Gamification of in-house enterprise settings:
A literature review

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Abstract

The practice of utilizing gameful design elements in in-house enterprise settings is an emerging phenomena. Research on the subject is, however, disciplinarily dispersed and difficult to find. Further, there are no summary overviews of subject. Through a literature review of existing research, this thesis illuminates gaps in the current research, avenues of interests for approaches to the application of gameful design elements in in-house enterprise settings and provides a conceptual overview of the state of the field. This is accomplished by answering the research questions: how has research approached the study of gamification of in-house-enterprise settings and what does research contribute? The review concludes that research sees both promises and perils with the gamification of work settings for both employees and enterprises in general. In constructing these arguments research draws upon theory from various academic disciplines. However, the proliferation of unfounded arguments, for and against, the utilization of gamification are identified. Empirically grounded research lends some credence to the assumption that gamification can benefit both employees and enterprises. Effects of gamification are however not conclusive and should be studied further.

Keywords: Gamification, gameful design, enterprise, business, literature review

1. Introduction

The concept of gamification is a current topic that attracts increasing attention within the field of information systems (IS), human-computer interaction (HCI) and a plethora of other research areas that is concerned with “the use of game design elements in non-game contexts” (Deterding, Dixon, Khaled, & Nacke, 2011 p. 1). Despite the ostensible similarities with preceding methods of monitoring, motivating and rewarding employees, customers or students to behave in a desired fashion the concept of gamification has emerged as a novel and distinct phenomena largely due to the formalized digital applications of gameful design in activities supported by information systems. However, while gamification has quickly emerged as a discrete concept, both research and practice sprawls in variety of divergent directions and often do not seem to be aware of each other.

Considerable economic investments are being made into the gamification of enterprise processes. The Gartner Group (2011, 2012) are often quoted predicting that by 2015 50 percent of organizations managing innovation processes will have gamified them. Further, they claim that by last year (2014) 80 percent of gamified applications failed to meet business objectives due to design failures. These conclusions illustrates problems and interests that should make research upon gamification of enterprise settings a priority for both practitioners and researchers. The industry should for instance be very interested in why their applications seem to fail and the academy ought to be interested in examining this novel and growing phenomena that has the potential to impact areas of study like management, working conditions and design of information systems.
The gamification research that has garnered the largest interest has mainly been concerned with applications in education settings or with the psychological motivational factors behind the effectiveness of gamification (Hamari, Koivisto, & Sarsa, 2014). Moreover, Hamari et al. point out that few empirically oriented studies have been performed. Somewhat surprisingly, there is no aggregated view on the application of gameful design in work and business settings which are the areas that are often promoted as favorable environments for the gamification of activities. The previously mentioned predictions made by Gartner would suggest that a need for this kind of orientation is pressing. How has our body of knowledge evolved about gamified workplaces since the Gartner Group included the concept in their hype cycle?

Through a literature review this study aims to create a comprehensive image of the emerging body of research concerned with gamification in work and business settings. This review aims to create an overview about what is known about gamification in workplace contexts and illuminate directions for future research interested with the application of gameful design elements of in-house-enterprise settings. This has been done by answering the research questions how has research approached the study of gamification of in-house-enterprise settings and what does research contribute?

2. Related research

As an approximate measure of the subject of gamification’s popularity in research a general database search was conducted in the following databases: Google Scholar, EbSCO Host, Web of Science, Scopus and Science Direct. The search terms used were: gamification, gamif* and gameful. The results of this general database search is briefly presented below in Table 1.

Although this database search is not entirely comparable with the year-old database search of Hamari et al. (2014), due to their added search terms related to motivational affordances, a comparison reveals that there has been a considerable increase (more than a doubling in all databases) in the amount of published content on the subject of gamification.

<table>
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<tr>
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As Table 1 reveals there is significant scholarly work being done in the study of gamification, yet database searches divulge no summary overviews of applications within the enterprise processes that there is an emerging industry spring up around. Granted, both the industry and the scholarly interest around the phenomena is still relatively new. However, considering the

¹ The actual number of peer-reviewed papers may be lower in some databases due to the search-results containing hits that are in fact not peer reviewed, e.g. short articles in academic journals.
² Google Scholar only delivers an approximation of the number of results.
more than doubled increase in available literature only since the previous year the field of study could be considered ready for a summary review. Furthermore, bearing in mind the failure rate predicted by Gartner (2012), the industry should be in sore need of a systematic review in order to implement this knowledge into their practices.

Below, the definition of gamification that is used in this paper is presented with a description on the history of the concept of gamification and gameful design. An introduction is given to the state of research on gamification in enterprise settings before moving on to the research design of this study.

2.1 Gamification

Although the conception of the term gamification is fairly recent the term has garnered widespread use and attention, largely due to the efforts of marketers (e.g. McGonigal, 2011; Zichermann & Linder, 2013) promoting the concept as a way of serving business interests of motivating desired behavior from employees or customers. Notions bearing a resemblance to gamification are however not new. For example, Nelson (2012) traces precursors to gamification in concepts such as Soviet “socialist competition” and its American equivalent in the concept “work as play”. Likewise, the monitoring of customer and employee behavior for business purposes are not novel activities. As examples, the SABRE computerized reservation system monitored customer bookings in the 1960’s, and time studies conducted under the notion of scientific management (i.e. Taylorism), starting at the end of the 19th century, were notorious for their minute observations of worker activities.

Indeed, Deterding et al. (2011) point out that the thought of using elements of digital games for purposes other than pure enjoyment is not a new one. Since the early 1980’s the field of Human-Computer Interaction (HCI) has been informed by video game design in the craft of software user interfaces and playful interaction arenas with technology. So called ‘serious digital games’, sometimes stylized ‘persuasive games’, has also emerged as both a field of study and practice that utilizes formalized digital games as a means of conveying and promoting learning or educational experiences on a variety of different topics, deemed ‘serious’, beyond the notion of pure enjoyment or recreation that is commonly associated with digital games.

The contemporary use of the term gamification is closely linked with the launch of the Foursquare location-sharing-service introduced in 2009 which implemented points, badges, leaderboards, mayorships and rewards as ways of motivating check-ins through the service (Walz & Deterding, 2015). The first recorded use of the term gamification was however noted in 2008 with widespread diffusion of the word in the second half of 2010 (Deterding et al. 2011). Gamification as a concept has since come to permeate a wide variety of everyday digital services, management systems and education platforms.

In research, gamification as a delineated field relies heavily on the previously cited 2011 definition of the term from Deterding et al. where gamification is defined as “the use of game design elements in non-game contexts”. The seminal designation takes its beginning in the assumption that gamification moves in a spectrum of varying degrees of ‘gamefulness’, made up of differing objectives and expressed through various means. Deterding et al. argues that gameful and playful applications of design removed from exclusively leisurely activities can be said to move between the poles of whole game systems and elements of games. Furthermore,
this view is complicated by the addition of a dimension of whether play or games can be considered to be open or rule based. Deterding et al. argue that their conceptual model can be applied to the analysis of, on the one hand, toys and objects, and on the other hand, formalized games and systems. Finally, with their model the authors also discuss what they term the cultivation of ludification and the ludification of culture in relation to the different quadrants of the model. These analytical devices, while interesting, are of most consequence to game scholars discussing the infusion of games into culture, and vice versa, and are therefore not further discussed in this paper.

In the described matrix of Deterding et al. (2011) (see figure 1), gamification, or gameful design, plots into the field of a rule-based system, or game, utilizing gameful elements in its design. Due to the overwhelming prevalence of this framework in research the definition of gamification used in this paper adheres to the notion of gameful, rule-based design elements being used in contexts outside of explicit game settings. The terms gamification, game design elements and gameful design are hereafter used interchangeably. Other aspects of the model of Deterding et al. related to the previously mention concepts of ludification will not be further discussed in this thesis since these concepts lie outside the focus of this review. The model is thus primarily used as a basis of classification since the focus of this review lies on the application of gamification of in-house-enterprise settings, as opposed to a wider societal analysis. While the enterprise area is definitely related to the discussion that Deterding et al. introduces about the interaction between games and societal culture, these considerations could form the basis of another thesis.

Gamification has been deemed a growing and relevant field for scholarly inquiry (Harman, Koohang, & Paliszkiewicz, 2014). However, at the same time there exists a number of caveats in relation to the emergent body of research. As could be expected within a relatively new line

![Figure 1: A simplified conceptual mapping of game elements in different contexts. Adapted from Walz & Deterding 2015](image)
of inquiry, there has been few empirically rigorous studies conducted on the subject of
gamification (Hamari et al., 2014), there is a wide variety of methods being used to study the
field which makes comparison of results difficult and, lastly, most existing research handles
the subject on a high level of abstraction and mostly in conceptual terms.

Hamari et al (2014) has concluded that gamification in various settings have established
positive effects in the form of stimulating desired behavior by the actors being subjected to the
gamification. However, they stress that the outcome of the gamification is highly dependent
upon the context that is being gamified and upon factors related to the individual users of the
gamified systems. In their literature review Hamari et al. have primarily considered studies
conducted in education and crowdsourcing contexts which they see as a possible indication
that conditions not primarily characterized by a profit motive or instrumentality might be
beneficial environments for the implementation of gameful design elements. In relation to
individual characteristics as a mediator for the effects of gamification Hamari et al. relate that
users engage with gamified systems for a variety of reasons and in differing ways, thus peoples’
motivation for interacting with the studied systems has an impact on the effectiveness of
gamification. Hamari et al. conclude that research on applications of gameful design elements
in different contexts is needed as well as study into individual modes of engagement and
motivations for adoption.

As demonstrated above, research on gamification in general has been conducted and there
exists a call for research into the application of gameful design elements in diverse contexts.
Since gamification of in-house-enterprise settings is a novel and distinct area, there is a need
for a concentration of the research conducted into this area. Below, the results of an initial
foray into the field of gamification in enterprise settings is presented. Furthermore, the
rationale for delimiting this review to ‘in-house’ settings is expanded upon.

2.2 Gamification of in-house enterprise settings

Despite marketing and business applications of gamification often being the first areas of
interest mentioned in relation to gamification, academic interest in this subject often seems to
be inclined toward educational applications and psychological factors involved in gamification
processes. This distribution of scholarly interest is both understandable and explainable in
many ways related to, for instance, the relative ease of access to college students as research
subjects and the previous body of research into motivational psychology which paves the way
for study into these areas. However, keeping in mind Gartner’s (2011, 2012) reports stating
that by 2015 over 50% of enterprises managing innovation will utilize gamified processes and
their prediction that by 2014 80% of all gamified application will have failed to meet its
objectives, it would be unfortunate if the enterprise area was exempt from academic scrutiny
and surrendered to marketers and sales representatives. There is a need for a current review
on the state of hype and fact in this area.

The focus of this study is specifically aimed at in-house enterprise uses of gamification. For
the purposes of this thesis ‘enterprises’ are seen as organizations built up around the execution
of activities related to the production of goods, services or administration that make up the
internal labor of an enterprise. This demarcation places actors that are sometimes seen as part
of the organization outside the boundaries of an enterprise. Thus, for example, students or
customers are understood as actors outside of the enterprise, and gamification aimed toward their central activities falls outside the scope of this review. Furthermore, the emphasis on ‘in-house’ uses of gamification in this context stresses that the activities and processes affected by the use of gamification are aimed toward the internal functions of an enterprise. As such, enterprise gamification of external crowdsourcing, or of customer processes (which have been studied more frequently) and similar applications falls outside the area of interest for this thesis. However, no distinction is made as to what entity is the owner of any one gamification platform or solution, the main interest for this review is the context where the gamified system is utilized by actors considered to operate in-house.

The application of gameful design elements in work settings is, by prolific marketers (e.g. McGonigal, 2011; Zichermann & Linder, 2013), thought of as ways of stimulating employee behavior in a desired fashion. The models of gamification that are being touted range from increased transparency of what work is being done and by whom as a method of promoting individual status and spirit of competition to more or less tangible rewards being distributed when certain tasks are accomplished. Gamified work settings rely heavily upon the fact that work is being monitored and measured by the computerized systems that are involved in the work processes. As expected, the actual implementation of different kinds of gamified systems into work processes varies. There are software vendors that market ‘off-the-shelf’ applications that are compatible with a large number of standard business software, ranging from word-processing applications to enterprise resource planning-systems (ERP). Furthermore there exists custom built gamification software that companies have built and implemented themselves.

While marketing proponents (e.g. McGonigal, 2011; Zichermann & Linder, 2013), vendors of gamification systems (e.g. Salesforce; Bunchball) and Deterding et al. (2011) are the dominant voices being invoked when arguing for the gamification of work settings, critical voices are also present. While criticisms of the concept of gamification has been put forward by academics, their critique has not been articulated through scientific journals. Professor of Interactive Computing Bogost (2011, 2015) has, for example, put forth the thought that gamification is to be considered mainly as a marketing scam built upon the popularity of games and argues that the phenomena should rather be given the moniker ‘exploitationware’. Sociologist Rey (2015) explicitly critiques the use of game design elements in workplaces as a manipulative means of obscuring the alleged exploitation of the workforce. While these examples of critique are firmly grounded in theory and research they have appeared in trade media aimed at the intersection of research and practice and has not been expounded upon through formal study and peer-review. A critical stream of formal research is not apparent at first glance in relation to gamification of enterprise settings even though the subject would seem to lend itself to this kind of scrutiny from scholars interested in workplace conditions, management applications or information systems. Furthermore, considering the failure rate predicted by Gartner (2012) disgruntled industry voices should have begun to emerge in discussions of enterprise gamification.

Additionally, considering the range of disciplines represented in the literature review of Hamari (2014), varying from social psychology and marketing to IS and HCI, scholars of
different backgrounds and theoretical approaches should be making contributions to the study
gamification in work settings.

Researchers are nevertheless beginning to explore the application of gameful design
elements in work and business settings from a variety of approaches and interests. However,
there exists a gap in relation to questions of basic effects of gamifying the workplace. One
complicating factor in this field is that research often seems to be performed in relative
isolation, published in various journal and is possibly kept separate due to disciplinary
boundaries. The sprawl of academic research on the subject of workplace gamification makes
it difficult for contributions to the academic body to build upon an existing body of research.
A summary approach is needed in order to create a state of the field.

As far as I have been able to ascertain, the sole previous attempt at creating an overview of
gamification in enterprise settings is made by Mollick and Werbach (2015). Their work, which
appears in trade media, is however exclusively geared toward an explanation of the hoped for
management outcomes of the implementation of game design elements in work settings.
Furthermore, a large part of their model is concerned with questions pertaining to the
application of gamification in crowdsourcing contexts which can be assumed to be radically
different than in-house utilizations of gameful design in work processes. Finally, the model of
Mollick and Werbach is primarily grounded in anecdotal evidence and examples that have
retroactively been classified as examples of gamification.

The above described state of research makes it abundantly clear that there is a need for a
systematic review of the state of research within the field of in-house enterprise applications
of gamification. This literature review aims to create an overview about what is known about
gamification in workplace contexts and illuminate directions for future research interested
with the application of gameful design elements in enterprise settings. This will be done by
answering the questions how has research approached the study of gamification in enterprise
settings and what does research contribute?

3. Method

Below, the herein used method of literature review according to Webster and Watson (2002),
as well as the workflow of this review is explained.

3.1 Literature review

Since gamification is a fairly new and emerging field of scholarly inquiry there are few literature
reviews (Hamari et al., 2014; Harman, Koohang, & Paliszkiewicz, 2014) available into the
subject. Furthermore, the existing reviews have been concerned with fairly niche subjects. This
is however to be expected, as a developing field of research it is understandable that there are
few comprehensive views on the subject matter. This condition may in fact be the staging
ground and motive for carrying out a literature review according to Webster and Watson
(2002). This literature review takes its starting point in this argument of nascence and, like the
previously mentioned reviews, aims to complete a niched conceptual review of a sub-field of
gamification, specifically, in-house enterprise uses of gameful design in work processes.
Webster and Watson (2002) remark on the complexity of performing a literature review within the discipline of information systems, connected to the high levels of interdisciplinarity of the field. The emerging subject of gamification is not exempt from this complication since many areas of scholarly interest make claims on the study of gameful design elements in non-game contexts. The search for literature related to the subject interest will thus not be restricted to sources primarily interested in information systems or human-computer interaction.

Webster and Watson (2002) propose that a high quality literature review should embrace a structured approach in recognizing and selecting material for analysis. Furthermore, the review should adopt a focus on conceptual framings, as opposed to a focus on authors, of the topics at hand in order to synthesize an overview that clarifies and exposes both the subjects that have been explored and the areas that would benefit from further inquiry. Additionally, Webster and Watson argue that a complete review is not limited to any research methodology, region or set of journals. This approach has herein been adopted with the exception of the exclusion of literature written in languages other than English which may or may not contribute to a regional bias.

In this literature review, the focus will be directed toward how gamification of in-house enterprise settings have been studied and to what effect within scholarly research. As has been previously mentioned this is an underdeveloped subject that would benefit from a concentration of the body of knowledge. Thus, research typical of the more well-studied areas explicitly interested with motivational affordances of gamification and educational applications will be excluded from this review. Furthermore, studies concerned with the gamification of crowdsourcing for enterprise purposes lies beyond the scope of this review since that application borders on questions related to open innovation which, arguably may be related to but, is not the subject of this thesis.

Below, the initial focused searches of this literature review is expounded upon in greater detail.

3.1.1 Step 1: Focused searches

Since gamification is a phenomena that is laid claim to by a wide variety of academic disciplines there is a need to go beyond the confines of information systems journals in order to create a comprehensive view on the state of the research on gameful design application in enterprise settings. This follows the above mentioned argument of Webster and Watson (2002) related to the complexity of performing literature reviews in the discipline of information systems. As a result, the databases that were selected for inclusion in the search for literature of interest were aggregators of cross-disciplinary scholarly literature intended to provide a wide basis for the search phase of the review. The included databases were: Ebsco Host, Web of Science, Scopus and Science Direct.

The initial database queries on gamification (see Table 1) yielded the recognition that the searches performed could neither be too wide nor too narrow in order to create a fruitful yet manageable scope for this review. Variations upon the search term gamification (e.g. gamification, gamif* and gameful) were combined with a grouping of search terms related to the enterprise settings of interest for this study (e.g. enterprise, work and business). The search term ‘work’ was later removed due to it adding a disproportionate amount of search results based on the references to previous “theoretical work” in abstracts which inflated the search
results without yielding a theoretical return as these articles focus lay outside the interest of this review. The initial number of search results can be seen in table 2. The search with the combined query initially resulted in 317 hits (with no consideration of duplicates). With a jumping-off point in this initial body of writing, articles were carefully read and appraised for relevance pertaining to this review.

Table 2 Results from focused searches and screening of titles and abstracts

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<th>Library</th>
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The overarching principle for determining whether any one article was relevant for this review was if the texts conveyed the focus of the article to be about gameful design elements in in-house enterprise or work settings. As such, articles not related to this subject (i.e. enterprise gamification of external crowdsourcing, or of customer processes) were not included in the final review. Articles were further culled due to their use of the term gamification as a seeming throw-away term in the abstracts or keywords that had revealed them in the searches. On the same note, search results that, more or less obviously, had confused or obscured the differences between the concepts ‘gamification’ and ‘serious games’ were excluded. Accordingly, search results discussing one-off contests, or distinctly educational games as ‘gamification’ were omitted. Articles concerned with gamification in education which often, without reference, cited successful business applications as its raison d’être for implementation in education were discarded as well since they did not relate to the focus of this review. Exempt to this rule were a few articles specifically touching upon gamified workplace training. A number of search results bypassed the “English only” search option by containing an abstract in English while the article was written in another language and was consequently disqualified from the review. Lastly, articles that were not available in full text via, either the Umeå University Library’s access to academic articles or freely available through web searches were barred from this survey, this was the least frequent cause for exclusion.

This survey resulted in 26 hits that were found to be of relevance to the subject of this literature review. The 26 articles consists of seven journal articles, eleven conference papers and eight papers collected from “Lecture Notes in Computer Science” by Springer. Out of the 26 selected articles only five contain empirical studies of implementations of gamification. While the remaining articles are conceptual in their approach, some of these 21 articles are grounded in interviews. The majority of the identified literatures academic affiliation is related to computer sciences where, for example, IS, HCI and software engineering are represented. Three articles belong to a dedicated business research tradition while only one stems from the field of psychology.
The detailed analysis of the identified literature is explained below. Appendix 1 provides a full list of the literature included in this review.

3.1.2 Step 2: Analysis
In lieu of adopting a theoretical framework for the analytical synthesis of reviewed material an open coding approach aimed toward generating new insight into the emerging field of gamification research was applied. This method entails that codes were not preconceived or specified before the start of coding process but were rather inductively generated through the iterations of coding. In an emerging line of inquiry this method, similar to grounded approaches, are recommended (Gough, Oliver, & Thomas, 2012, p.149f). The process of open coding intends to produce code clusters and categories from the relevant central themes of the data being analyzed.

The data was coded in the Atlas.ti qualitative data analysis software though none of the advanced software supported functions of analysis (e.g. frequency or network analysis) were used.

The coding procedure was adapted from Saldana’s (2009, pp. 1–31) introduction to coding. The workflow is described as follows. The coding process began with thorough readings of the identified relevant literature in order to become familiar with the content. In the next step an in vivo coding approach was applied, where codes were purposefully constructed using terms and wording similar to the original texts so as to not lose contextual relevance. These initial codes where then iteratively recoded into descriptive codes that summarized the meaningful topics grounded in the data. The descriptive codes were then clustered into categories based on topical association. Code clusters were finally organized into overarching themes. Due to the high level of complexity of the studied phenomena and the variance of subject literature the identified categories and themes are not always mutually exclusive. However, for the sake of clarity and the purposes of this review the themes are largely kept analytically separate.

Below, the path from grounded text to code, category and theme are illustrated through an example, with a starting point in the quote:

“The supervisors can schedule these (grouped) activities to employees based on career and developmental goals of employees or leave them open baskets for any employee to pick them. The option to pick activities provides a sense of empowerment and control for employees” (Neeli, 2012, p.2)

The above related quote exemplifies the standpoint that the utilization of a gamification system that allows employees to select and carry out tasks from a pool of available jobs leads to the workforce experiencing a sense of empowerment and control. A feeling that in this context, even though the supervisors are mentioned, is primarily discussed as a gain for the employees. The grounded quote was first given a rudimentary in vivo-code that was consequently refined into the descriptive code “Sense of empowerment and control”. The coding process produced further codes that were related to claimed employee benefits stemming from the implementation of gamification, these codes were clustered together and then subsumed under the category “Prospects of gamification for employees”. The category consisting of code

3 http://atlasti.com/
clusters was later deemed to have a relationship to the similarly constructed category “Prospects of gamification for organizations” and was lastly incorporated into the central theme “Promises of gamification of enterprise settings”. The remaining themes were constructed according to the same process.

A further schematic excerpt from the workflow of the coding process is presented in appendix 2 where the path from grounded data material through codes, categories to themes are illustrated. In vivo codes have been omitted from this overview since they are generally close to both the grounded text and the descriptive codes.

The coding process described above resulted in six sub-categories that emerged as the four central themes of the literature reviewed in this study. The identified themes with their corresponding categories are presented below. The four overarching themes have been labeled “Prospects of gamification of in-house enterprise settings”, “Perils of gamification of in-house enterprise settings”, “Impact of gamification of in-house enterprise settings”, and “Articulated needs for research”. As previously mentioned, the identified conceptual themes are not mutually exclusive but are at times treated as analytically separate for the clarity of presentation.

4. Results

Since much of the analyzed literature is conceptual in its focus, a large part of this review results are aimed toward synthesizing an overview of the assumptions and claims that are put forth about gamification of in-house enterprise settings. An initial parenthetical but overarching observation is that all but four articles utilizes the article of Deterding et al. (2011) for a plethora of different reasons, thus confirming its stature as foundational literature of the gamification field. As with the general field of gamification, research has been found to sprawl in many different directions in terms of, methods, theoretical approaches, subject of interest and, ultimately, results. This section provides a selective overview of dominant, general and underrepresented conceptual themes which, through the coding process, have been identified in the studied body of literature.

4.1 Promises of gamification of in-house enterprise settings

Based on the fact that the subject matter of the analyzed literature is concerned with the gamification of in-house activities in different ways it is not surprising that they form an opinion on the possibilities of the application of gameful design in work settings. What is interesting about the reviewed papers is what they argue that gamification can accomplish and on what grounds they base their arguments. Below, the two main categories, related to the prospects of gamification for employees and organizations that make up the theme “promises of gamification of in-house enterprise settings” are explained in terms of theoretical underpinnings and identified outcomes.

In the identified literature there are two main foci as to whom the implementation of gamification of the enterprise is said to benefit, these are either its employees or the enterprise itself. The different foci of course has an impact on how their arguments are constructed.
A common assumption behind most of the reviewed articles is that increasing worker engagement is a central challenge for many enterprises if they are to be successful. Be it that employees have been found to be lacking in engagement (Neeli, 2012), the workforce being young and in need of novel motivational reinforcement (Oprescu, Jones, & Katsikitis, 2014; Rauch, 2013) or the workers are simply not performing at the level they perhaps could (E. N. . Webb & Cantú, 2013), gamification of work activities is argued to be the solution to their motivational insufficiencies. In justifying this tactic authors have adopted different theoretical approaches.

Four IS articles (Herzig, Ameling, & Schill, 2012; Makanawala, Godara, Goldwasser, & Le, 2013; Neeli, 2012; Wiegand & Stieglitz, 2014) cite psychological theory of flow as a possible and desirable result of well-designed and well-implemented gamification solutions. The reasoning is that gamification of work processes makes these activities stimulating in a way that promotes intrinsic, rather than extrinsic, motivation to complete tasks challenging enough for their skillsets and this in turn creates higher levels of engagement with the activities being performed. By being provided gamified challenges that correspond to workers skillset, being neither too difficult nor too easy, workers are presumed to enter a psychological state of flow where they are highly engaged with their tasks. This worker engagement is then assumed to translate into organizational benefits in the form of higher levels of goal achievement. Making a case for the reward systems of gamification contributing toward the goal of higher levels of worker engagement Makanawala et al. (2013, pp. 2-3) argues:

“Csikszentmihalyi [...] says that our best moments - the ones that we enjoy the most - occur when we’re voluntarily trying to accomplish something difficult for which we have the right skills. This is mostly due to the superiority of intrinsic motivators (autonomy, mastery, and the sense of belonging) over extrinsic motivators that are more materialistic - rewards, money, etc. To achieve the game mission, we are applying both extrinsic and intrinsic motivators in our games.”

The almost axiomatic assumptions that gamification leads to higher engagement and organizational benefits are present in most articles, at least through a passing reference to Deterding et al. (2011). However, some articles provide further evidence through citing business articles that indicate a correlation between engagement and organizational goal achievement in the form of increased shareholder returns, net profit margins, productivity (Makanawala et al., 2013; E. N. . Webb & Cantú, 2013), or knowledge exchange (Uskov & Sekar, 2014).

From the standpoint that gamification can provide monetary benefits to the enterprise Erdos and Kallós (2014) construct a benefit evaluation model for gamified add-ons in business software. Based on a fusion of the hedonic wage model and the Technology Acceptance Model (TAM) the authors claim that that economic benefits of gamifying the enterprise can be calculated from measures of expected increases in efficiency.

Related to the argument around worker engagement is the prevalent view that gamification alleviates employees sense of boredom or routineness (Carignan & Lawler Kennedy, 2013; Erdos & Kallós, 2014; Makanawala et al., 2013; Meder, Plumbaum, & Hopfgartner, 2013, 2014;
Neeli, 2012; E. N. Webb, 2013), thus making work a joyful and entertaining activity rather than a toil as illustrated by the following quote from Erdos and Kallós (2014, p. 2):

“Essential types of gamification features of business applications generally enhance user experience, enable people to do otherwise boring tasks so that there is a visual design and other incentive substance using game design techniques”.

Although these benefits take place in the workers experience of enjoyment, alleviation of boredom and routineness it is mainly seen as an overarching enterprise benefit since it is seen as a way of retaining and maintaining a productive workforce that is otherwise subject to high levels of costly turnover and loss of productivity.

Another psychological approach that is mainly represented by one business article (Robson, Plangger, Kietzmann, McCarthy, & Pitt, 2015), but nevertheless represents an interesting outlier, is a behavioral psychological view of gamifications mechanisms supporting the behavioral change of employees through the positive and negative reinforcements of the gamified system. According to this approach, employees’ desired behavior can be shaped and conditioned through a reinforcement system based upon gamification in a way that supports organizational goals.

Finally, adopting a more versatile psychological approach in the argument for the benefits of gamification is the psychology article of Oprescu et al. (2014). The authors draw upon a wide array of research from education and health promotion to make its primary contribution through adopting a focus upon how gamification can promote the wellbeing of employees while aligning employee/employer goals for mutual benefit. Psychological concepts that are utilized in this argument number behavioral operant conditioning, locus of control, self-efficacy hierarchy of needs, theory of planned behavior and psychogenic needs. The authors conclude that: “An analysis of research literature across disciplines identified an emerging base of evidence that suggests gamification as a promising strategy for promoting loyalty, productivity, and wellbeing in the workplace.” (Oprescu et al., 2014, p. 4). The authors produce a mnemonic framework for their summary of what they have found to be the beneficial potentials of enterprise gamification in “I PLAY AT WORK”.

The above described theme details a cross-section of the argued promises of gamification benefitting either employees or organizations. Overall, the point of departure for most articles is that gamification has the potential to increase employee engagement in such a way that it is translated into organizational benefits. Authors providing references for the correlation between gamification and engagement primarily draw upon established psychological concepts that have been used in other contexts. References as to the correlation between engagement and organizational benefit are scarcer but are drawn upon from business, management and IS research. There is an overall tendency in the literature to primarily adopt a focus on organizational impact when discussing gamification of the enterprise.

Below, the second theme identified is presented.

4.2 Perils of gamification of in-house enterprise settings

In the same way that it was no surprise that the literature might discuss the promises of gamification it was possible that the perils of gamifying the workplace would be discussed as well. Themes of this kind did indeed emerge during the coding process. Similarly to the above
described theme, perils were found to be focused upon either employees or the organization in general. However, while this theme was found prominent in the data, it is slightly less salient than the first presented theme. Below, the two identified code clusters related to this theme, “Risks of gamification for employees” and “Risks of gamification for organizations” are presented.

A concern that is often expressed in the literature is the risk of the game ‘being gamed’ (Makanawala et al., 2013; Robson et al., 2015; Shahri, Hosseini, Phalp, Taylor, & Ali, 2014; Thom, Millen, & DiMicco, 2012; E. N. Webb, 2013). This fear is grounded in the thought that the implementation of a gamified work system can lead to behavior where employees chase rewards, be they intrinsic or extrinsic, in such a way that the game becomes their main motivational objective which could lead to a loss of work quality. This apprehension of workers “cheating” the enterprise is very clearly articulated by E. N. Webb (2013, p. 5):

“Put another way, people will always try to game the system if they see a way to do it. Your gamification model needs to consider what you can do to ensure that the data they put in satisfies your real requirements in order to win. For example, if your business goal is to increase the number of invoices a user completes per hour, you may increase speed (intended) at the expense of accuracy (unintended).”

This unsolicited exploitative behavior by the employees is thought to be mitigated by aligning work and gamification mechanisms as well as by supervisors monitoring the work being done.

A related peril that is considered an organizational problem is the risk that the provision of extrinsic rewards through a gamified work system could lead to a decrease in employees’ intrinsic motivation to carry out their tasks (Carignan & Lawler Kennedy, 2013; Thom et al., 2012; Wiegand & Stieglitz, 2014). These concerns are grounded in previous research (Carignan & Lawler Kennedy, 2013), empirical observations (Thom et al., 2012) and anecdotal evidence (Wiegand & Stieglitz, 2014). No specific approach for handling this complexity is given, it is rather presented as a caveat in the design phase of any gamified system that needs to be considered.

As mentioned above, the primary concern of the literature when discussing risks of gamifying work settings is a focus on organizational perspectives. However, one article (Shahri et al., 2014), almost exclusively, revolves around risks in relation to employees. This is done with the explicit intention of creating a code of ethics for gamification within enterprises. By way of a mixed methods survey based and validated in interviews with experts, employees and managers, the authors conclude that:

“Gamification could be seen as an unfair mechanism to increase productivity with no real costs, i.e. via playfulness. In addition, it could increase pressure on employees to achieve more or avoid being in the bottom of the list. Gamification might contradict with some personality types and cultural norms.” (Shahri et al., 2014 p. 10)

The authors create a checklist of ethical considerations when implementing gamification in an enterprise context and briefly mention value sensitive design as a method for maintaining user focus in the design of applications. The identified areas of interest in relation to ethical
considerations are, tension in the workplace, gamification as a monitoring mechanism, gamification and privacy, gamification as exploitation, and finally, gamifications relation to personal and cultural values.

The question of privacy is briefly considered by Herzig, Ameling et al. (2012) as well, but from an organizational legal standpoint, where they point out that some forms of fine grained monitoring may not be allowed by local laws and that gamified systems may have to implement workarounds that anonymizes and aggregates data on lawful levels on abstraction.

The above quoted article (Shahri et al., 2014) being the foremost and most initiated critique of gamification of enterprise settings does not however mean that others do not discuss these risks related to employees. They are however in general considered on a more cursory level by other authors. Articles considering employee perspectives on risk discuss cultural and individual factors could conflict with the adoption of gamification (Carignan & Lawler Kennedy, 2013; Thom et al., 2012) and low performers being de-motivated by the highlighting of performance (Wiegand & Stieglitz, 2014). Ultimately, these considerations often settle into discussions of how conceivably detrimental effects on personnel will impact the enterprise.

The above presented theme revolves around projected risks associated with the application of gameful design elements in enterprises. Many authors caution that the implementation of gamification in work settings can have adverse consequences for the organization if the employees were to begin ‘gaming the game’, thereby causing a loss in work quality. Furthermore, some authors raise the concern that providing extrinsic rewards may lead to workers losing their intrinsic motivation to perform their jobs and thus become dependent upon the game mechanics external modes of motivation. One article specifically addresses the professed lack of critical voices in relation to employee perspectives on gamification of enterprises and attempts to create a code of ethics for different aspects of gamification. The legality of analytic functions of gamification is briefly considered by one article. In this theme, as well as in the first presented theme, there is a tilt toward a focus on organizational interests when considering risks associated with the implementation of gamification in the enterprise settings.

Below the third theme is presented, dealing with observed effects of gamification on the enterprise.

4.3 Impact of gamification of in-house enterprise settings

As previously mentioned the majority of the reviewed literature is conceptual in its focus providing justifications, potential applications or frameworks for the implementation of gamification in in-house enterprise settings. However, there are a five articles that makes contributions grounded in empirical observations of elements of gameful design in these contexts. The fact that this material is underrepresented in this review provides a justification for highlighting these rare efforts in particular. The results presented under this theme is made up of one central code cluster titled “observed effects of gamification”.

One of the most frequently cited articles amongst the literature, besides Deterding et al. (2011) is Thom et al. (2012) which relates the effects of the removal of an implemented gamification system of an internal social networking service (SNS). With the removal the authors saw a significant decrease in the desired employee interaction with the system leading
them to argue that neither the implementation nor deconstruction of a gamified system should be taken lightly since employee motivations seem to be affected. Furthermore, they saw a significant decrease in engagement by geographically removed employees who should have retained the intrinsic motivation toward maintaining contact with colleagues at headquarters located in a different country.

Teetering on the edge of representing an application of a serious game, Depura and Garg (2012) utilized a social gamified educational platform in the onboarding process of newly hired students into a ‘Fortune 100’ company. The intentions of the trial was to, by way of gamification, increase new hire retention while streamlining the onboarding process. Based on a qualitative survey and quantitative interaction data the authors conclude that the use of game mechanics supports learner engagement while reducing the cost of onboarding employees in person while also increasing the productivity of new hires.

Meder et al. (2013) relate the results of a survey amongst university personnel on their attitudes toward gamification. Results show that while some of the respondents are convinced of its possible positive effects the majority are unconvinced as to gamifications potential to serve as an intrinsic motivator to themselves. The results of the survey was later compared with interaction logs from a gamified bookmarking system that was implemented in the same workplace. The comparison reveals that there is a relationship between the attitude toward gamification and adoption of a gamified system.

Another example of an implemented gamification solution is presented by Herzig, Strahringer, and Ameling (2012) who gamified an instantiation of the SAP ERP software. The implementation was evaluated using a modified version of TAM and descriptive statistics. The results of the study convey that: “gamification objectively yields improvements in factors, such as software enjoyment, flow experience or perceived ease of use.” (Herzig, Strahinger et al., 2012 p.11). The intention to use the system was however not increased since the perceived usefulness decreased with the addition of gameful design elements.

A requirements engineering (RE) process was gamified through a prototypical board game and an online variation of the Six Thinking Hats method (Ribeiro, Farinha, Pereira, & Mira da Silva, 2014). Feedback was gathered from involved project managers who reported:

“[…] a high degree of satisfaction regarding the amount and quality of generated requirements. Moreover they pointed out that the amount of valid requirements and requirements feedback was similar or better when comparing to traditional tools that they recurrently use on their projects” (Ribeiro et al., 2014 p. 10)

Furthermore a higher rate of participation, which is deemed crucial in RE, was observed through the utilization of the online gamified RE prototype.

The theme presented under this heading is related to the few empirical studies of gamification of in-house enterprise contexts that were conducted amongst the reviewed literature. One well, cited article observed that removal of gamification led to a decrease in the desired behavior of the affected employees. Another study consisting of interaction data and interviews concerning a gamified social educational platform concluded that gamification is an efficient and cost effective approach to handling onboarding activities of new employees. Further, a study was conducted on attitudes toward gamification and interaction with a gamified enterprise bookmarking tool that was later implemented. The study concluded that
there is a correlation between attitude and the subsequent level of adoption. Finally, an SAP ERP system was gamified and implemented in a trial evaluated using a combination of TAM and descriptive statistics. The gamified system was found to increase software enjoyment, flow experience, and perceived ease of use, however, the perceived usefulness of the system decreased with the addition of gameful design elements.

Below, the fourth and final theme, regarding research needs, is presented.

4.4 Articulated needs for future research

Even though much of the literature has been quick to primarily point out, the sometimes unsubstantiated, benefits of gamification in enterprise settings some authors acknowledge the need for further study of this field of application. Below is briefly presented the research needs that are articulated throughout the reviewed literature. Excluded from this presentation is the very specific studies that authors themselves say that they will continue researching in their future work. The theme consist of one central category of codes named “Research need”.

Foremost is the recognition that the effects of gamification need to evaluated in further detail than it has been to date (Butler, 2014; Neeli, 2012; Oprescu et al., 2014; Robson et al., 2015; Wiegand & Stieglitz, 2014). This insight stems both from the fact that foundational literature on the subject is scarce and the appreciation that concepts, frameworks and approaches suggested in the literature need to be empirically evaluated.

As a side note to the above mentioned category of general evaluation there is a smaller call for research into the development of methods for how to actually appraise and measure the effects of gamification in enterprise settings (Neeli, 2012), and a further call for methods on how to segment users in ways so that gamification could be tailored to different individual preferences (Butler, 2014; Carignan & Lawler Kennedy, 2013). As previously presented, Erdos & Kallós (2014) develops a method for calculating economic benefits of gamification for enterprises, which could be seen as a step in the right direction for the construction of evaluative methods.

The smallest identified theme in the reviewed literature consist of articulated calls for further research on subjects related to the utilization of gamification of in-house enterprises. Primarily authors identify the need for general study of the effects of gamification in enterprise settings. Further, authors find a specific need for the development of measurement methods for gamified applications as well as methods toward customizing gamification solutions with respect to individual and cultural predilections.

5. Discussion

As initially discussed, the field of in-house enterprise applications is a fairly novel line of inquiry. This is in many ways reflected in the literature reviewed herein, beginning in the fact that despite a widely cast net in the search phase of articles this exploration reveals a rather small sample of articles explicitly discussing the application of a concept that often is presented as obvious. Furthermore, as briefly observed in the result section, most of the literature contained in this thesis is conceptual in its nature. This, in and of itself may not be a problem because of the novelty of the subject. However, reliable and current theoretical underpinnings
of the propositions made about gamification in general is regretfully absent, thus making the case for applications of gamification in enterprise settings relatively weak. Main references for the account of gamification in enterprise settings are often the definitional conference article of Deterding et al. from 2011 and assorted business submissions from trade media books, blogpost or articles. In relation to the use of this literature as foundational for the argument of gamification, the main contribution of Deterding et al. (2011) is their (self-professed) tentative definition of gamification, which does not contribute that much in terms of insight on effects of gamification. Meanwhile, the business literature often provides a rosy account of gamification which can be presumed to be biased being authored by proponents and economic stakeholders. Again, this forms a somewhat fragile ground for the informed utilization of gamified work processes in enterprise settings.

However, with a jumping off point in these problems some authors have made valuable contributions by providing well thought out modes of argumentation based on previous and established theory, mainly with a foundation in the discipline of psychology. The avenues that Herzig, Strahringer, et al. (2012), Makanawala et al. (2013), Neeli, (2012), Wiegand & Stieglitz (2014) provide for gamification as a fostering force of worker experience of flow (according to flow theory) should be able to be empirically studied, meaning that substantial contributions could be made to the body of research. Both in terms of whether gamification provides benefits in the form of worker engagement and enjoyment and whether these factors are in fact translated into organizational benefits. This kind of study would arguably form a beneficial base of knowledge for enterprises looking to gamify their work processes. This kind of study also aligns with the identified calls for research focused on effects and measurement methods of gamified solutions.

Furthermore, the case for correlation between engagement and organizational benefits, while not implausible, is in general poorly constructed. A few authors provide informative references from the field of business research, showcasing that there exists theoretical grounding. These arguments could be paired with the psychological notions of favorable modes of engagement through the flow concept in order to construct a stronger case for gamification.

In relation to the perceived benefits of gamification for enterprise employees related to the alleviation of boredom both the problem description and the motivation for gameful design elements as the solution remains largely unsubstantiated. Of course there lies a conceivable logic in the envisioning of a routine work situation that could be made more enjoyable through the use of gameful design elements. However, only one article (Meder et al., 2014) provides a reference to research that has found that routine interaction with tedious digital systems tend to balance out on a low level if adoption of the system is voluntary. This case could be made stronger if more clearly linked to the previously discussed concept of flow, or the psychological foundations built upon by Oprescu et al. (2014) discussing gamifications possible contribution to wellness factors.

When discussing the perils of gamification the apprehension that employees may exploit the system for their own benefit emerges as a recurring topic. These trepidations are, with the exception of Thom et al. (2012), not backed up by previous research. However, while this conclusion may not be farfetched, this review reveals that these arguments could be strengthened by utilizing the evidence that Carignan & Lawler Kennedy, (2013), Thom et al.
(2012), Wiegand & Stieglitz (2014) presents regarding the impact of extrinsic rewards on inner motivation to perform a task. An irony on this subject is the fact none of the authors discussing the possible exploitation, or ‘gaming’, of game mechanics acknowledge the fact that this is, in effect, what the enterprise seeks to do to their employees.

On the subject of employee related risks of gamification of enterprise settings Shahri et al. (2014) stands alone in adopting this perspective as an explicit focus. Based in interviews with respondents in various positions and conducted in several steps Shahri et al. builds a good case that the areas of concern raised are probably relevant to acknowledge in any implementation of gamified work processes. However, the article suffers from the same theoretical deficiencies as the previously discussed literature and the case could be further supported by relating the results of the interviews to theory or observations. As Rey (2015) displays there are theoretical grounds in social sciences for making many of the same observations that Shahri et al. (2014) found. Furthermore, Carignan and Lawler Kennedy, (2013), Thom et al. (2012), Wiegand and Stieglitz (2014) supports some of the arguments put forward by Shahri et al. (2014).

In relation to the above discussed subjects, a point is to be made about how previous research is utilized to motivate the implementation of gamification in work settings. Oftentimes references are utilized in a throw-away-manner where effects are quoted without much explicit reflection on the quality or substance of the cited literature. Case in point being how Thom et al. (2012) often is used. As previously related, Thom et al. studied the removal of gamified elements of an enterprise SNS, which suffered a decrease in employee activity when elements of gameful design were removed from the software. Literature citing this article often relate these results in a clear-sighted manner but then go on to use this article as a validation that gamification creates more activity, even though Thom et al. discusses that a large part of the activity that disappeared with the removal of gamification likely was non-value adding processes that could fall into the category of ‘the game being gamed’. Of course, if the objective of implementing gamification is increasing activity without consideration of the possible effects this may have on work quality this argument is valid. However, as showcased by Makanawala et al. (2013), Robson et al. (2015), Shahri et al. (2014), E. N. Webb (2013) concerns are raised about employees exploiting the gamified systems in unintended ways, therefore it is baffling that the points raised by Thom et al. (2012) are not reflected upon further, despite them being amongst the most rigorous observations of effects of gamification in the enterprise to date. The subject of study would benefit from a greater consideration and connection of the subject expounded upon and previous work in the field.

Apart from the discussion in the paragraph above, based on the empirical contributions in this literature review there seems to exist some tentative support for some of the claims about gamification in enterprise settings that have been discussed previously. Depura and Garg (2012) give credit to claims of gamification being able to contribute to organizational goal achievement in the form of building engagement and increases in efficiency. However, the survey results presented appear be constructed in such a way that respondents did not have an option of leaving negative responses on their experience. Furthermore, respondents were answering questions posed by a new employer meaning that there could be a risk of the answers being constructed to say what the employer is presumed to want to hear. And finally, the efficiency gains observed, by Depura and Garg, through gamification largely rely on the
automation of a previous interpersonal process. This does not, however, mean that there were no gains made in efficiency, it is simply difficult to attribute them specifically to a gamified system where any automated digital system might have sufficed.

Continuing on the subject of the reviewed empirical research, the study of Meder et al. (2014) showing that attitude toward gamification and adoption of a gamified system correlate makes a contribution that may be relevant in the implementation phase of a gamification system. However, these result may apply to a lot of different systems where attitude and adoption can be presumed to be connected. Herzig, Strahring, et al. (2012) make a more sophisticated attempt at evaluating technology acceptance of a gamified systems. Their conclusion seems to corroborate the potential of gamification to be a technological addition that can indeed improve upon the experience of interaction with work software. However, the perceived usefulness of the gamified system decreased through the gamification of the system which, as the authors point out, may be due to design deficiencies in the studied prototype. The observations made by Herzig, Strahring, et al. could be considered a corroboration of the Gartner group’s 2012 prediction of gamification failure tied to poor design.

In regards to the identified calls for future research, the effects of gamification and ways to measure these effects stand out as the primary and pressing needs. This recognition is welcome considering the sometimes lacking theoretical and empirical grounding discussed above. Based on this review these needs emerge as central to continued meaningful study, design and implementation of gamification of in-house enterprise settings. Furthermore, a need for greater interdisciplinary awareness of approaches, methods and results is identified.

As mentioned in the section on related research, it is surprising that critical perspectives on the application of gamification in work settings are hard to come by. Considering the substantial number of articles screened in the search phase of articles in this review it continues to surprise that only one article (Shahri et al., 2014) explicitly mentions this absence and aims to contribute with a critical examination of the drawbacks of this potentially exploitative and harmful management application. As Rey (2015) shows there are, for example, critical contributions to be made from the field of sociology concerning questions of exploitative practices of employers.

In the reviewed literature, the primary contributing academic disciplines are connected to computer sciences while often operating in the intersection of many subjects such as IS, HCI and software engineering. Further, smaller contributions are made by business, management and psychology scholars. Other scholarly fields that should be able, and willing, to make contributions to the study of gamification in enterprise settings could be the disciplines of social psychology, pedagogy and research more widely concerned with human resource management. In line with what some of the reviewed authors articulate there, is a need for interdisciplinary study of gamification if research is not to fall into the traps of bland empiricism or, on the other hand, ceaseless unfocused theorization. However, this review illustrates that there is no immediate risk of empirical studies becoming excessive.

Some of the issues raised with the reviewed literature in this discussion may be moot due to novelty of the field. It is self-evident that researchers cannot cite work that hasn’t been done at the time of writing, and it is understandable that it is difficult to be aware of concurrent cross-
disciplinary advances in an emerging field of research. However, these facts highlight the need for a review of the kind provided in this thesis.

5.1 Implications for research and practice

Up to this point in this thesis, the implications for the academic study and industry applications of gameful design elements in in-house enterprise contexts have mostly been grazed upon. Under this heading these implications are expounded in greater detail.

As this review has shown, gamification of in-house enterprise settings is a growing field of interest for both researchers and stakeholders in other organizations. But what are the overarching takeaways from this review for these groups? Primarily, the state of knowledge that this review provides should urge caution in the implementation of gamified solutions into enterprises. The foundational arguments for employing gamification in enterprises are to a large extent inferred and unconfirmed. Further, the discourse around workplace gamification seems to be dominated by arguments closely resembling the benefits being touted by biased representatives of the gamification software industry. The advertised promises of gamification may very well be real but until they are more firmly established managers considering the implementation of gamification in their processes would do well to practice restraint in relation to adoption. This concern becomes more urgent in light of the observations made by Thom et al. (2012), which may be considered the most rigorous of the empirically oriented studies in this review. As the authors illustrate, a seemingly innocuous application of a point based system may result in a higher degree of a desired and measurable activity, though the quality and value of this activity is difficult to gauge. In a business where the possible variance in quality of the performed activities is low, gamification may be a method toward promoting higher levels of activity. In cases, like Thom et al., where the quality of the desired activity is of a more complex nature (intra-organizational communication), gamification may increase non-valuable game induced activity, thereby becoming a questionable waste of resources.

Further complicating the effects of gamification in the case of Thom et al. (2012) is the fact that the removal of the gamified system appears to have affected the intrinsic motivations toward value-adding activities of employees who were assumed to retain these modes of motivation even after the elimination of the system. It is not farfetched to assume that organizations who adopt gamification at one point or another either will remove, alter or exchange their gamification solution, thus opening up their operations to the kind of complexity observed by Thom et al. As illustrated by this reasoning, the ‘gaming of the game’, or the stimulation of non-value adding activities through gamification is a real and justified concern that should be taken into account. In the above described situations researcher have a role to play in further determining the effects and complexities of these processes.

There is a need for more rigorous and refined theoretical groundwork of gamification, though the main focus of academics at this point should lie upon empirical studies of gamification in work settings. The relative lack of such empirical studies is somewhat surprising, though some of the reviewed authors seem to imply that there is an unwillingness amongst enterprises to invite researchers to study implementations of gamification. If the failure rate of gamification that Gartner (2012) has predicted is to be avoided, there is a need for intimate collaboration between industry and academy.
Considering the underrepresented critique of gamification from an employee perspective also provides cause for reflection upon in-house applications of gameful design. Bearing in mind the apprehensions articulated through the respondents of Shahri et al. (2014), it is indeed possible that gamification could be considered an invasive cause of tension and stress in the workplace. The most obvious of these tensions being tied to the possibility that addition of gamified work elements may be perceived as an empty and exploitative method of cheerful corporate coercion toward higher levels of productivity. It is conceivable that employees experiencing feelings of pressure from exploitation could develop stress related ailments and become unhappy in their workplaces. Furthermore the visibility of performance and competitive elements could exacerbate stressful comparisons with coworkers. Again, in certain contexts these kinds of effects may not be a problem for an employer interested with the possible short term benefits of gamification. However, in an organization desiring to create a sound work climate for employees, questions of these possible effects should be examined. This is another area where academy and practice should be able to collaborate in order to create a better understanding of these perils.

Knowledge of the possible drawbacks tied to gamification solutions may be of interest to stakeholders monitoring worker conditions e.g. unions, legislators or the human resource management functions of an enterprise. The reoccurring accounts of gamification as neutral elements of game design in work environments may obscure the possible detrimental effects of a contentious management instrument.

If investments into gamification of in-house enterprise settings persist, study of the subject needs to move beyond its current conceptual focus and contribute with rigorous research into the practical effects and applications. Otherwise, individuals and organizations run the risk of merely engaging in what Bogost (2011, 2015) terms “marketing bullshit”.

5.2 Limitations of this literature review

Even though the field of research on gamification is growing it should still be considered to be in its infancy. This applies even more so to the line of inquiry into in-house applications of gamification. However, considering the proliferation of gamification enterprise platforms and the vast resources that Gartner, among others, claim is being invested in enterprise gamification it is somewhat surprising that more articles were not identified to be of relevance to this review. However, it is possible that different search strategies, in terms of keywords, databases and an inclusion of related topics could have revealed contributions conceptually or theoretically close and relevant to the studied subject.

The interdisciplinary breadth of contributions may not has been as large as expected considering the variance in e.g. Hamari et al. (2014). However, the discovery of relevant articles outside the field of computer science related research and the variety of applied foundational literature illustrates the need for approaches crossing disciplinary borders. This literature review provides a stepping stone for such endeavors.

This literature review is by necessity not an all-encompassing summary, but a conceptual overview of the field of gamification in business enterprises. Omissions of smaller themes are made on the grounds that they have not emerged as relevant through the coding process by not providing contributions beyond what a cursory glance of the literature would provide. The
themes highlighted herein have emerged though iterative coding and serves as signposts for knowledge gaps and potential avenues of interest for future research into this budding field.

6. Conclusion

Research on gamification of in-house enterprise settings has to date been scarce and poorly related to each other. Through a literature review of existing research this thesis illuminates gaps in the current research, avenues of interests for approaches to the application of gameful design elements in in-house enterprise settings and provides a conceptual overview of the state of research as to what gamification may contribute in an enterprise context. Research has been found to see both promises and perils with the application of gamification of work settings. In constructing these arguments research draws upon theory from psychology, business research, and IS. However, the proliferation of unfounded arguments both for and against the utilization of gamification are also identified. Tentative empirically grounded research lends some credence to the assumption that gamification can benefit both employees and enterprises. Effects of gamification are however not conclusive and should be further studied. The results of this literature review should benefit future research, industry applications and serve as an introduction to anyone interested in gamification of in-house enterprise settings.
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Appendix 1


### Appendix 2

<table>
<thead>
<tr>
<th>Grounding</th>
<th>Descriptive code</th>
<th>Category</th>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The supervisors can schedule these (grouped) activities to employees based on career and developmental goals of employees or leave them open baskets for any employee to pick them. The option to pick activities provides a sense of empowerment and control for employees” (Neeli, 2012)</td>
<td>Sense of empowerment and control</td>
<td>Prospects of gamification for employees</td>
<td>Promises of gamification of in-house enterprise settings</td>
</tr>
<tr>
<td>“Essential types of gamification features of business applications generally enhance user experience, enable people to do otherwise boring tasks so that there is a visual design and other incentive substance using game design techniques” (Erdos &amp; Kallós, 2014)</td>
<td>Relieve sense of boredom</td>
<td>Increase organizational goal achievement</td>
<td>Prospects of gamification for organization</td>
</tr>
<tr>
<td>“More recently, this approach also sparked interest in the enterprise domain with the intention to introduce game mechanics on the job which results in higher levels of employee engagement in order to drive positive organizational outcomes, such as organizational commitment or job performance.” (Herzig, Ameling, &amp; Schill, 2012)</td>
<td>Increase employee engagement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>“[...] many companies suffer from participation inequality, providing evidence for the assumption that in almost every company, at least one software system exists that can benefit from higher user activity. A promising approach to increase user participation can be achieved by applying gamification methods.” (Meder, Plumbaum, &amp; Hopfgartner, 2013)</td>
<td>Monitoring creates tension</td>
<td>Risks of gamification for employees</td>
<td>Perils of gamification of in-house enterprise settings</td>
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<td>“In highly hierarchical and centralised management styles, gamification could lead to stressing people by creating the fear of being questioned frequently. Also, managers could use the collected information to compare employees with each and create competition for promotions, hence creating tension.” (Shahri, Hosseini, Phalp, Taylor, &amp; Ali, 2014)</td>
<td>Monitoring creates tension</td>
<td>Risks of gamification for employees</td>
<td>Perils of gamification of in-house enterprise settings</td>
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<td>Privileges are classified as non-monetary rewards which are earned in combination with other instruments (e.g. by reaching a certain score, level, or badge). [...] However, it also bears some risk of social complexity (e.g. jealousy / inequality) as soon as the privileges becomes transparent to other users.” (Wiegand &amp; Stieglitz, 2014)</td>
<td>Rewards impair social complexity</td>
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<td>“One key consideration in gamification is to consider the unintended outcome in your design. Put another way, people will always try to game the system if they see a way to do it. Your gamification model needs to consider what you can do to ensure that the data they put in satisfies your real requirements in order to win.” (Webb, 2013)</td>
<td>Gamification system is exploited</td>
<td>Risks of gamification for organization</td>
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<td>“Gamification could drive people to do things in a cursory manner. The fear of losing their community recognition, when techniques like ranks and status and leader boards are applied, could be the main reason for that.” (Shahri et al., 2014)</td>
<td>Loss of work quality</td>
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<td>“The quantitative results and the qualitative survey feedback demonstrate that the application of interactive learning techniques such as online social interaction and game mechanics can help create learner engagement, especially in a new hire onboarding scenario.” (Depura &amp; Garg, 2012)</td>
<td>Improves onboarding engagement</td>
<td>Observed effects of gamification</td>
<td>Impact of gamification of in-house enterprise settings</td>
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<td>“In this paper we have presented a theoretical model for the evaluation of our ERP gamification prototype. We have shown that gamification objectively yields improvements in factors such as software enjoyment, flow experience or perceived ease of use.” (Herzig, Strahringer, &amp; Ameling, 2012)</td>
<td>Improvements of user experience</td>
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