial system for first time AutoCAD users. In: *Proceedings of the 25th Annual ACM Symposium on User Interface Software and Technology*. Presented at UIST'12. ACM, Cambridge, MA. 2012, pp. 103–112.
- LIU, Yefeng et al. Gamifying intelligent environments. In: *Proceedings of the 2011 International ACM Workshop on Ubiquitous Meta User Interfaces*. Presented at Ubi-MUI'11. ACM. 2011. pp. 7–12.
- LOOYESTYN Jemma, et al. Does gamification increase engagement with online programs? A systematic review. *PLoS ONE* 12(3): e0173403. 2017.
- MCGONIGAL, Jane. *Reality is broken: Why games make us better and how they can change the world*. Penguin books. 2011.
- MEKLER, Elisa, et al. (2017). Towards understanding the effects of individual gamification elements on intrinsic motivation and performance. *Computers in Human Behavior*. 2017, 71, pp 525–534.
- MERSEY, Davis et al. Engagement with online media. *Journal of Media Business Studies*.7(2). 2010, pp. 39-56.
- MORGANTI, Luca et al. Gaming for Earth: Serious games and gamification to engage consumers in pro-environmental behaviours for energy efficiency. *Energy Research & Social Science*. 2017, 29, 95–102.
- NAKAMURA Jeanne and CSIKSZENTMIHALYI Michaly. The construction of meaning through vital engagement. In: *Keyes C, Haidt J, editors Flourishing: Positive Psychology and the Life Well-Lived*. Washington, DC, *US American Psychological Association*. 2003. pp. 83–104.
- NICHOLSON, Scott. *A User-Centered Theoretical Framework for Meaningful Gamification*. Games+ Learning+ Society. 8, 2012.

- NICHOLSON, Scott. A RECIPE for Meaningful Gamification. *Gamification in Education and Business*. 2014, pp. 1–20.
- RAFTOPOULOS, Marigo, et al. How enterprises play: Towards a taxonomy for enterprise gamification. In *Staffan Björk, Annika Waern, Mathias Fuchs (Eds.), DiGRA 2015: Diversity of play*. 2015, pp. 1-17. Lüneburg, Germany.
- REEVE, Johnmarshall. Self-determination theory applied to educational settings. In: *Deci, E.L., Ryan, R.M. (eds.) Handbook of Self-Determination Research*, pp. 2–183. University of Rochester Press, Rochester. 2004.
- REEVES, Byron and READ, Leighton. Total engagement: Using games and virtual worlds to change the way people work and businesses compete. *Cambridge MA: Harvard Business School Press*. 2009.
- RIGBY, Scott and RYAN, Richard. Glued to games: How video games draw us in and hold us spellbound. *Santa Barbara: Praeger*. 2011.
- RICHTER, Ganit et al. Studying gamification: the effect of rewards and incentives on motivation. In: *Reiners, T., Wood, L.C. (eds.) Gamification in Education and Business*. 2015, pp. 21–46.
- ROBSON, Karen et al. Game on: Engaging customers and employees through gamification. *Business Horizons*. 2016, 59(1) pp. 29–36.
- RODGERS, Carol. Defining reflection: Another look at John Dewey and reflective thinking. *Teachers College Record*. 2002, 104 (4), pp. 842–866.
- RYAN, Richard and DECI, Edward. Self-determination theory and the facilitation of intrinsic motivation, social development, and well being, *American Psychologist*. 55. 2000. pp. 68–78.
- RYAN, Richard et al. The Motivational Pull of Video Games: A Self- Determination Theory Approach. *Motivation and Emotion*. 30(4). 2006. pp. 344-360.
- SAILER, Michael, et al. Psychological perspectives on motivation through gamification. *Interaction Design and Architecture(s) Journal*. 2013, 19,28e37.
- SAILER, Michael, et al. How gamification motivates: An experimental study of the effects of specific game design elements on psychological need satisfaction. *Computers in Human Behavior*. 2017, 69, pp 371–380.
- SALEN, Katie, and ZIMMERMAN, Eric. Rules of Play: Game Design Fundamentals. *Cambridge: Mit Press*. 2004. p.80.
- SEABORN, Katie and FELS, Deborah. Gamification in theory and action: A survey. *International Journal of Human-Computer Studies*. 2015, 74, pp. 14–31.
- SIMOES, Jorge, et al. A social gamification framework for a learning platform. *Computers in Human Behavior*, 2013, 29, 345e353.
- SNYDER, Erin and HARTIG, Jason. Gamification of board review: a residency curricular innovation. 2013, *Med. Educ*. 47. pp. 524–525.
- TEIXEIRA, Diogo and PALMEIRA, António. Needs Satisfaction Effect on Exercise Emotional Response: A Serial Mediation Analysis with Motivational Regulations and Exercise Intensity. *Motriz. Revista de Educação Física*. 2016, 22.
- VANSTEENKISTE, Maarten, et al. Motivational profiles from a self-determination perspective: the quality of motivation matters. *J. Educ. Psychol*. 101(3). 2009, pp. 671–688.
- VANSTEENKISTE, Maarten, et al. The development of the five mini-theories of self-determination theory: an historical overview, emerging trends, and future directions. In *T. C. Urdan & S. A. Karabenick (Eds.), The Decade Ahead: Theoretical Perspectives on Motivation and Achievement*

(Advances in Motivation and Achievement. Vol. 16 A. 2010. pp. 105-165. London: Emerald Group Publishing Limited.

VAN ROY, Rob and ZAMAN, Bieke. Why Gamification Fails in Education and How to Make It Successful: Introducing Nine Gamification Heuristics Based on Self-Determination Theory. *Serious Games and Edutainment Applications*. 2017, pp. 485–509.

Vegt Niko et al. Designing Gamification to Guide Competitive and Cooperative Behavior in Teamwork. In: *Reiners T., Wood L. (eds) Gamification in Education and Business. Springer, Cha.* 2015.

WEBB, Erika. Gamification: When It Works, When It Doesn't. *Lecture Notes in Computer Science*. 2013, pp. 608–614.

WERBACH, Kevin. (Re)Defining Gamification: A Process Approach. In *A. Spagnolli, L. Chittaro, & L. Gamberini (Eds.), Persuasive Technology*. Vol. 8462. 2014, pp. 266-272.

WERBACH, Kevin., & HUNTER, Dan. For the Win: How Game Thinking Can Revolutionize Your Business. *Philadelphia: Wharton Digital Press*. 2012.

XU, Yongwen. Literature review on web application gamification and analytics. *Honolulu, HI: University of Hawaii*. 2011. CSDL Technical Report 11–05.

ZICHERMANN, Gabe and LINDER, Joselin. *Game-Based Marketing. New Jersey: Wiley*. 2010

WEBOGRAPHY

BOGOST, Ian. *Persuasive Games: Exploitationware*. [online] Gamasutra.com, 2011. Available at: http://www.gamasutra.com/view/feature/6366/persuasive_games_exploitationware.php/ (Accessed 9 May 2019).

DETERDING, Sebastien. *Just add points? What UX can (and cannot) learn from games*. SlideShare. Available at: <<http://www.slideshare.net/dings/just-add-points-what-ux-can-and-cannot-learn-from-games>> (Accessed March 1, 2019)

GARTNER. *By 2014, 80 Percent of Current Gamified Applications Will Fail to Meet Business Objectives Primarily Due to Poor Design*. Gartner.com, 2012. Available at: <<http://www.gartner.com/technology/research/gamification/>> (Accessed 7 May 2019)

MARONEY, Kevin. *My entire waking life*. [online] The Games Journal., 2011. Available at: <http://www.thegamesjournal.com/articles/MyEntireWakingLife.shtml> (Accessed 2 June 2019).

NICHOLSON, S.: *A User-Centered Theoretical Framework for Meaningful Gamification. A Brief Introduction to Gamification Organismic Integration Theory Situational Relevance and Situated Motivational Affordance*. [online] Games+Learning+Society 8.0. [Accessed 29 April 2019]. Available at: <<http://scottnicholson.com/pubs/meaningfulframework.pdf>>

ROBERTSON, Margaret. *Can't play, won't play*. [online] Hideandseek.net, 2010.. Available at : <<http://www.hideandseek.net/2010/10/06/cant-play-wont-play/>> (Accessed 14 April 2019)

TABLE OF FIGURES

FIGURE 1 : CONCEPTUAL MODEL OF THE RESEARCH.....35

TABLE OF CONTENTS

ANTI PLAGIARISM STATEMENT.....	5
TABLE OF CONTENTS	8
CHAPTER 1 – THE CONCEPT OF GAMIFICATION.....	13
I. The definition and characteristics of gamification.....	13
A. Game as opposed to play.....	14
B. Game elements	16
C. Non-game context.....	19
D. Design.....	20
II. Gamification types: structural and content	21
III. Meaningful gamification and its principles	22
CHAPTER 2 – THE EFFECTS OF GAMIFICATION.....	25
I. Gamification and motivation	25
A. The effect of gamification on motivation.....	25
B. Basic human needs.....	26
C. Intrinsic and extrinsic motivation	26
D. Causality orientation and its moderating effect.....	28
II. The influence of gamification on engagement and behaviour	29
CHAPTER 4 – CONCEPTUAL MODEL AND HYPOTHESES	33
CHAPTER 5 – STUDY.....	36
I. Design and procedure	36
II. Measurements	39
A. Causality orientations.....	39
B. Basic needs satisfaction and intrinsic motivation measurement	42
C. Engagement measurement	44
D. Time spent on a page and pages visited.....	46
III. Data analysis	46
BIBLIOGRAPHY	52
WEBOGRAPHY.....	57
TABLE OF FIGURES.....	58
TABLE OF CONTENTS	59