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Accounting for gambling design elements: A proposal to advance gamification taxonomies

Annika Reinelt  
*Technical University of Darmstadt*, reinelt@ise.tu-darmstadt.de

Martin Adam  
*Technical University of Darmstadt*, adam@ise.tu-darmstadt.de

Konstantin Roethke  
*Technical University of Darmstadt*, roethke@ise.tu-darmstadt.de

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ACCOUNTING FOR GAMBLING DESIGN ELEMENTS: A PROPOSAL TO ADVANCE GAMIFICATION TAXONOMIES

Research Paper

Annika Reinelt, Technical University of Darmstadt, Darmstadt, Germany, reinelt@ise.tu-darmstadt.de
Martin Adam, Technical University of Darmstadt, Darmstadt, Germany, adam@ise.tu-darmstadt.de
Konstantin Roethke, Technical University of Darmstadt, Darmstadt, Germany, roethke@ise.tu-darmstadt.de

Abstract

Gamification has been touted as a powerful means to incite user engagement and behavioral changes. Recently, the rise of design elements characteristic of gambling design (e.g., chance-based outcomes) has received increased attention in gamification and started to spark a debate of what is gaming in contrast to gambling, and consequently what is gamification in contrast to gamblification. Therefore, to clearly delineate gamification and associated design elements within the overarching gamification domain, we argue a comprehensive, common classification method is needed for game and gambling design elements applied to non-game and non-gambling contexts. Accordingly, we propose new dimensions and characteristics to extend gamification taxonomies and validate these along practical case examples. This advancement of classification systems can serve as basis for closer examination of design elements determining gamification’s and gamblification’s effectiveness in spurring user experience and engagement and for novel designs of gamified and gamblified systems.

Keywords: Gamification, gamblification, classification, taxonomy.

1 Introduction

User engagement has long been one of the most crucial goals and prerequisites of successful information systems (IS) design (McKeen et al., 1994). In this context, gamification has emerged as an increasingly relevant concept for researchers and practitioners alike over the past decade, utilized to boost user engagement across a diverse set of application fields (Koivisto & Hamari, 2019). Application contexts have covered a vast range including education (Bonde et al., 2014; Dicheva et al., 2015; Frost et al., 2015), health and exercise (Hassan et al., 2019; Hassan et al., 2020; Schmidt-Kraepelin, Warsinsky, et al., 2020), marketing (Hsu & Chen, 2018; Yang et al., 2017), e-commerce (Adaji & Vassileva, 2017; Meder et al., 2018), sustainability (Beck et al., 2019; Lounis et al., 2014), and human resource management (Cardador et al., 2017; Sarangi & Shah, 2015) – to name only a few. Gamified IS are employed to enhance user experience and enjoyment, make tasks more engaging, motivate users towards target behaviors, and ultimately improve societal or organizational outcomes (Bui et al., 2015; Koivisto & Hamari, 2019; Liu et al., 2017).

One of the most common definitions regards gamification as the “use of design [rather than game-based technology or other game-related practices] elements [rather than full-fledged games] characteristic for games in non-game contexts” (Deterding, Dixon, et al., 2011). In addition to game design elements, we observe a recent rise of gambling design elements being implemented most prominently in the (e-) sports
and video gaming domains (Abarbanel & Johnson, 2020; Lopez-Gonzalez & Griffiths, 2018; Macey & Hamari, 2019, 2020). These elements include betting and loot boxes among others, and – much like traditional gamification elements – aim for increased user engagement and organizational outcomes such as revenue growth. The use of loot boxes and skins gambling was responsible for $30 billion revenues in 2018 and is expected to reach $50 billion by 2022 (Zendle et al., 2020) – and it has already sparked debate whether respective elements should be considered gaming or gambling (Griffiths, 2018).

However, despite posing a unique subdomain of gamification and recently gaining in practical and economic relevance, gambling design elements have often been overlooked in gamification concepts and have been subject to little scrutiny in theoretical work. This has resulted in a blurred differentiation between gamification and gamblification – which is considered the use of gambling design elements in non-gambling contexts. IS researchers have proposed a multitude of frameworks for gamification in the past (Khan et al., 2020; Mora et al., 2017; Treiblmaier et al., 2018), but have not yet included gambling design elements in gamification terminology or categorizations.

To address the rise of gambling design elements and indications that they could affect user engagement differently than game design elements, we argue that a shared, consolidated understanding of game and gambling design elements and their characteristics is needed as a joint basis and starting point to resolve questions of effectiveness and effect mechanisms. As such, to extend our current understanding of gamification and gamblification, we intend to answer the following two research questions:

**RQ1**: How can gamblification be distinguished classification-wise within the overarching concept of gamification?

**RQ2**: How can gambling design elements and their characteristics be described, classified, and accounted for in a gamification taxonomy?

To this end, our paper contributes by advancing the most recently established IS gamification taxonomy by Schöbel et al. (2020) to classify and account for design elements of gamblified systems. We contribute to IS research on gamification by reinforcing gamblification as a unique and specialized form of gamification and providing a more comprehensive taxonomy, ensuring a shared language and understanding, and allowing researchers and practitioners to derive novel gamification and gamblification designs.

We will begin by providing an overview of related gamification and gamblification work as well as established frameworks as a foundation for our taxonomy development. We will then describe our approach to advance the taxonomy and accordingly propose new taxonomic dimensions to account for gambling design elements in non-gambling contexts. Finally, we will apply the adapted taxonomy to practical case examples.

## 2 Related work and theoretical background

### 2.1 Gamification, gambling, and gamblification

Gamification is most frequently cited as the use of game design elements in non-game contexts (Deterding, Dixon, et al., 2011). Another popular definition refers to gamification as “a process of enhancing a service with affordances for gameful experiences in order to support users’ overall value creation” (Huotari & Hamari, 2012, 2017). The leading application area for gamified information systems is by far the educational field, with close to half of all gamification-related publications in this domain, followed by information systems and applications related to the health industry (Bozkurt & Durak, 2018; Koivisto & Hamari, 2019; Schlagenhaufner & Amberg, 2015).

Gamification design elements can comprise a wide range of affordances (i.e., perceivable possibilities for action (James et al., 2019)), including affordances focused on achievement and progression (e.g., points, challenges, status bars), social features (e.g., cooperation, networking, competition), immersion (e.g., avatars, narrative) or real-world orientation (e.g., motion tracking, check-ins) (Koivisto & Hamari, 2019). Most frequently observed across publications are points, scoring, badges, and leaderboards (Koivisto & Hamari, 2019; Schlagenhaufner & Amberg, 2015).
Gambling refers to behaviors in which individuals risk money on the outcome of an unknown event to achieve a potential monetary gain (Laffey, 2007; Ma et al., 2014). Definitions of gambling include characteristics such as uncertainty of outcomes at the time of staking money, chance determination of the outcome, and reallocation of monetary value (Griffiths, 2018). Some of the most commonly observed practices of gambling are “wagering in casinos and on lotteries, horse and dog racing, card games, and sporting events” (Potenza et al., 2002).

Gamification and gambling denote two clearly different concepts. Whereas gamification describes the practice of incorporating game design elements in various contexts, gambling refers to a specific type of behavior holistically (rather than the use of selected elements). One could claim that both gamification and gambling are characterized by the engagement of individuals, or the pursuit thereof, but an important distinction is the direction of initiation. Whereas gamification is initiated by a designer or provider (e.g., of a gamified information system) to engage users, gambling is initiated by a user or player who chooses to engage in gambling behavior.

The increased accessibility of gambling, facilitated among others by the rise of online gambling (Hou et al., 2019), has also helped to spread the incorporation of gambling design elements in non-gambling contexts (i.e., gamblification). For example, designers have widely discovered the use of gambling elements in contexts such as e-sports and gaming (Macey & Hamari, 2019). One prominent example of this are loot boxes (i.e., chance selections of virtual items in video games purchased with real money), which have already been controversially debated with regard to whether they should be considered as gambling (Griffiths, 2018; Koeder et al., 2018; Zendle et al., 2020). Design elements characteristic of gambling introduced in other contexts further include chance-based elements and unpredictable rewards to increase engagement on the live streaming website Twitch (Abarbanel & Johnson, 2020), skins lotteries, loot boxes, and betting in video gaming (Lichtenberg & Brendel, 2020; Macey & Hamari, 2019, 2020), betting and fantasy games in sports, notably soccer (Lopez-Gonzalez & Griffiths, 2018), lottery-based rewards for recycling empty bottles (Pantelotteriet, 2018), and lottery-based rewards for purchasing tickets on public transport (Fabbri et al., 2019).

Gamification and gamblification denote two unique but closely related concepts. They both describe the practice of applying game or gambling design elements, respectively, to other contexts in order to engage users and achieve target outcomes. They differ in types of design elements used, in mechanisms determining user outcomes and interactions, and in non-financial vs. financial outcomes. Additional differences between gamification and gamblification can stem from theoretical foundations of their respective effectiveness. For example, due to intrinsically motivating aspects of gamification designs and potential extrinsically motivating incentives included in gamblification designs (Deci & Ryan, 2002; Ryan & Deci, 2017), the specific effect mechanisms and mediators at play could diverge, as observed in studies of intrinsic and extrinsic motivation in other contexts (Kuvaas et al., 2017).

Consistent with Adam et al. (forthcoming), we therefore view gamblification as a unique sub-branch of gamification, defined as the use of gambling design elements in non-gambling contexts and target IS to enhance user experience, engagement, and target system monetization. The differentiation between gamblification and gamification without gambling design elements can be made based on the type of design elements utilized. As proposed by the authors, the following three key attributes of gambling design elements set gamblification specifically apart within the overarching concept of gamification:

1. Specific **game design objects** and corresponding affordances (e.g., lotteries and dice),
2. Related **chance-based** game mechanics determining outcomes, and
3. User-system **resource transfers**, meaning outcomes (e.g., stakes, rewards) with objective value are transferred.

The design of an information system is considered an example of applied gamblification only if it fulfills all three aspects of this definition. Only then can we clearly differentiate it from other variations of gamification and start to focus on understanding its design elements and their effectiveness in detail.

Considering recent applications (and at times controversy) of gambling design elements and the prominence of gamified information systems, we firmly believe that gambling design elements will
become increasingly relevant for IS design in the future. It is therefore indispensable that IS researchers and practitioners develop a shared and structured theoretical understanding of the new phenomenon of gamification for further examination of gamification-specific effects and targeted application of gamification designs. For instance, there are already indications that chance-based mechanics could affect users’ preferences, motivation, and enjoyment differently than certain outcomes (Abuhamdeh et al., 2015; Gaertig & Simmons, 2018; Shen et al., 2019). Effectiveness of gambling design elements may also be determined by specific contexts or personal dispositions.

As gamification researchers have called for more work to determine the value of specific design elements in driving user motivation (Seaborn & Fels, 2015), the field requires a shared classification system of gamified and gamblified IS, encompassing game and gambling design elements respectively, as a basis for expanding our knowledge of gamification and gamification effects and investigating potential differences in theoretical foundations of either’s effectiveness. We aim to assess how to make gamification taxonomies inclusive of gamblification characteristics and thereby to develop a common structure and terminology for design elements of gamblification as a basis for future research avenues.

2.2 Taxonomies

A common approach to structure knowledge within a certain field is the development of taxonomies (i.e., classification systems). Glass and Vessey (1995) maintain that taxonomies “facilitate systematic research into the differences among, and the needs of, particular domains”. By grounding research and practice in shared terminology and structure, taxonomies allow systematic descriptions, research of predicted relationships among concepts, and exchange between research communities (Feine et al., 2019; McKnight & Chervany, 2001). According to Nickerson et al. (2013), useful taxonomies have five qualitative attributes: They are concise, robust, comprehensive, extendible, and explanatory.

Several frameworks and taxonomies have previously been established for gamification and elements of gamified IS (Schmidt-Kraepelin, Toussaint, et al., 2020; Seaborn & Fels, 2015). One widely cited framework for design and research of gamified systems was put forward by Liu et al. (2017). The authors postulate that gamification objects and gamification mechanics (united under the overarching term of gamification design elements) are applied to a target system (defined by its user, task, and technology) to form a gamified system. Gamification design principles govern how user-system interactions are shaped to achieve meaningful user engagement in the form of experiential and instrumental outcomes. Liu et al.’s framework can easily be transferred to describe how gamification attributes are employed in an IS to achieve meaningful user engagement (Adam et al., forthcoming), hereby reinforcing that gamification can be considered a subdomain of gamification: Gamification objects (i.e., design objects characteristic of gambling design) are implemented as part of the gamblified system. As an additional design element, gamblification mechanics (i.e., chance-based mechanisms) rule user-system interactions. And finally, gamblified user-system interactions include the transfer of resources between users and system, ultimately leading to experiential, engagement, and monetization outcomes.

Based on this understanding of gamblification as a specific variation on gamification, displaying specific objects, mechanics, and additionally transfer of resources, we will therefore draw upon an existing gamification taxonomy to assess their applicability in classifying gambling design elements (and therefore delineate cases of gamblification) and propose extensions for gambling design elements.

One of the most recent taxonomies in the field of gamification was developed by Schöbel et al. (2020) and recommends ten dimensions of game logic and game design: (1) Reward (Rewarding, Documenting), (2) Punishment (Punishing, Neutral), (3) Bonus (Bonus, No Bonus), (4) Interdependency (Independent, Dependent), (5) Development (Developing, Static), (6) User Design (Partial Involvement, Prescribed by Developer), (7) Competition (Competitive, Individual), (8) Cooperation (Cooperation Possible, Cooperation Impossible), (9) Surprise (Surprising, Regular), and (10) Initial Motivation (Intrinsic, Extrinsic).

We will focus on this latter taxonomy (Schöbel et al., 2020) as we continue due to its recency, validation in practice, and inclusion of concrete design characteristics. We build on their structure and examine how it can account for gamblification to provide a more thorough understanding of gamification and
gamblification design elements. A comprehensive gamification taxonomy should not only enable a conversation about good gamification designs vs. poor designs, but also about differences between gamification and gamblification and their respective effects.

3 Methodology

Nickerson et al. (2013) established a method for taxonomy development in IS research, suggesting two possible approaches, which can also be combined. In their empirical-to-conceptual approach, researchers identify objects and common characteristics of these objects, and then formulate taxonomic dimensions on this basis. In their conceptual-to-empirical approach, new characteristics are conceptualized, objects examined for these characteristics, and a taxonomy created or revised on this basis. We followed three steps along these approaches to advance an existing classification system of gamification to account for gambling design elements, summarized in Figure 1 below.

First, we aimed to find examples of gambling design elements in previously published work to discover which types of elements a taxonomy would need to encompass. In this empirical-to-conceptual step, we hoped to identify instances in which empirical work had been conducted within the overarching context of gamification but had leveraged design elements characteristic of gambling, as gamblification has not yet been widely established as a commonly accepted concept and set term. We chose to focus the review on gamification literature to ensure an exhaustive but targeted search process rather than expanding into the domains of full-fledged games or gambling games at the expense of review rigor and clarity.

Second, we took a conceptual-to-empirical approach and considered a recent taxonomy of gamification (Schöbel et al., 2020). We examined the suitable fit of this taxonomy in classifying gamblification elements in light of our literature review results and of each attribute of the definition of gamblification. The goal of this step was to conclude if and which taxonomy extensions would be required to make the taxonomy inclusive of gamblification characteristics.

Step 1: Literature review
- Database search
  - Inclusion based on peer review
    - Inclusion based on abstracts
      - Selection after detailed review
        - n = 105
        - n = 65
        - n = 25
        - n = 10

Step 2: Framework fit
- Existing gamification taxonomy
- Literature review results
- Defined gamblification attributes
- Preliminary conclusions of required extensions

Step 3: Taxonomy extension
- Iteration 1: first new dimension
- Iteration 2: second new dimension
- Final taxonomy
- Application for validation

Figure 1. Methodology for advancement of existing gamification taxonomy.

And third, we deduced two new dimensions to build a comprehensive taxonomy of gamification and gamblification, guided by our insights from Step 1 and 2. The meta-characteristic of our taxonomy extension (Nickerson et al., 2013) were characteristics of gamblified information systems, for which we developed explanatory classifications in two iterations. We defined the ending condition for the taxonomy extension process as the unambiguous discrimination between gamblification and gamification without gambling design elements. After the first extension, individual design elements of information systems could be classified as gamblified, but potential overlaps with gamified systems remained. Only after the second extension of the taxonomy, we determined that an identification of a system as clearly gamblified was feasible based on taxonomic characteristics of the design elements, and therefore concluded the development process. To validate the final taxonomy, we applied it along two recent practical case examples and distinguished these between one example of gamblification and one specific form of gamification in practice.
Figure 1 provides an overview of the three steps taken based on the approach observed in previous taxonomy development in IS research (Feine et al., 2019).

## 4 Taxonomy development

In the following, we present the results of our approach to extend existing gamification frameworks, including results of a respective literature review, fit with an existing taxonomy, new taxonomic dimensions, and a practical application of the extended classification system.

### 4.1 Literature review results

We conducted the literature search across the Association for Information Systems Electronic Library (AISeL) and EBSCOhost, extending the search beyond the IS area due to the interdisciplinary nature of the gamification concept, and selecting only a limited number of comprehensive databases for the search as “conducting […] searches in as few comprehensive databases as possible instead of several ones is seen as preferable for purposes of rigor and clarity” (Koivisto & Hamari, 2019, p. 194) to ensure a reproducible and rigorous review (Cram et al., 2020; Paré et al., 2015). We therefore included AISeL due to its repository of the most prominent academic IS journals and conferences and EBSCOhost because it offers a cross-disciplinary index of various relevant databases (e.g., including Business Source Premier, APA PsycInfo) and over 2,000 journals.

We searched for all publications containing gamif* in their title, subject, or abstract “AND” (i.e., in combination with) at least one gamblification search term in title, subject, or abstract. We derived the following list of gamblification search terms from the definition of gamblification as the use of gambling design elements in non-gambling contexts displaying chance mechanisms and resource transfers: uncertain, chance, lottery, stake, risk, gamb*, luck, raffle, bet. Inclusion criteria for publications were, in a first instance, if publications were peer reviewed, English language, and not duplicate. Upon further review, publications were included if we observed any analysis or review of gambling design element use, as opposed to use of exclusively design elements in the “traditional” sense of gamification (i.e., points, badges, levels, and other elements not characteristic of gambling design).

Figure 2 provides an overview of the literature review search process based on the approach observed in previous taxonomy development in IS research (Feine et al., 2019). Figure 1 illustrates the number of publications considered in each step of the literature review, as elaborated in the following.

<table>
<thead>
<tr>
<th>Gamification</th>
<th>Databases:</th>
</tr>
</thead>
<tbody>
<tr>
<td>(TI gamif* OR SU gamif* OR AB gamif*)</td>
<td>EBSCOhost AISeL</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design elements characteristic of gambling</th>
</tr>
</thead>
<tbody>
<tr>
<td>((TI uncertain OR SU uncertain OR AB uncertain) OR (TI chance OR SU chance OR AB chance) OR (TI lottery OR SU lottery OR AB lottery) OR (TI stake OR SU stake OR AB stake) OR (TI risk OR SU risk OR AB risk) OR (TI gamb* OR SU gamb* OR AB gamb*) OR (TI luck OR SU luck OR AB luck) OR (TI raffle OR SU raffle OR AB raffle) OR (TI bet OR SU bet OR AB bet))</td>
</tr>
<tr>
<td>Inclusion criteria:</td>
</tr>
<tr>
<td>Peer-reviewed English language No duplicates Use of gambling design elements</td>
</tr>
</tbody>
</table>

**Figure 2. Search strategy for literature review.**

Our literature search across the two databases resulted in 105 results. Focusing the search to peer-reviewed scholarly publications narrowed the results down to 65. Further excluding duplicate publications resulted in 62 publications for review. We reviewed titles and abstracts of these 62 publications in order to discern whether they did in fact contain gamification operationalized with gambling design elements (e.g., involving chance or betting) or whether they had implemented gamification in the most commonly observed, “traditional” sense (e.g., involving in-game point rewards or challenges). This closer review yielded 25 publications, which we deemed potentially relevant and therefore calling for further assessment. Upon analysis of full text and respective operational interpretations of gamification therein, we further eliminated publications, in which we could not confirm the use of gambling design elements (e.g., no chance-based mechanism upon closer review),
and finally identified 10 studies that employed gamification with design elements resembling gambling design elements and were therefore different from game design elements covered in the majority of existing gamification frameworks and taxonomies. We observed that these 10 gamification examples demonstrated design elements borrowed from games of chance or gambling, which included (1) chance selection of user outcomes, (2) user ability to gamble outcomes, (3) chance selection of content presented to users, and (4) real-money consequences for users. An overview is provided in Table 1.

4.1.1 Chance selection of user outcomes

Game design elements in non-game contexts often serve the purpose of offering a desirable outcome to incentivize user engagement (Bozkurt & Durak, 2018). Users engage to receive acknowledgement of their skills shown, performance tracking, or effort invested, therefore striving for a positively rewarding or even neutrally documenting outcome for their behavior (Schöbel et al., 2020).

However, it seems random, chance-based user outcomes are also implemented as design elements to engage users: Woźniak (2020) examined an incentive scheme for sales representatives, which not only consisted of points to be collected and exchanged for rewards, but also bonus draws among groups of employees. Random lottery-based reward schemes for public transit usage were tested by Rey et al. (2016) during off-peak hours to determine if gamification could sustainably shift travel behavior. Woźniak (2017) also varied types of rewards in gamified motivation schemes for employees of small and medium enterprises, implementing badges, levels, achievements, and points collection for rewards but also rewards based on lotteries. Finally, Macey and Hamari (2019) assessed the role of “gambling-like” design elements introduced in video games. For example, they considered the use of loot boxes, which contain virtual items determined by chance and are largely acquired with real-world currency.

Based on design elements in gamification-related empirical publications, we conclude a comprehensive gamification taxonomy should therefore enable classification of design elements that operationalize the determination of user outcomes by chance, such as lucky draws, lotteries, and loot boxes.

4.1.2 User ability to gamble outcomes

In many gamification contexts, users receive reward outcomes – be they determined by performance, effort, or as described above by chance – as the final step of an activity (e.g., marking the completion of a task, achievement of a level, or conclusion of a transaction) (Richter et al., 2015).

In a study by Howard-Jones et al. (2016), the authors implemented a gamified learning experience, in which participants could win points for giving a correct answer but could also choose to subsequently “game” their points on a wheel of fortune. For each round they gave a correct answer and committed to a gamble, they could therefore double or lose the points depending on the outcome of the wheel.

Based on this design element reminiscent of wagering money in a gamble, we conclude that a comprehensive gamification taxonomy should therefore enable classification of design elements that operationalize users putting potential rewards at stake.

4.1.3 Chance selection of content presented to users

In addition to chance selection of user outcomes, as previously described, we also observed design elements that incorporated chance selection of information or content available to users. Fulmer and Reich (2019) set out to gamify consumers’ online shopping experience through selecting by chance which products would be promoted. Boyle et al. (2018) examined web-based intervention methods for individuals’ drinking behavior and introduced the design element of a game-like spinner to select question and feedback topics for participants seemingly at random. Similar appearances of chance-based uncertainty were employed by Earle et al. (2018) and Boyle et al. (2017) with chance design elements in the same intervention context. Also, Boyle et al. (2017) implemented a gamified intervention method in the frame of a Facebook-connected social game, which featured an animated slot machine to select topics for each participant session by chance. In a smartphone-based version of the game examined by Earle et al. (2018), representation of chance selection of intervention question and feedback topics was again achieved through use of the slot machine design element.
Based on these elements of chance observed in e-commerce and web/app interventions, we conclude that a comprehensive gamification taxonomy should enable classification of chance-based mechanisms to display products or content, and related design elements such as spinners and slot machines.

4.1.4 Real-money consequences for users

Bayuk and Altobello (2019) examined consumer preferences for features of financial game mobile applications. They assessed the effect on preferences of both social design elements, including achievements and leaderboards, and economic design elements, including potential to earn real money or better interest rates, of the personal finance apps.

Based on such game design elements offering real-currency rewards for user behavior, we conclude that a comprehensive gamification taxonomy should enable researchers and practitioners to distinguish between types of user incentives that could range from in-game points to real-world money.

We have summarized these observed design elements in Table 1. We do not conclude that the listed examples should all qualify as examples of gamblification in practice. They rather serve as a source of information as we consider how to extend existing classification systems of gamification and to expand our understanding of the range of gamification design elements. We will proceed to examine how these objects and mechanisms relate to or differ from an established gamification framework.

<table>
<thead>
<tr>
<th>Gambling design elements</th>
<th>Empirical examples</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chance selection of user outcomes</td>
<td>Bonus draw</td>
<td>Wozniak, 2020</td>
</tr>
<tr>
<td>Lottery</td>
<td></td>
<td>Rey et al., 2016; Wozniak, 2017</td>
</tr>
<tr>
<td>Loot box</td>
<td></td>
<td>Macey &amp; Hamari, 2019</td>
</tr>
<tr>
<td>User ability to gamble outcomes</td>
<td>Wheel of fortune for chance to</td>
<td>Howard-Jones et al., 2016</td>
</tr>
<tr>
<td></td>
<td>multiply or lose points won</td>
<td></td>
</tr>
<tr>
<td>Chance selection of user presented content</td>
<td>Chance selection of products</td>
<td>Fulmer &amp; Reich, 2019</td>
</tr>
<tr>
<td></td>
<td>Chance spinner</td>
<td>Boyle et al., 2018</td>
</tr>
<tr>
<td></td>
<td>Animated slot machine</td>
<td>Boyle et al., 2017; Earle et al., 2018</td>
</tr>
<tr>
<td>Real-money consequences</td>
<td>Chance to earn real money</td>
<td>Bayuk &amp; Altobello, 2019</td>
</tr>
</tbody>
</table>

Table 1. Gambling design elements observed in literature review.

4.2 Review against an established taxonomy

The definition of gamification as the “use of design elements characteristic for games in non-game contexts” (Deterding, Dixon, et al., 2011) in order to “improve user experience (UX) and user engagement” (Deterding, Sicart, et al., 2011) is one of the most widely accepted understandings of the concept (Blohm & Leimeister, 2013; Morschheuser et al., 2018; Seaborn & Fels, 2015). In line with this definition, gamification is considered the use of gamification design elements in non-gambling contexts and a specific subdomain of gamification, with both concepts pursuing similar design approaches and goals. Gamification and gamblification both describe approaches of finding inspiration for concrete design features of information systems in game design and gambling design, respectively. Also, both gamification and gamblification describe the practice of applying these specific features to contexts that are different than the contexts from which they were taken. And finally, both gamification and gamblification share mutual goals of engaging users and shaping user behaviors. As the concepts are closely related, we proceed to examine aspects of gamblification in light of an established taxonomy of gamification.

For this purpose, we draw upon the recent gamification taxonomy of Schöbel et al. (2020), spanning across four dimensions of underlying game logic and six game design dimensions, and providing examples of construction elements (i.e., gamification objects and mechanics), which are allocated to one or both characteristics within each dimension. (Figure 3 illustrates the taxonomy with Schöbel et al.’s original dimensions shown in grey.) We considered this taxonomy as the starting basis for our taxonomy extension (shown in color in Figure 3) because it is recent, established in theory and practice, context-independent, and includes concrete mechanisms and characteristics. Some existing frameworks include
concrete dimensions but are developed for a specific application area (Schmidt-Kraepelin et al., 2018), whilst others are applicable to a range of contexts but focus more on theoretical perspectives and design principles than classifying concrete elements (Liu et al., 2017). We set out to refine the selected taxonomy to account for gambling design elements by comparing it to our literature review observations as well as to defined attributes of gamification.

As described above, our literature review had resulted in four key design elements published in a gamification context but using gambling design elements. Next, we assess these four elements against dimensions and characteristics offered by the gamification taxonomy:

(1) *Chance selection of user outcomes:* Chance mechanisms are not covered by the dimensions and characteristics in the existing taxonomy. There are several dimensions describing possible mechanics such as the interdependency of design elements and the possibility of cooperation or competition. The taxonomy also differentiates purposes of rewards as either positively rewarding or neutrally documenting. But neither mechanics nor reward dimensions allow a distinct classification of the use of chance or luck to determine rewards or other user outcomes.

(2) *User ability to gamble outcomes:* The option for a user to consciously vary (e.g., gamble) their outcomes or rewards is not explicitly covered by the dimensions and characteristics offered by the taxonomy. However, one of the “game logic” dimensions describes degrees of user involvement as “partial involvement” or “prescribed by developer”. Whilst this does not distinctly describe the action of a user to alter their potential outcomes (e.g., putting their rewards at stake), this ability could be a possible construction element to operationalize user involvement.

(3) *Chance selection of user presented content:* Following the argument for design element (1) above, chance mechanisms determining products or content to be shown to users at random are a mechanism not yet described by the taxonomy at hand.

(4) *Real-money consequences:* Real-money consequences for users are not covered by the types of rewards and mechanisms defined by the taxonomy. It includes dimensions of rewards and bonus, but a transfer of actual resources between user and system does not fit within the classification characteristics offered.

Based on the reconciliation of literature review results with Schöbel et al.’s taxonomy, we conclude that the taxonomy should be extended for possible classifications of random rewards and objective-value implications.

We next reconsidered the three central attributes of gambling design elements per the gamification definition to compare these also with the taxonomy:

(1) *Game design objects and corresponding affordances characteristic of gambling design:* The examples of construction elements provided along the existing taxonomy in Schöbel et al. (2020)’s work do not include gambling-specific design objects or affordances, indicating that the taxonomy may not be comprehensive of gamblified systems. However, such gambling design objects (e.g., lotteries, dice) are specific embodiments of underlying dimensions and characteristics of the respective gamified or gamblified system rather than individual categories – objects should be classified using dimensions and characteristics of the taxonomy, but not every object must be explicitly named within the taxonomy (according to Nickerson et al. (2013), a taxonomy is comprehensive once all objects within the domain of interest can be classified). It would therefore be sufficient to ensure dimensions and characteristics of the existing taxonomy are extended to classify further construction elements including gambling design objects in the future.

(2) *Chance-based game mechanics determining outcomes:* As concluded in the reconciliation of literature review results (1) and (3) above, the taxonomy does not yet permit classification of chance-based mechanisms central to gamification design.

(3) *Resource transfers between user and system:* Also, as concluded in the reconciliation of literature review results (4) above, the taxonomy classifies rewards and bonuses but does not yet support classification of a transfer of resources.
We conclude that gamblification as a unique variation of gamification warrants coverage in frameworks and taxonomies alike in order to clearly identify respective design elements. The reconciliation of literature review results and the gamblification definition with Schöbel et al.’s taxonomy confirmed that it lacks dimensions to classify chance mechanisms and resource transfers, whilst specific gambling design objects and affordances should be possible to classify using a taxonomy extended accordingly and do not require addition of individual dimensions. We therefore proceeded to develop additional dimensions and characteristics to advance the existing taxonomy.

4.3 Development of an advanced taxonomy

In order to define characteristics of a comprehensive taxonomy of gamification and gamblification, we identified characteristics of gamblified information systems as the meta-characteristic to guide our development process (Nickerson et al., 2013). We probed our conclusions from the empirical-to-conceptual (literature review) and conceptual-to-empirical (taxonomy fit) approaches previously described against this meta-characteristic.

In a first iteration, we introduced the taxonomic characteristics of chance-based uncertainty as opposed to performance-based uncertainty under a new game design dimension uncertainty. This distinction is in line with previously established segmentations. For example, skill and luck have been contrasted as determinants of different motivation forms in the context of gambling games (Chantal & Vallera, 1996). Also, difficulty level, goals, information level, and randomness have been discussed as potential origins of outcome uncertainty in the context of motivation theory (Malone, 1981). We therefore argue that the suggested game design dimension of uncertainty and related characteristics are important additions to a gamification taxonomy. They allow us to differentiate whether the uncertainty of occurrences and outcomes within an information system stem from a dependence on respective user skills, performance or usage behavior, or if they in contrast stem from actual randomness. We note that (chance-based) uncertainty and the dimension of surprise already included in the existing taxonomy are mutually exclusive: Whilst surprising elements are not expected by a user and could therefore be perceived as “random” in the general sense, chance-based uncertain outcomes can be expected by the user but still rely on luck or probability in their occurrence, form, and value.

After this advancement, the ending condition of our taxonomy development was not yet met. Even systems including an element of chance could still qualify as a non-gamblified form of gamification rather than clearly gamblification. Design objects based on chance, such as dice, have already been established as tools of gamification (Morschheuser et al., 2018), whilst luck and random outcomes have even been listed as common game mechanics (Dale, 2014). The taxonomy therefore requires further characteristics to allow an unambiguous classification of gamblified systems.

Consequently, we proceeded to add the dimension of resource transfer in a second iteration. Similar to how the act of risking money on an outcome transforms a game of chance into a gamble (Laffey, 2007), the combination of chance-related mechanics with user-system resource transfers makes the difference between a gamified and a gamblified system. Accordingly, the characteristics of the resource transfer dimension vary between no objective value being transferred as opposed to resources with objective value being transferred.

As these two new taxonomy dimensions were sufficiently exhaustive to classify a gamblified system without remaining ambiguities, we terminated the taxonomy extension development at this point. A final view of the advanced gamification and gamblification taxonomy is illustrated in Figure 3, with newly added dimensions and characteristics highlighted in color. We propose the integration of uncertainty as a new dimension of game design, whilst resource transfer extends beyond game design and underlying game logic, therefore constituting a separate new category for implications.

Finally, we will examine two practical examples. As we aim to apply the advanced taxonomy to validate its use in determining characteristics of gamified or gamblified systems, we chose illustrative case examples that promised to display different characteristics of the new taxonomic dimensions (i.e., forms of uncertainty and resource transfer). We particularly searched for examples involving transactions with real money because objective-value resource transfers are the characteristic that can finally set apart a
gamblified system from a chance-based gamified system. Further search criteria for suitable examples included recency and low entry barriers for use to ensure the chosen examples were tangible and potentially widely used. We therefore selected two cases oriented towards consumer users (as opposed to business users), which we observed advertised in the U.S. in October of 2020 and offered in the Apple App and Google Play stores on an ongoing basis, respectively (Charity Miles, 2020; Starbucks, 2020).

Figure 3. Advanced gamification taxonomy for classification of gamblification design elements.

4.3.1 Case example 1

The global coffee chain Starbucks generally offers a reward program, in which its customers can earn rewards (“stars”) for purchases they make and later redeem these for drinks, food, or merchandise offerings. For a limited time, they additionally offered “Starland”, an augmented reality (AR) game (Starbucks, 2020). The AR game could be accessed online or in the respective app, allowing a user to scroll across starry skies and choose stars for a chance to win instant prizes or receive raffle tickets. In order to participate in the AR game, users were required to become a Starbucks Reward member and earn up to two plays each day by making a purchase at Starbucks.

We apply our taxonomy advancement to determine if this case leverages gamification or clear gamblification design elements:

- Customers playing Starland were confronted with uncertain outcomes. As they played the game, they knew neither if they would win any of the instant prizes nor if their raffle ticket would offer any value. This uncertainty was not due to customers’ individual behavior, skills, or performance in the game. They simply chose a star in the AR environment, upon which an outcome would be revealed to them. Outcome uncertainty was therefore purely chance-based.

- Participants of the AR game also engaged in resource transfers carrying objective value. By making purchases as qualification to play the game, they hoped to achieve a potential gain by winning a prize. These potential rewards for participants had real-currency value.

Based on these design characteristics, Starland qualifies as an example of gamblification in practice. By incentivizing customers to make more purchases, enabling more frequent plays and thereby higher chances to win prizes, Starbucks used gamblification to increase monetization of its rewards system.

4.3.2 Case example 2

Charity Miles is a free mobile application that rewards its users for physical activity with donations to a charity of their choice (Charity Miles, 2020). The app tracks all activities selected by the user (e.g., running or biking). Money is donated to the user-chosen charity based on the amount of activity (e.g., a certain value per mile biked or per mile ran by the user).

Again, we apply our taxonomy to determine potential gamification or gamblification design elements:

- User of Charity Miles face performance-based uncertainty. The outcome (i.e., money donated to their chosen charity) is dependent on the users’ performance in terms of frequency and distance of their exercise. No chance mechanism is involved – users know how much money will be donated per unit of exercise and they choose the receiving charity in advance.

- Users of the app do not engage in transfers of objective-value resources. No purchase is made by the user as the app is free to download. The donation determined by user behaviors is made in
real currency, but the user does not place or receive any money-equivalent input or stake into or from the system. The investment on the part of app users is the time and effort of exercising, which carry no monetary value per se.

Based on these design characteristics, Charity Miles is an example of gamification rather than gamblification. As demonstrated by these two examples, the extended taxonomy of gamification and gamblification allows us to differentiate game and gambling design features in target systems.

5 Discussion

This paper extends the most recently established IS gamification taxonomy by Schöbel et al. (2020) to account for gambling design elements and their respective characteristics. We conducted a review of gamification literature for potential applications of gambling design elements, assessed gaps within a recent gamification taxonomy based on the gamblification understanding, and proposed the addition of two new dimensions accordingly: uncertainty (performance-based or chance-based) and resource transfer (objective value or no objective value). Finally, we validated the advanced taxonomy along one customer reward program and one mobile application as practical case examples.

5.1 Theoretical and practical contributions

Our paper contributes to IS research on gamification by advancing an existing taxonomy to classify design elements of gamblified systems. These advancements offer theoretical and practical benefits to both researchers and practitioners. By accounting for gambling design elements through added dimensions and characteristics, we increase the comprehensive quality of the taxonomy and thereby improve it according to attributes of a useful taxonomy in IS contexts (Nickerson et al., 2013). Following established criteria for contributing to taxonomic theories and revising previous classification systems (Gregor, 2006), we ensure that the categories are meaningful and natural, and do not omit important elements needed for a complete and exhaustive taxonomy.

We also reinforce gamblification as a unique subdomain of gamification, offering a foundation for shared language among IS researchers and across disciplines. Clearly identifying a target system as gamblified provides an additional avenue in finding potential explanations for observed effects on user engagement and motivation. The taxonomy is therefore also a basis for making systematic predictions about different outcomes and distinct effect mechanisms of gamification and gamblification design elements, which can then be tested in targeted empirical research. The defined characteristics could also inform exchanges in debates whether certain behaviors and user applications should be classified as gaming or gambling, facilitating conversations between different research communities.

A clearer differentiation of gamblification within the overarching domain of gamification, facilitated by a comprehensive classification system, can also contribute to advance theories. For example, self-determination theory is most commonly drawn upon as a theoretical basis in gamification research to date (Liu et al., 2017), grounded in IS designs’ potential to fulfill users’ psychological needs and thereby induce motivation for an activity. However, self-determination theory and other theories consulted in previous research may not be suitable to explain gamblification-specific effects. Assessment of the gamblification characteristics proposed in our taxonomy extensions could contribute to identifying new or advancing existing theories to account for effects of chance-based uncertainty and extrinsic, objective-value incentives to promote or thwart users’ motivation for an activity.

In practice, the gamification taxonomy now reflecting gamblification can guide IS designers in deriving novel gamification and gamblification designs. Deliberately employing gambling design elements, they can create new ways of engaging users and nudging users towards desired behaviors based on implementation and testing of specific elements. For example, the unblurring of gamification vs. gamblification design elements can result in even more conscious operationalization choices in a gamified or gamblified system and deliberation of advantages of specific elements (e.g., skill- or chance-based mechanisms) in the context at hand. They can further explore a broad potential range of application areas for gamblification, taking inspiration from the past spread of gamification designs.
5.2 Limitations and future research

We aimed to be thorough and systematic in our approach to this paper, but certain limitations remain. For example, our literature review for uses of gambling design elements may have overlooked relevant publications and thereby potential other design objects or mechanics: As our literature review was limited to gamification publications, papers also applying gambling design elements but not explicitly naming or examining gamification would not be included in the search results. In addition, we only considered extensions of one gamification taxonomy in detail, despite more frameworks present in the gamification field. However, the chosen structure is among the most recent and concrete taxonomies, providing a robust foundation for our advancements. Finally, further steps could be taken to validate our extended taxonomy. Beyond application to practical cases, the classification characteristics could be tested with expert researchers and practitioners (e.g., through card sorting (Moore & Benbasat, 1991)) in a next step for additional validation as a useful taxonomy (Nickerson et al., 2013).

In light of these considerations, we suggest four essential focus areas for future research: First, we call upon IS design researchers to further refine, extend, and validate the latest taxonomy for gamification and gamblification. Second, IS researchers should gain a better understanding of the mediating mechanisms and concepts underlying gamblification. So far only limited work has been done and proven conclusive on untangling the individual effect mechanisms of the plethora of gamified design elements on user behavior (Hamari, 2013; Nicholson, 2012; Zuckerman & Gal-Oz, 2014). We should aim for a clearer view of relationships between specific design elements, the type of user motivation they induce, which psychological needs they satisfy, and specific mediating or moderating constructs. Third, we propose a closer examination of gamification’s context dependency. Literature reviews have indicated that gamification effects can depend on their implementation context and the respective user (Hamari et al., 2014). To guide IS designers in practice, it would be important to understand better under which circumstances, including application areas and users’ personal dispositions, gamblification and gamification respectively are particularly effectiveness in enhancing engagement. Finally, there is a lack of clear guidelines for designing gamblified systems. To enable researchers and practitioners to leverage conceptual and empirical knowledge on gamblification, future research could examine the design of specific gambling design elements following the design science research approach (Hevner et al., 2004).

5.3 Critical aspects of gamblification

When delving deeper into characteristics of gamblification and its application areas, it will be crucial to consider ethical concerns associated with using elements related to gambling design and behaviors. Due to its potential to unfold detrimental effects for individuals including personal monetary losses and addiction, problem gambling can result in psychosocial distress across “personal, familial, financial, professional and legal” life domains (Blaszczynski & Nower, 2002). Research has already tied loot boxes in video games to problem gambling and regulators have agreed to further examine related risks (Zendle et al., 2020), with some countries even banning them (BBC, 2019). Further research and continued investigations are needed to ensure gamblified information systems are only ever implemented if potential harmful implications for users are fully understood and circumvented.

6 Conclusion

For more than a decade now, gamification has been a popular and promising concept to instigate user motivation, engagement, and desired behaviors. More recently, the use of gambling design elements has increased to pursue similar motives. We argue that the domain is in dire need of a common terminology and shared understanding of design element characteristics to guide future conversations and designs of gamified and gamblified systems. We propose a first taxonomy consolidating and differentiating both gamification and gamblification to reduce ambiguities and direct a more systematic assessment of gamification and gamblification effectiveness.
References


