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Effects of Gamified E-learning

From an employee's perspective

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Effects of Gamified E-learning: From an employee's perspective

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ABSTRACT (MAX. 200 WORDS):
The purpose of this study is to examine the influence of gamification on employees in the workplace. Despite the fact that gamification is a relatively recent phenomenon, numerous studies have already been undertaken to develop the concept's theoretical foundation. In order to further expand the topic, the following study examines the workplace experiences of five end users of gamified systems through an empirical investigation. According to the findings of the study, gamification is a widely utilized method of conducting learning in the workplace that has received widespread support among employees. It offers numerous benefits, including time and location flexibility, ease and enjoyment of learning, and competitiveness. On the other side, the study reveals various flaws in the systems, most notably the lack of depth in the courses, which causes users stress, and the absence of rules. By presenting the following findings, the study aims to demonstrate to future designers and practitioners the areas in which gamified systems can be enhanced to facilitate their ongoing development.

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1 Introduction

Information Systems (IS) research on gamification has focused on investigating the intended affective, cognitive, and behavioral outcomes of gamification, such as higher levels of engagement or fun (Schöbel, Schmidt-Kraepelin, Janson, and Sunyaev, 2021). Researchers have spearheaded the concept into working applications where gamified features keep the users engaged in a fun and engaging environment where almost everything that organizations have hoped for has been partly or mostly achieved (Bai, Hew, and Huang, 2020). However, there is a feeling that gamification is still in a somewhat early stage (Hamari, Koivisto, and Sarsa, 2014), where the concepts have been around for one and a half decades but it still suffers from being somewhat unreliable, mystical, hard to understand, and what may also be described as made-up nonsense (Bai, Hew, and Huang, 2020).

Gamification has emphasized the creation and evaluation of prototypes, and the objective was to demonstrate that gamified systems yield superior results compared to non-gamified systems (Rapp, Hopfgartner, Hamari, Linehan, and Cena, 2019). However, the field is entering a new phase due to studies identifying the notion of gamification's glaring and obvious shortcomings. E-learning is an example of a context where gamification has been effectively implemented and is very probably the most common application of gamification, and as a result of this boom, plentiful research on e-learning have been conducted to demonstrate the value of gamification (Bai, Hew, and Huang, 2020; Osatuyi, Osatuyi, and de la Rosa, 2018; Toda, Valle, and Isotani, 2018; Almeida, Kalinowski, and Feijó, 2022; Phung, 2020). E-learning is data and communication technology that facilitates students' technologically enhanced learning. This made E-learning the ideal platform for gamification, as it is frequently the younger age that uses E-learning. The idea of making it more engaging and fun, similar to playing a game, was a natural match for researchers (Bai, Hew, and Huang, 2020.

It is not only in the field of Education that gamification has tried to find its application. The private sector has also eyed gamification as a potential new technology. The current literature confirms gamification's effectiveness in the context of customer engagement, creativity, learning, behavior change, technology adoption, and enjoyable experiences (Almeida, Kalinowski, and Feijó, 2022; Mattke and Maier, 2021). Moreover, as with such advantages on customer behavior, organizations have turned their eyes to their employees with the hope that gamification can infuse them with the same positive effects; this does not mean, however, that it translates well into an organizational context when it comes to their employees (Alfaqiri, Noor and Sahari, 2022).

Because of the advantages of gamified E-learning, organizations and professional institutions are implementing E-learning by adapting an expanded array of platforms powered by new technology; however, gamified e-learning does have its troubles (Hammedi, Leclercq, Poncin and Alkire, 2021). There seems to be an understanding that what is needed as a next step to make gamification more viable is more study, particularly on the effects that gamified systems have on users, including the not much-explored area of negative effects of gamification, something that researchers are calling the "dark side" of gamification (Andrade et al., 2016; Hyrynsalmi, Smed and Kimppa 2017; Schöble et al., 2021).

Further study, particularly among the end users of gamified systems, is necessary to identify the systems' strengths and weaknesses and, as a result, improve their efficacy. By researching how the systems' various characteristics affect the end user's experience, we want to further

understanding of which components of the gamification should be strengthened and which should be reviewed or enhanced so that the systems fulfill their goals most effectively.

1.1 Problem

One of the essential questions surrounding gamification is how it impacts the users of gamified systems. Researchers have suggested that more study is needed to explore how people experience gamification (Schöbel et al., 2021). This has been attempted by Singh and Verma (2020), resulting in the creation of a causal-chain framework that considers every part of gamification to understand when gamification produces specific outcomes and to map how different variables affect these outcomes. This theoretical framework is relatively new as of the date of this study and thus needs empirical examinations that would prove its validity.

Gamification is commonly expected to affect the users of gamified systems positively. The term "gamification" finds its roots in a "game," inducing positive emotions relating to fun, easiness, and enjoyment. Some service companies experimented with creating fun experiences to increase employee engagement, as promised by gamification (Hammedi et al., 2021). However, little evidence shows how gamification works when brought to a workplace context or seen from an employee's perspective. Some studies suggest that gamification may have the opposite effect and increase stress, over-participation, and demotivation (Hammedi et al., 2021).

The need for research from an employee context is potentially fascinating, as there is bound to be a difference from the customer context. What is more, some researchers claim that for gamification to be effective, it requires voluntary participation. At the same time, an employee of a company may inversely feel that they are required, if not downright obligated, to participate in e-learning (Hammedi et al., 2021). This raises another question: Can non-voluntary participation in gamified e-learning bring positive outcomes? All these issues require verification with the employees, as they are the ones that are targeted by gamified systems at work. Hamari et al. (2014) found that the gamified context and utilization affect user engagement and outcomes, and suggested that future studies should be qualitative as they may be better for comprehending gamification.

Finally, the current literature on gamification suffers from a research gap. The studies conducted so far focus mainly on the good parts of gamification. These are, for example: how gamification can reduce stress and increase well-being (Phung, 2020; Hammedi et al., 2021) and how it can make work more enjoyable, motivating, and engaging for the employees (Sailer, Hense, Mayr, and Mandl 2017; Peng, Lin, Pfeiffer and Winn, 2012; Mitchell, Schuster, and Jin, 2020; Hammedi et al., 2021), and how their efficiency will grow to new heights giving the organization that has implemented these systems an incredible return on this investment (Behl, Sheorey, Jain, Chavan, Jajodia and Zhang, 2021; Hammedi et al., 2021). In return, researchers that have studied the gamification literature have found that very little is being said about the potential negative effects of gamification.

Schöbel et al. (2021) argue that future research should try to investigate the effects of gamification and give the negative ones their due since this aspect of gamification has not been given the attention it deserves and needs in order to make gamification successful. They also propose that researchers explore the limits of gamification since out of the already little research done on the potential negative effects of gamification, most of it deals only with its

risks and not limitations. The potential negative effects of gamification are an area requiring investigation.

1.2 Research Question

The current problems in the field of gamification pertain to the general lack of research on how employees are affected by gamification. We want to narrow this scope further and specify how gamification affects employees from a workplace context. One kind of gamified solution that has been brought up as one of the most common is the education learning system. E-learning is also part of employees' development in an organization which will have us explore this specific situation. We will also keep in mind the call of the research community and pay attention to reporting any negative effects that gamification may cause in the context we are studying, keeping a balanced approach between positive and negative effects. Therefore, we would like to propose the following question:

- How are employees affected by gamified e-learning systems in a workplace environment?

1.3 Purpose

This thesis aims to expand the body of knowledge on how gamification affects employees in organizations. We will do so by using a causal-chain framework to explain the relations between gamification and outcome. We will use this framework to create qualitative interviews with an emphasis on the individual, as suggested by the research community. We will do this by examining their use of gamified e-learning, as e-learning is a well-used area for gamification. Nevertheless, not enough is known about its efficiency in a workplace environment. This is why we will choose individuals that are employees who use e-learning within their organizations for interviews. Since we recognize that the current literature calls for studies on the negative aspect of gamification, we will keep in mind to address these as a part of potential employees' experiences, but will keep a balanced view so as not to see overly positive or negative on gamification.

1.4 Delimitation

In order to answer the research question of how employees are affected by the gamified e-learning systems in a workplace environment, we will analyze the role of the individual characteristics of the participants (such as age, expertise or voluntariness, referred later to as "moderators," see Figure 2.4), as well as of the environment of the gamified system (such as time pressure or users collaboration, referred to as "mediators") on the perception of the gamified systems. Subsequently, we will investigate the effectiveness of the gamification for the user (such as engagement or user acceptance, referred to as "outcomes").

We will not be examining the role of the very frame of the gamified e-learning (the system of points, rankings, punishments, rewards, etc., referred to as "antecedents.") on its effectiveness as we do not dispose of a base of users that would have experience with all the different types

of the systems that they would be able to compare between one another. Neither will we look into the components of the gamification that directly relate to the psychological stance of the users (such for instance "expectancy").

2 Theoretical Framework

In this chapter, we dive into the topic of gamification. We reviewed the literature on the subject of gamification and quickly found how broad the topic was. In the model below, we have illustrated how we are going to narrow down the field into the area where we will conduct our research in this study. We went broad with gamification and saw that there were mainly newer studies on gamification and employees. We chose to use the perspective of gamified e-learning systems as an interesting lens. We decided to combine the two to study how employees are affected by gamified e-learning systems in a workplace environment.

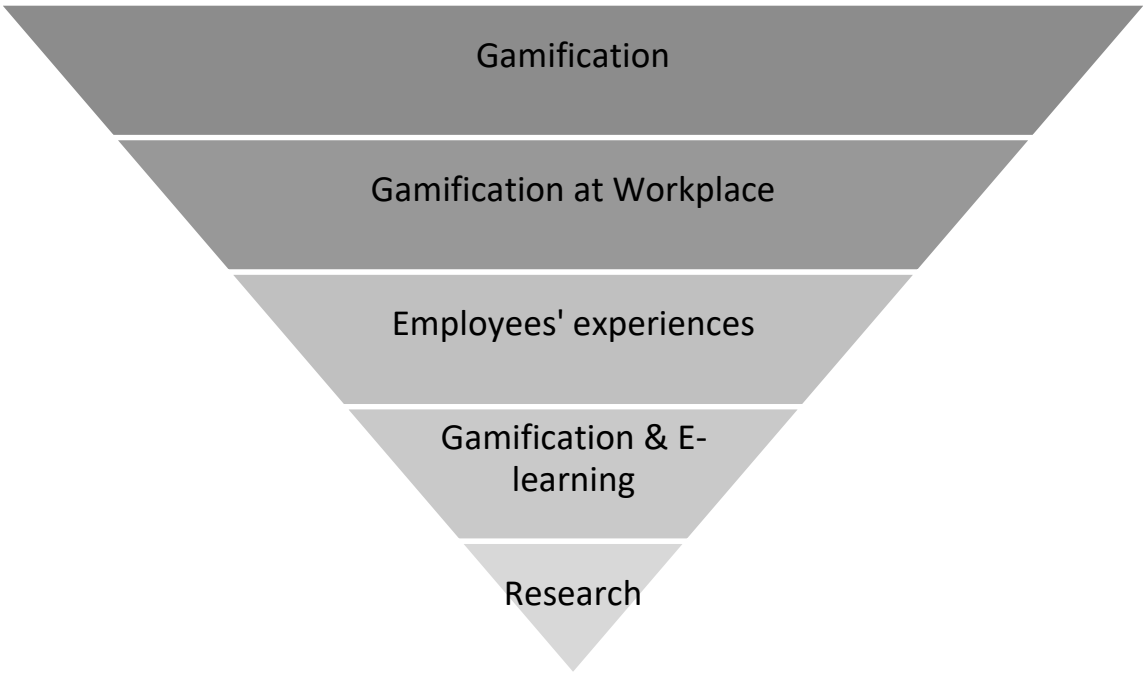
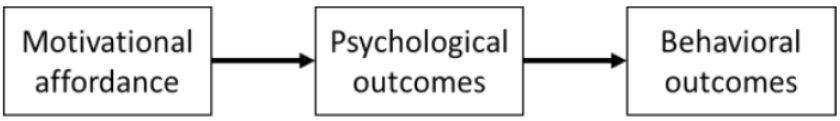


Figure 2.1: Narrowing down the field of gamification.

2.1 Concept of Gamification

Gamification has become quite a trend and, with it, a major practice and research interest in the information systems (IS) field, in particular in the area concerning human-computer interaction (HCI) (Schöbel et al., 2021). Gamification is a term derived from the digital media field and was invented in 2002 and documented in 2008, and it has become prevalent in many fields since 2010 (Bai, Hew, and Huang, 2020; Rapp et al., 2019). The concept of Gamification should, however, not be confused with what one may think of as the entertainment kind of games found in today's PCs, consoles, and mobile devices, which are purely made for fun(Bai, Hew, and Huang, 2020). The main purposes of Gamification are learning and acquiring knowledge and reprogramming behavior (Bai, Hew, and Huang, 2020). In short, this was conceived into the word Gamification and is defined as: "The use of game design elements in non-game contexts" (Alharthi and Parrish, 2017; Bai, Hew, and Huang, 2020; Bai, Hew, and Huang, 2021; Garcia-Iruela and Hijon-Neira, 2020; Hanus and Fox, 2018; Hyrynsalmi, Smed and Kimppa, 2017; Mattke and Maier, 2021; Mitchell, Schuster, and Jin, 2020; Osatuyi, Osatuyi, and de la Rosa, (2018); Sailer et al., 2017; Schlömmer, Spieß, and Schlögl, 2021; Schöbel et al., 2021; Toda, Valle and Isotani, 2018; Yang and Li, 2021).

Sailer et al. (2017) split the definition into four semantic components: game, elements, design, and non-game contexts. They explain that the term Game is conceptualized as free and ex-



plorative, rule-based playful activities. Elements bring the characteristics of games to the real-world context of a given system, and these elements also help define the game's meaning. Design is not physical component-based but refers explicitly to a deliberate design process. Non-game context does not refer to possible areas they can be applied to, but rather the context where one applies game design elements, either in a game or in the game design process.

Rapp et al. (2019) explain that in the infancy of Gamification, research was primarily pushed by designing and evaluating gamified prototype applications and services. They point out that researchers have typically aimed to demonstrate that gamified systems produce better outcomes than non-gamified systems. Only recently have researchers attempted to understand the mechanisms through which Gamification can bring about those outcomes (Rapp et al., 2019).

Researchers have explained Gamification with different terms. Although these terms all relate to Gamification, they differ in purpose and instructional goals (Osatuyi, Osatuyi, and de la Rosa, (2018). Osatuyi, Osatuyi, and de la Rosa (2018) have categorized these as: Game-based learning - This technique integrates games into instructional content, such as making a game of teaching and learning to engage students and positively influence learning outcomes. Serious games - They are games that are used for training purposes, attitude and behavior modification, and skill development which are seen in healthcare, education, and the military. Game mechanics - This concept contains the elements of basic actions of a player like what they can do, a player's behaviors and control mechanisms, and the effect their actions have on the game. Game dynamics - is the behavior of game mechanics in reaction to player inputs. These dynamics create the fun that a player feels while playing a game.

Schöbel et al. (2021) explain that to explore whether Gamification works, researchers have tried various examples of gamified systems, with game design elements in many combinations and several different dependent variables and constructs like engagement, motivation, and fun, to mention some. Those studies have helped to establish Gamification as a scientific research area in IS (Schöbel et al., 2021). Gamification has also been used to enhance positive patterns in service use, such as increasing user activity, social interaction, or quality and productivity of actions (Hamari, Koivisto, and Sarsa, 2014). So, Gamification is applying and implementing game concepts and game-design elements, like game mechanics and dynamics, in real-world situations (Osatuyi, Osatuyi, and de la Rosa, (2018)). This is to help develop problem-solving skills and can even be used to encourage certain desired behaviors (Osatuyi, Osatuyi, and de la Rosa, (2018)).

Hamari, Koivisto, and Sarsa (2014) conceptualize Gamification in three main parts (Figure 2.2): First is the implementation of motivational affordances - this is the process of invoking gameful experiences and further behavioral outcomes in a gamified system. This is done through certain elements designed into the system. The second part is the resulting psychological outcomes. This part is the psychological result of a gamified system, of which it is somewhat unclear which affordance produces what result, as the results are based on the whole system. The third part is the furtherment of behavioral outcomes - these outcomes come from the result of the psychological changes of a gamified system.

Figure 2.2: Gamification Conceptualized (Hamari et al., 2014, p.2).

The areas in which Gamification has previously been implemented include the following: work, education, crowdsourcing, data collection, health, marketing, social networks, and environmental protection (Hamari, Koivisto, and Sarsa, 2014; Sailer et al., 2017; Schöbel et al., 2021). Within all these contexts, Gamification is expected to foster the initiation or continuation of goal-directed behavior, also known as motivation (Sailer et al., 2017).

Hamari, Koivisto, and Sarsa (2014) noted that the role of the context being gamified and the qualities of the users had an impact on users' engagement in a gamified system and that it affects the outcomes quite a bit. This would suggest that qualitative studies would be preferable in the future when truly understanding Gamification.

2.2 Gamification at the workplace

Organizations use Gamification to gain and retain customers (Hammedi et al., 2021; Mattke and Maier, 2021). It is estimated that over 50% of organizations managing innovation processes used Gamification in certain aspects of their business in 2015 (Hanus and Fox, 2018). Bai, Hew, and Huang (2020) present examples of how Gamification can help engage in certain tasks. The first is when Gamification can be used to improve fitness – one example is the Nike+ service. The Second example of Gamification is to generate brand loyalty – here, Starbucks uses gamification services for this task. A third shows how Gamification is used in answering other people's questions – this is seen in Yahoo! Answers. Gamification is becoming a popular next-generation marketing and consumer interaction approach mirrored in the rise of gamification-focused startups. Codecademy combines game-like aspects to educate coding; Codecademy also helps established enterprises gamify their offerings (Hamari, Koivisto, and Sarsa, 2014).

Another example that uses Gamification successfully for education is the Duolingo application, a service utilized by 300 million people globally for language education (Mattke and Maier, 2021). It claims that it provides opportunities for individuals of all socioeconomic backgrounds to learn new languages (Almeida, Kalinowski and Feijó, 2022) and is considered a big success. Gamification, however, goes beyond just day-to-day activities and marketing strategies.

2.2.1 Gamification from an employee's perspective

In a narrower sense, gamified workplaces are organizations that utilize Gamification to change certain employees' work processes into a game-like experience using selected game design and game interaction concepts (Ferreira, Araújo, Fernandes, and Miguel, 2017). A gamified workplace aims to promote good outcomes at the organizational and individual levels, fostering the development of healthy companies in which better performance levels correlate with greater levels of employee engagement and well-being (Ferreira et al., 2017). However, Gamification requires voluntary engagement to be effective, whereas employees may feel compelled or pressured to participate in a workplace setting (Hammedi et al., 2021). By mandating Gamification, managers inevitably contradict the condition of voluntary participation, which distinguishes this employee context from the consumer context that defines the vast majority of earlier research (Hammedi et al., 2021). Therefore, it is essential to

investigate the function of Gamification and its effect on employee engagement and well-being (Hammedi et al., 2021).

Bai, Hew, and Huang (2020) propose that gamified practices will become a major feature when organizations need to motivate people, especially when trying to connect to those born in the digital age of online games. Younger workers are more motivated by job-related outcomes, task successes, and extrinsic rewards. In contrast, older workers are motivated by social variables, according to research on age disparities in the workplace (Larsen, 2019). Additionally, older workers have a lower percentage of technological acceptance than younger workers. This has consequences for the forms of Gamification that may be effective with each group (Larsen, 2019). To highlight the benefits of gamified workplaces, Ferreira et al. (2017) present three key characteristics of the workplace gamification concept that have been highlighted: First, games are a form of engagement that promises to make dull jobs entertaining by combining rule-based procedures with importance. Second, games are fair, transparent, and just in assigning tasks and rating participants. Moreover third, games are seen as efficient activities that lead to better outcomes and self-improvement. Similar to how games encourage users to advance through different stages, gamified work processes may motivate users to advance through progressively challenging tasks (Larson, 2019). Using games and Gamification in the workplace may increase engagement in business activities, program uptake, and greater productivity (Larson, 2019).

Gamification has been positioned as the long-sought answer to diminishing employee engagement in modern workplaces and the issues they provide for employee retention (Mitchell, Schuster, and Jin, 2020). However, little research illustrates the function of Gamification in the workplace or from the employee's viewpoint; therefore, Gamification's usefulness is somewhat debatable (Hammedi et al., 2021). New practices can help engage employees by facilitating resource transfers, relationships, and mutual well-being (Hammedi et al., 2021). However, such engagement requires diligent management, and some service companies have experimented with creating fun experiences to enhance employee engagement, with the belief that fun can increase employees' job satisfaction and engagement, thereby enhancing their well-being and performance (Hammedi et al., 2021).

The greatest potential for organizations lies in how Gamification can help employees learn better through education (Bai, Hew, and Huang, 2020). In recent years, Gamification has developed as a significant method for increasing student engagement in education, particularly in online learning (Alfaqiri, Noor, and Sahari, 2022). The cultural and commercial success that has been demonstrated with the application of these methods has attracted the attention of businesses, resulting in their use in organizations despite requiring a greater investment because many employees use their mobile devices constantly. Employers are beginning to view them as a tool to align with their aspirations (Cardoso, Miranda, and Vergaray, 2021). Ferreira et al. (2017) proposed the concepts of 'perceived enjoyment' and 'perceived playfulness' while examining Gamification and the function of motivation which are considered elements that influence user acceptance of technology. In addition, they discovered that previous research had established substantial links between perceived enjoyment and playfulness and the behavioral intention to embrace and utilize ITs, which in this case can include gamified systems. The use of technology in training platforms has elevated the standard of corporate training; particularly, the development of information technology has transformed corporate training from classroom-based to online (Alfaqiri, Noor, and Sahari, 2022). All sizes of businesses are using Gamification within their operations, and Larson (2019) presents some examples: First is The European Central Bank which employs game-based learning for teaching financial indicators. The second is LiveOps Call Center which uses Gamification to instruct standard

business procedures. The third is a gamified leadership training program at Deloitte. Fourth and last is L'Oréal, which incorporates serious games into its recruitment procedure. Organizations have opted for online training because it eliminates geography and time limitations, allowing employees to access training anytime and from any location (Alfaqiri, Noor, and Sahari, 2022).

2.3 Gamification and E-learning

One context in which we can see Gamification is being used extensively is in education, which is conceptualized in E-learning (Almeida, Kalinowski, and Feijó, 2022; Toda, Valle, and Isotani, 2018). The main purpose of Gamification in education is to facilitate the same motivation and engagement that gamers have towards games in students and their approach to learning (Osatuyi, Osatuyi, and de la Rosa, (2018). This coincides well with the fact that some of the biggest challenges facing education are increasing learners' motivation, participation, and engagement (Osatuyi, Osatuyi, and de la Rosa, (2018). Because today's learners are immersed in interactive media and video games, classroom gamification may be enticing and motivating (Hanus and Fox, 2018). Despite its popularity, the impact of various gamification features has not been studied widely, nor has the effect of how voluntariness in E-learning may affect users (Hanus and Fox, 2018).

When gamifying E-learning, it uses Gamification on one or more core services or activities (Hamari, Koivisto, and Sarsa, 2014). Osatuyi, Osatuyi, and de la Rosa (2018) argue that even if Gamification has many benefits, implementation into education can be complex. They continue that adding game features to the educational system may lead to no outcomes. So, when deciding to implement Gamification, they advise taking careful steps when applying certain mechanics. Previous research has shown that in education and learning contexts, the learning outcomes of Gamification were mostly positive in terms of increased motivation and engagement in the learning tasks and enjoyment of them (Hanus and Fox, 2018; Hamari, Koivisto, and Sarsa, 2014). However, at the same time, it has also been pointed out that negative outcomes may need attention (Hamari, Koivisto, and Sarsa, 2014).

Andrade, Mizoguchi, and Isotani (2016) argue that everything in life has a bright and a dark side. However, only looking at the bright side leaves out a very important half. They go on to say that there is a large number of publications that talk about the benefits of Gamification in learning environments. They also found that it also seems that only a few researchers are researching the dark side of using Gamification and how users are affected by these negative effects (Andrade, Mizoguchi, and Isotani, 2016).

Despite the hype around Gamification as a new way to engage users, the evidence for its effectiveness is varied (Bai, Hew, and Huang, 2020). In reality, Gamification has generated significant criticism, with some individuals asserting that Gamification is ludicrous and referring to it as "exploitation-ware." (Bai, Hew, and Huang, 2020). They go so far as to argue that Gamification is marketing nonsense devised by consultants to make business life more entertaining, similar to video games.

Understanding the effectiveness of Gamification is also an important practical issue as many businesses currently offer gamification services, and investments are being made in gamification-related endeavors (Hamari, Koivisto, and Sarsa, 2014). As with any other trending marketing issue, Gamification is extensively debated in industry chatter, usually based on

anecdotal and intuitive assumptions that range from severely unfavorable to extremely positive opinions; thus, scientific evidence about the efficacy of Gamification is required (Hamari, Koivisto, and Sarsa, 2014).

Despite some positive effects of using Gamification, including improving student performance and engagement, Andrade, Mizoguchi, and Isotani (2016) are hesitant about using gamification principles in education since they could cause addiction and increase the externalization of behaviors that can hinder learning. They argue this should be taken seriously because these benefits are from mere accidents and not a result of a well-thought-out design. This is alarming since they found no literature that studied the potential negative effects of Gamification in an education context. One newer study shows, however, that some of these effects could be lack of effect, lack of understanding, irrelevance, motivational issues, and worsened performance (Almeida, Kalinowski, and Feijó, 2022). The complete list can be seen in Figure 2.3 below.

Negative effects caused to the user	#Papers	Negative effects caused to the user	#Papers
Lack of effect	16	Dislike of gamification	3
Lack of understanding	9	Lack of improvement	3
Irrelevance	8	Time constrains	3
Lack of motivation	8	Dislike of competition	2
Demotivation	6	Discouragement	2
Loss of performance	6	Lack of flow	2
Cheating	5	Lack of granularity on grading	2
Gaming the system	5	Novelty effect	2
Reduction of intrinsic motivation	5	Perception of high workload	2
Alienation or confusion for non-gamers	3	Sabotaged cooperation	2
Anxiety	3	Unintentional sabotage of weaker students	2

Figure 2.3: Negative effects caused to the user of gamification (Almeida, Kalinowski and Feijó, 2022, p.5).

2.4 Theoretical Framework

Researchers have called upon what future research needs, and it is one part to unify research into a working theory for Gamification and another part to explore in more detail how humans experience Gamification (Schöbel et al., 2021). There is a need to investigate a user's motivations for using a gamified solution, what their resulting emotions of this usage are, and how to cluster users based on certain characteristics (Schöbel et al., 2021).

2.4.1 Prior Research and Frameworks

So far, the first wave of gamification research mainly provided either: definitions, frameworks, and taxonomies for Gamification and game design elements; described systems, designs, and architectures from a technical perspective; or focused empirically on answering whether gamification works or not (Schöbel et al., 2021). Schöbel et al. (2021) further found that researchers subsequently called for more theory-driven studies. Some called for research that analyzes individual game design elements' effects, moderators, and mediators. This resulted in the second wave of gamification research. Although researchers have started answering these calls, more empirical and theory-driven research is needed to widen the understanding of the underlying working mechanisms of Gamification.

Gamification has generally been grounded in a limited number of established theories. Some of these have been the well-known technology acceptance model, flow theory, self-determination theory, cognitive load theory, and information processing theory. Choosing different theoretical perspectives can be useful since Gamification has its foundations in fun and entertainment by using game design elements to support and enhance users' motivation and engagement (Schöbel et al., 2021).

Rapp et al. (2019) state that there is a need to create a common language on which research can build and accumulate knowledge. Attempts at this have been made; however, it was suggested that wider use of theories could make gamification studies open to new opportunities for explaining users' behavior, which could lead to further understanding of Gamification and thus richer and multifaceted designs.

A study by Singh and Verma (2020) went to answer this call and, through their research, reviewed the field of Gamification and categorized every theory that was used in different ways of Gamification into four broad categories; personal behavior theories, workplace-based theories, game-based theories, and goal-based theories. They found that many different theories and models have been used in the literature to explain and understand Gamification and its effects in a workplace-specific context:

The personal behavior theories explain Gamification and its effect using theories situated in a personal or individual level of behavior psychology and deal directly with the psychological outcomes that lead to the desired behaviors (Singh and Verma 2020). The goal-based theories contain the theories borrowed from the game field. The idea behind these theories is that Gamification provides the sense of playing a game instead of working and can lead to an increase in the enjoyment of work (Singh and Verma 2020). The workplace-based theories explain Gamification based on workplace-related characteristics and behaviors (Singh and Verma 2020). The goal-based theories consist of those theories that are dependent on goal-setting processes and behavior. Goal setting is essential to successful gamification design and implementation (Singh and Verma 2020).

2.4.2 Causal-chain framework for gamification

Based on a review of all the theories by Singh and Verma (2020), they extrapolated every component of how gamification turns input into output, along with how this process can be influenced and explained their findings in a causal-chain framework found in Figure 2.4.

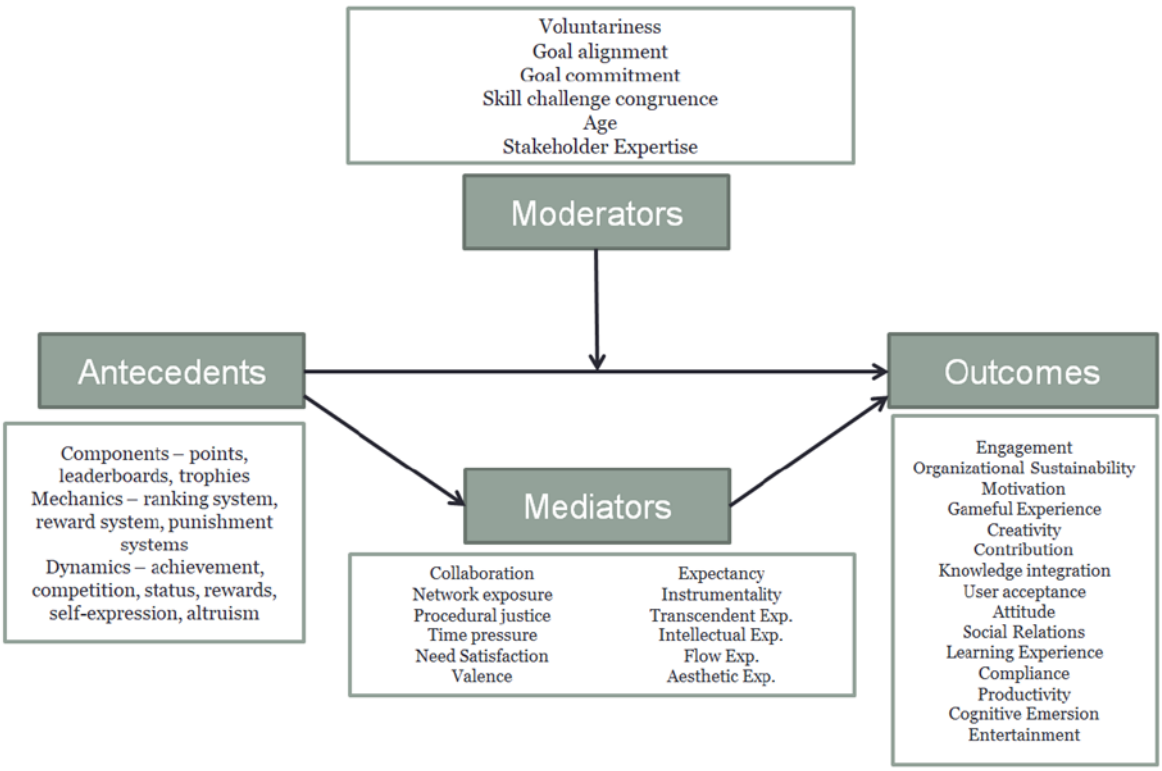


Figure 2.4: Causal-chain framework for gamification (Singh and Verma, 2020, p.7).

Both Bai, Hew, and Huang (2020) and Hamari, Koivisto, and Sarsa (2014) found that when it comes to gamification components, or more generally "Antecedents," there are not any specific standards yet in the literature for what constitutes a gamification component. Osatuyi, Osatuyi, and de la Rosa (2018) go one step further and have tried to divide components into game mechanics and game dynamics. Game mechanics are the base components of games, such as points, levels, badges, virtual gifts, and leaderboards that translate inputs into outputs. Game dynamics are a game's elements like rewards, status, achievements, self-expression, competition, and altruism, which govern how players interact with game mechanics.

2.4.2.1 Antecedent

In Figure 2.4, Singh and Verma (2020) have categorized all inputs from their review of Gamification into antecedents. They were then classified into components, mechanics, and dynamics. Components are the most basic game elements that are used to implement Gamification. Examples of these are points, badges, leaderboards, and trophies. Game mechanics are mechanisms that emerge as a combination of game components like rules, regulations, and features present in the gamified environment. They, in turn, transform into reward systems or ranking systems. Lastly, the game dynamics are the participant's responses in a gamified environment which is the source of the emotions responsible for the participant's motivation. These include rewards, achievement, status, competition, self-expression, and altruism.

2.4.2.2 Moderators

In the upper segment of their framework, Singh and Verma (2020) define a moderator as a variable or construct that affects the relationship between the outcome and antecedent, and it dictates the strength of the relationship and controls its intensity. Their review identified six primary moderators: voluntariness, goal alignment, skill challenge congruence, goal commitment, age, and stakeholder expertise.

2.4.2.3 Mediators

In the lower segment of their framework, Singh and Verma (2020) illustrate the mediators and explain that they are the variables that mediate the effect between an outcome and an antecedent. These effects are, however, the indirect effects that the antecedent causes on the outcome. The mediators found in the review are valence, expectancy, instrumentality, procedural justice, time pressure, flow experience, aesthetic experience, intellectual experience, transcendent experience, collaboration, and network exposure. These variables have been found to transfer the effects of Gamification to the desired outcomes.

2.4.2.4 Outcomes

In the last segment of their framework, Singh and Verma (2020) present the outcomes, which are the consequences of a gamified system in context to mediators and moderators, and show the possible outputs. Several outcomes have been studied in these studies; behavioral outcomes such as engagement and motivation directly affect the employee "s willingness to participate in the tasks. Some outcomes can affect an organization's macro-level, like organizational sustainability, knowledge integration, and knowledge sharing. Individual-level outcomes include creative ideation, user acceptance of a gamified environment, and a gameful experience. Finally, some constructs measure the efficiency or performance of the user, like contribution, attitude, and compliance of employees.

2.4.3 Adaptation of Framework

These factors are multiple and have an extensive background that must be looked into, as they come from several theories. So, we wish to shorten the list of factors we look into depending on the nature of what our research question is going to answer, the question of: "How are employees affected by gamified e-learning systems in a workplace environment?"

We have chosen to exclude the factors from the Antecedents completely as this study will not focus on the design elements of Gamification. Instead, we see the gamified system as a whole, meaning for this study, the sum of all factors in Antecedents is what makes up whatever gamified system that our respondents are using. It is not important to ask if they have encountered every factor of a gamified system because we ask how they are affected by it. The specific parts, if important enough to mention, will be brought to attention by the respondents.

This thesis will use all the Moderator factors as they are arguably the most relevant for our study. They are the variables or constructs that affect the relationship between the antecedent and outcome. As our question is formulated, we seek to know how employees are affected by gamified systems. So, we are going to look into all of these factors.

Mediators are variables that mediate the effect between an outcome and an antecedent. At first glance, there are quite a few factors that were not important to us. The reason is that most of these factors came from personal behavior theories. Singh and Verma (2020) state that one of the potential limitations of employing those theories to research gamification is their lack of workplace emphasis. However, we found a few that may be interesting for our study for a few reasons. The time pressure factor could be interesting as we are also giving recognition to potential negative effects of Gamification as asked by the research community. Secondly, we would like to ask about collaboration and network exposure as they could be particularly interesting since we are undergoing the covid-19 pandemic and many have had to work from home.

When choosing the outcomes, we went with Engagement and Motivation as they are related to behavioral outcomes. As well as individual level outcomes of Productivity and Creativity, User Acceptance, Learning Experience, and Gameful Experience and Entertainment fit well with wanting to know how employees are affected. Likewise, we chose not to include the rest as they fell into either outcome that affects the organization on a macro level or constructs that measure the efficiency or performance of the user, as these lean more toward a business perspective and not an individual employee perspective.

3 Methodology

In this chapter, we present what choices we made in order to conduct our study. This includes the choice of method that dictates our approach and how we have collected the data in this thesis. This is followed by how we narrowed down the target samples and selected our respondents. We then present our interview guide; we discuss how we conduct the interviews and how we analyze the data. Lastly, we are going to address our research quality and research ethics.

3.1 Choice of Method

To answer the research question "How are employees affected by gamified e-learning systems in a workplace environment?" we chose to go with a qualitative study based on the nature of the question itself. This is a "How?" question and is thus more of an explanatory nature where we seek to provide an answer about the causal mechanisms of a phenomenon (Recker, 2013); in this case, it is about the gamification phenomenon and how employees are affected. We decided on conducting qualitative research since it is better at providing answers to why people make decisions and act the way they do since these characteristics and actions are often highly contextual (Recker, 2013); the question reflects this in how employees, as people, act in a workplace context. This decision is further grounded in what previous researchers have found, which is that it is better to choose a qualitative method approach when researching gamification since the answers may be highly context-related (Hamari, 2014). As gamification is still considered to be relatively young by researchers (Schöble et al., 2021), the choice of a qualitative study is also being supported by the argument that it is well suited when researching a phenomenon that is not yet fully understood, not well researched, or still emerging (Recker, 2013), which based on current research we would argue for. The nature of our study will take on a deductive research strategy as the goal of our research is to try and apply the concepts and patterns known from theory using new empirical data (Bhattacherjee, 2012). This correlates well with having chosen a causal-chain framework (Figure 2.4) which has been made as an effort to try and map how the effects of gamification work, and so we will use deductive research with this framework in order to explain our empirical data and answer our research question.

3.2 Data Collection

When we are collecting our data, there are different techniques that can be employed in qualitative research (Recker, 2013), and the most prominent form is interviewing, be it face-to-face, one-to-many, or via telephone/conferencing. These can either be descriptive, exploratory, or explanatory. Since our study is explanatory by nature, choosing interviews as a data collection technique would benefit our study. We argue for this choice since explanatory interviews are performed in causal studies, and they can help determine whether a presumed relationship and causal links between concepts or constructs do, in fact, occur and are perceived as such in real-life settings (Recker, 2013). As we are using a causal-chain framework (Figure 2.4) as a base for this thesis that has already established the relationship and links between the different gamification aspects, using interviews to gather data and then explain the causal relationships of gamification, we would argue that this choice is a near-perfect fit for the

purpose of this study. When it comes to interviews, there are three different types, namely unstructured, semi-structured and structured interviews (Myers & Newman, 2007).

A structured interview has a prepared script that is meant to be followed through thoroughly without room for improvisation (Myers & Newman, 2007). Unstructured or Semi-structured interviews have no script or an incomplete one, and the basics are that the interview has some amount of improvisation and can be adjusted based on how the interview proceeds (Myers & Newman, 2007).

We have designed most of our questions with the causal framework (Figure 2.4) in mind and will use semi-structured interviews as a basis of data collection because, even though we wish to explain how gamification affects employees and present their experiences, we would also like to keep an open mind and make space for the possibility that the participants may have suggestions or ideas of their own on the concept of gamification. This is to make room to refine, improve, and extend the framework we are using to explain our collected data, as this is part of deductive research (Bhattacherjee, 2012). We would also like to address the lack of research into the dark side of gamification and help add to the body of knowledge by asking open questions about the topic of potential negative effects.

3.3 Target Sample

For this study, we followed Bhattacherjee's (2012) approach to target a suitable sample group based on a three-step process. The first one is defining the target population that is interesting for the study; secondly, you define a sampling frame; and thirdly, you choose whom you are going to interview, in our case, from the sampling frame (Bhattacherjee, 2012). We can easily define our targeted samplings who would be of interest to this study by simply looking at the research question: "How are employees affected by gamified e-learning systems in a workplace environment?". This brought us two points from which we could draw a selection. First, we are looking for employees who are hired and are working in any kind of organization. The second point is that this study is looking at how gamified e-learning systems affect these employees, so we can further narrow it down to the sampling frame of any hired employees who are using a gamified e-learning system. For this study, we chose to use the extensive LinkedIn network of the authors to find any potential candidates that fit this description. When creating a sample from these criteria and taking into consideration where the sampling is happening, this is considered Convenience sampling. This is a kind of sampling it is drawn from a part of the population that is close to hand, readily available, or convenient and is considered a non-probability sample because of the systematic exclusion of all who are not networked to us, the authors (Bhattacherjee, 2012).

3.4 Respondent Selection

As part of selecting the potential participants, it was necessary to ask a preliminary question about whether they knew of gamification and if they were using a gamified e-learning system as part of their work in their organization. Based on the responses, we gathered a target sample where we found some exciting prospects who were approached about the possibility of being interviewed for this study. This ended up with five respondents that were then interviewed.

Table 3.1: Overview of selected respondents and their information.

Respondent	Role	Organization	Industry	Duration	Date	Type
R1	Customer Service Generalist	IKEA	Vendor	16 Min.	April 25th, 2022	Teams Meeting
R2	Senior Consultant	Deloitte	Consulting	12 Min.	April 28th, 2022	Teams Meeting
R3	Project Manager	Novo Nordisk	Pharma-ceutical	11 Min.	May 4th, 2022	Teams Meeting
R4	Employment & Engagement Officer	Red Cross	Help Organization	15 Min.	May 6th, 2022	Teams Meeting
R5	Senior Consultant Project Manager	Amaris Consulting	Consulting	19 Min.	May 6th, 2022	Teams Meeting

3.5 Designing the Interview Guide

From our motivations for the Adaptation of the Causal-chain framework (Figure 2.4), we systematically created the questions for our study and presented them in a semi-structured interview guide which can be found in Appendix 1. As a reminder of what we would like to know from each question we created sub-questions that are presented in a sub-list, listed as a), b), and so on. These questions were for our own sake and were only asked if they were not answered on the first inquiry.

Table 3.2: Interview questions related to factors.

Segments	Factors	Expected in Question(s)	Abbreviation
Moderators	Age	1	AG
	Stakeholder Expertise	1, 2	SE
	Voluntariness	3	VO
	Goal Alignment	4	GA
	Goal Commitment	4	GC

	Skill challenge congruence	2 + 5	SCC
Mediators	Time Pressure	6,11	TP
	Collaboration	5,7,11	CO
	Network Exposure	7,11	NE
Outcomes	Gameful Experience	5	GE
	Entertainment	5,7,8	EN
	Engagement	8,10,11	EG
	Creativity	8	CR
	Productivity	8	PR
	Learning Experience	8,9,10,11	LE
	Motivation	8,10,11	MO
	User Acceptance	10	UA

Before the interviews we made sure to ask our potential respondents whether or not it was ok to record our session and have the interview automatically transcribed at the same time. We made sure that the respondent felt comfortable with being interviewed and regulated that they would be anonymized by default, but if they felt comfortable with using their names, they were welcome to do it. Consent to being interviewed would be asked both before the recording as a reminder of their choices and rights as a respondent and during the recording as a formal verbal articulation of their consent to being interviewed and what information we were allowed to use. The first part of the interview would be a short and concise introduction about themselves. The second part would start by asking about the respective course that the respondents have taken in the gamified e-learning system of their companies. This was primarily about how gamification was affecting them and what their personal experiences were with this kind of system, as well as trying to perceive their more positive feelings about gamification. The structure of the questions, however, meant that the question was kind of open and that they could add in anything they would like. The third part of the interview would dive more specifically into the dark side aspect of gamification and how they may be affected negatively by gamification. This is to address the issue that other researchers have called lacking in current gamification research, and that is to address the potential adverse effects that gamification can produce in specific contexts.

3.6 Conducting the Interviews

The interviews were conducted through Microsoft Teams with a webcam so as to better connect to our respondents. The reason that we went for Teams meetings was an effort to increase the likelihood of an interview happening in the first place, as it may be more convenient for people who have busy schedules to log in to a meeting instead of having the hassle of being approached physically and sitting down in an official location to have this interview. At first, the interviews were conducted by both authors; however, after two interviews had been conducted, it was made clear that it would be easier if only one were to do the interview as it may become more of a conversation between two people and alleviate the artificiality of the interview (Myers & Newman, 2007) by having the one who is networked to the respondent doing the interview.

As this study is explanatory and the interview guide is semi-structured, we tried our best to make sure we asked all the questions since the explanatory study is dependent on the answers. However, we stayed mindful that the questions we prepared were only a guide and allowed ourselves to follow the flow of the conversation to possibly find new knowledge.

In the second interview, we talked to respondent 2 about consent and what information we were allowed to use before the interview started so that they had an understanding of what personal information was being used, but when we started the interview, we forgot to repeat the formal consent question on record. However, this was noticed by one of the authors, and before the interview ended, verbal formal consent was given at the end of the interview.

Respondents 2, 4, and 5's age wasn't mentioned in the interviews, however, as the respondents were selected from the author's LinkedIn network their age was easily found.

3.7 Data Analysis

As we are preparing to analyze the data, Seidman (2006) reminds us that research based on interviewing is labor-intensive and that analyzing interviews may take just as long as conceptualizing the study to this point.

3.7.1 Transcribing Interviews

It is further advised not to start analyzing before the interviews are over as the results from analyzing some findings may affect future interviews (Seidman, 2006). Transcribing interviews can be time-consuming work, and it is recommended that the use of computer-aided software would be preferable if possible (Seidman, 2006). As our interviews were done with web-cams face-to-face style on Microsoft Teams, one of the authors had access to a professional version of the program, which included a transcription feature. This feature was used as a preliminary transcript of the interviews, although the transcription did not catch every word correctly, and some words were missed out on. It was a great start to have the automated transcript instead of transcribing the interviews from zero. Microsoft Teams also had the option of saving the interview voice and webcam recording, which we took advantage of for additional transcription of what the program got wrong or missed. After the interviews, we made sure that any identifiable personal information that the respondents wanted to be anonymized was redacted

or changed into a proper acronym, likely R#, which stands for Respondent, and then the number of the order they were interviewed in.

3.7.2 Analyzing Interviews

When the interviews were transcribed correctly, the analysis of the interviews began. Coding is portrayed as probably the most common technique when analyzing qualitative data (Recker, 2013). Coding is the act of classifying what is interesting, labeling it, and putting it into appropriate categories (Seidman, 2006). As this study is explanatory and deductive in nature, and the structure of the interviews is semi-structured, each question has already been mapped to factors in the causal-chain framework, so analysis of the interview answers will follow the structure found in Table 3.2. To be able to perceive what data is explainable through deduction and what, if any, potential new data might have come forth as a result of the semi-structured interview, we shall code our interviews by categorizing what answers were found in each line of the transcripts by marking them with the abbreviation from table 3.2, as deductive research uses already made theories or frameworks and predicts what observations one might make in a study (Recker, 2013). We will be mindful of the answers and report anything new in our discussion so that further understanding of the gamification concept can be refined, improved, and extended as deductive research is supposed to (Recker, 2013).

3.8 Research Quality

The quality of research can ultimately be benchmarked from the adequacy and accuracy of two measurements; Validity and Reliability (Bhattacherjee, 2012; Recker, 2013). These two measurements are known as the psychometric properties of measurement variables (Recker, 2013). In order to measure the quality of research, both of these must be taken into consideration when conducting research.

3.8.1 Reliability

Reliability describes the degree to which similar results are predicted as consistent or dependable when the same constructs are measured repeatedly (Bhattacherjee, 2012). This means that Reliability a study can be repeated in equal settings and gain the same results (Recker, 2013). One point to consider when measuring Reliability is the use of data collection techniques that depend less on the subjectivity of the researcher, like questionnaires, and not on those that do, like observations, as a researcher's viewpoints can get in the way of getting Reliable data (Bhattacherjee, 2012; Recker, 2013). Another is not to ask imprecise or ambiguous questions, as this leads to interpretation and is not Reliable (Bhattacherjee, 2012). Last is not to ask questions about issues that respondents are not very familiar with or care about (Bhattacherjee, 2012).

3.8.2 Validity

Validity describes whether the data collected measures what the researchers set out to measure (Recker, 2013). Whether it was or was not is the measurement that is used for whether or not the research is high or low in quality, together with Reliability (Bhattacherjee, 2012). The key importance of Validity is that both the theoretical- and empirical assessments of a study

are being regarded when considering validation (Bhattacherjee, 2012; Recker, 2013). Both Bhattacherjee (2012) and Recker (2013) present four points to consider when assessing validation that we deem important for our study. First is Face Validity which refers to a construct's nature of measurement that comes from sensemaking and is the validation of constructs selected by experts. The second is Content Validity which represents the Validation of measurements that are derived from the theoretical literature in a study, which can be chosen as per inclusivity and exclusivity depending on the study. The third is Construct Validity which in our case would pertain to whether or not the wording of our interview questions script is ambiguous, which can give us different answers than intended. Construct validity can further be broken into two, Convergent Validity and Discriminant Validity, which are immediacy to theoretical constructs and deviance from the theoretical construct, respectively. Fourth and last is Predictive Validity, which is an assessment of the degree to which a measure successfully predicts a future outcome that is theoretically expected.

3.8.3 Establishing Quality

As we are using interviews in our study, the question of Reliability is an important one, especially since it is a qualitative data collecting technique. Reliability in relation to the issue of respondents, we have chosen to take those who understand and have experience with gamification specifically. This way, we hope to eliminate the possibility of our respondents not being familiar with our topic or not caring since they chose to participate. As for the issue of imprecise or ambiguous questions that can be interpreted, we are using a theoretical framework with well-defined constructs and have designed the interview guide as a semi-structure. This decision has a two-fold effect; first, we diminish the issue of subjectivity in an otherwise qualitative research technique by not going too far beyond the constructs of our framework. Secondly, by staying close to the theoretical constructs, we will deviate minimally from the constructs and will wrap up the question of Reliability and inevitably also address the issue of Validity altogether.

3.9 Research Ethics

Like in all things of life, there are ethical concerns to be considered when it comes to research; in this context, they seek to address questions about concepts such as good and bad, right and wrong, justice, and virtue (Recker, 2013). Not using ethics in research has had some bad examples, which only strengthens the need to conduct yourself with moral obligations towards good ethical behavior (Bhattacherjee, 2012). Ethical behavior is that which guides the behavior of a researcher when conducting research and is defined as abiding by rules of responsibility, accountability, liability, and due process (Recker, 2013). We followed thusly the expected tenets of ethical behavior as presented by Bhattacherjee (2012) and Recker (2013) that are widely accepted within the scientific community:

- **Voluntary participation and harmlessness**: When we first contacted our potential respondents with a short description of the intent of our study and they were given the option to participate freely or to pass. To alleviate any concerns of consequences about the respondents' answers, we made it very clear that we were only interested in their personal experiences and that this study would not implicate any negativity by putting their organizations in a bad light through their participation, as the organizational aspect was of no interest to the study. The interview would be done through online

means, and they were offered the choice of deciding when the interview would take place to fit their schedule better.

- **Anonymity and confidentiality**: The respondents would be informed that anonymity of their person would be the default and if they were unhappy with the interview or if they would like to redact some of their given information, like their name or the name of their organization, this request would be respected.
- **Disclosure**: When we took contact with our potential respondents, we explained the nature of our thesis as a study that sought to explain and explore how their personal experiences with gamification at their workplace affected them as employees.
- **Analysis and reporting**: The ethical obligation to present our findings is a responsibility we have kept in mind as we have conducted our study and are committed to declaring everything precisely as it presents itself without deliberate misconduct of the ethical obligations towards the research community.

4 Empirical Findings

The following chapter presents the findings of this study following the format found in Table 3.2 of this thesis. The answers will be referenced so that for an example, what Respondent 1 said in line 10 in their transcript is referenced as 1.10. The findings are grouped into the segments: Moderators, Mediators and Outcomes, each containing several factors that we have inquired the respondents about and will use to illustrate how the current situation of gamification is in the workplace, that will answer the research question.

4.1 Moderators

There are several factors that are considered moderators which affect the relationship of gamification and how well it's used. They are Age, Stakeholder Expertise, Voluntariness, Goal Alignment and Commitment, and lastly Skill Challenge Congruence.

4.1.1 Age and Stakeholder Expertise

The first factor that we are going into is Age and here they answered that Respondent 1 (R1) and Respondent 2 (R2) was 31 years of age, Respondent 3 (R3) was 37, Respondent 4 (R4) was 43 and Respondent 5 (R5) was 38. The next factor pertains to the individual's expertise with technology.

R1 has experience as a customer relations specialist and is now working as a customer relations generalist that focuses on sales and support in IKEA (1.8). They have also undergone university studying computer games and have some experience with gamification from that front (1.18).

R2 is a senior consultant in HR and works with strategy and innovation projects in Deloitte (2.2). They describe their IT knowledge as quite advanced as they use a wide range of different software and programs and mention that they have used gamification throughout their career as part of being employed in the government (2.4).

R3 is a project manager and works in a production department in Novo Nordisk (3.4). When asked about their IT expertise they describe it as quite good in relation to the position they are working in (3.8).

R4 is an employment and engagement officer in the Red Cross organisation (4.7). They consider their IT expertise to be good as they are always using online platforms, especially after working from home during the pandemic (4.9).

R5 is a senior consultant project manager in Amaris Consulting (5.4). When it comes to IT expertise, R5 has a master degree in computer science (5.6) but is not a programmer per se, rather they are more functional than technical as they manage IT projects (5.7) and find no problem in this at all (5.8).

4.1.2 Voluntariness

When gauging the factor of voluntariness, the reason for taking the courses were inquired.

R1 responds that since IKEA has e-learning in everything, they did quite a lot of courses every time they switched into a new position, as well as they complete courses 2 times every year in yearly intervals to keep updated (1.10). This has intensified under the pandemic and they mentioned that IKEA has a lot of internal competitions for which e-learning is used as a motivator (1.10) and as a competitive person, this is motivating too (1.32). Most of these courses are mandatory, however R1 likes to take extra courses whenever a free moment presents itself for the sake of learning something new (1.49).

R2 responds that the courses were for corporate awareness and knowledge and were necessary in order to gain the proper qualifications for the jobs they were to undertake (2.8). R2 also says that the systems show rankings and since they are a competitive person, they love to retake courses to try and beat their colleagues, showing initiative in taking courses (2.8, 2.10, 2.12, 2.14).

R3 responds that taking the courses for them means staying up to date to compete with colleagues and other people in the same market (3.10). When inquired further they respond that their voluntariness to take courses depended on the situation. One work project required certain knowledge and thus R3 had to take a certain course, while on the other hand sometimes they use the gamification platforms on their own volition if it is for their own gain (3.12).

R4 responds that they have an e-learning portal which has a combination of the compulsory courses that they have to do in order to perform their job, role or responsibilities, but there are some courses that R4 does voluntarily because they want to know more about something relevant or up-skill themself (4.11). Their willingness in taking voluntary courses (4.12-4.13) is seemingly whenever there is a need to improve on a personal level either by covering weaknesses within their knowledge of how the company works (4.15) as well as general self-improvement in how to increase confidence (4.17).

R5 responds that their voluntariness depends on the courses, and whether these are interpersonal or technical doesn't matter. Some are taken for the sake of their career, to develop soft skills in managing stakeholders (5.10), while at other times the clients demand a project to be developed in a certain technical methodology, which then requires R5 to have to learn specific things (5.11). However, even though there is a mandatory requirement on some of the courses, R5 shows some great willingness in learning and it motivates them to develop their career (5.10, 5.11).

4.1.3 Goal Alignment and Commitment

When trying to measure the respondent's Goal Alignment and Commitment we asked about their perceived importance of the courses they were undertaking.

R1 responds that the importance depends on the course as well as whether it is a mandatory repeating course or if it is a voluntary taken course. They specify that if it's the GDPR course, it can become tiring to take since they have done it twice a year for six years already (1.14). However, R1 also does courses for their own gain to evolve professionally and finds some dedication in this task while there are also voluntary based competitions to try and motivate engagement (1.49, 1.53).

R2 responds that they definitely think that training of any kind is important and that the courses are a reflection of that as a way to improve yourself and your capabilities and skills (2.10). As a competitive person R2 also finds the gamified courses really engaging and motivating in trying to stay above their colleagues, and they are highly committed to this (2.12, 2.14).

R3 responds that they deem staying updated as important in order to remain ahead of their colleagues and others in the market (3.10). R3 also mentions that the importance is somewhat connected to whether they chose the course as opposed to whether it was deemed necessary by the company (3.12). When inquired specifically if they found all courses they took as important they answered yes (3.13, 3.14).

R4 responds that they find the courses important depending on whether they are voluntary or not, but they seemingly like to learn and are willing to do the courses if it improves them in some sense either professionally or personally (4.15).

R5 responded that they have found that the details of the courses sometimes aren't enough in order to learn as much as they wanted to (5.16). They even exert willingness beyond what is needed of the company by spending their own time and money on learning whenever the courses may be lacking, for example they even buy books on the topic (5.17).).

4.1.4 Skill Challenge Congruence

This factor is something that is determined by looking at how respondents feel about the gamified e-learning concept and how their technical skill level may be a factor in how challenging it can be.

R1 responds that the challenges depend on the course and the way gamification is being used, particularly if it measures the success in points or similar processes. R1 also notes that the logical conclusions one can draw do not always give correct answers, and that this mismatch, which sometimes happens to go against one's better judgment, is what can be a challenge (1.22).

R2 responds that since they are a competitive person, they delight in challenges, especially when these are against others (2.12). They share that when they learn in a competitive format, they have a tendency to learn better, and the more challenging it is the better they are able to stay attentive to what they are learning (2.22).

R3 responds that sometimes the provided gamified e-learning is challenging for them because their generation has never had these things in the past and feel that it is quite new for them (3.20). R3 further says that this is natural when it comes to the future, new things will continue to come later as well and it's always going to be challenging for later generations (3.20).

R4 responds that sometimes the courses can be painful to do, just because of the very fact that one has to take courses at all, however using gamification concepts does help make learning more pleasant (4.19) and doesn't speak of any other challenges of using gamification at all, so it seems more a boon overall (4.28).

R5 responds that the challenge they have is not with using gamification, but rather that as a function of the gamification whenever someone has finished a course, they can see it and feel pressured to keep up. Consequently, they become stressed that they use too much of their own

time to finish a course or become discouraged that they don't have good time management skills (5.19, 5.20).

4.2 Mediators

The mediators are the variables that link the antecedents with the outcomes. For the sake of this thesis, we have analyzed the role of Time Pressure and the combined role of Collaboration and Network Exposure resulting from gamification that they played in the outcomes.

4.2.1 Time Pressure

The time limit parameter is a factor that impacts an individual's perceptions of the gamified e-learning courses. We asked the respondents how the courses they have taken were designed with regards to the time limit in order to learn how those time limits affected the overall effectiveness of the courses, what stress level they generated and how they influenced the respondents' attitude to the courses.

R1 responds that only some of the courses they took had time limits, while others required merely that a given percentage of correct answers was given, or no requirement was put at all (1.26). They think that a time limit could be a good motivator to take the course for people that otherwise would not take the course at all, but also that on the other hand the time limit can make some people skip important parts of the course in order to meet the time limit (1.28).

R2 responds that the courses they do have a time limit for completion (usually that is one month) and that each course would inform how long it takes to complete it. R2 says that they like to use these two timeframes in order to better schedule the course in their agenda (2.16). They add that the hard deadlines on some courses can be stressful for them and add pressure because of their client-based work (2.29; 2.32).

R3 responds that they did not have any time limits and could decide when to take the courses, which would give them flexibility to complete the courses at home in a relaxed environment, e.g., with a glass of wine (3.24).

R4 responds that the courses they took were mandatory and therefore had due dates (4.22). They add however that these courses had the advantage over traditional learning in that they allowed for flexibility when it comes to, among other things, the choice of the moment of completion, rather than enforcing a specified time of the day in the way the traditional classes do (4.26).

R5 responds that despite the fact that mandatory courses do not have time limits, the fact that other colleagues share that they have already completed them and that their completion can be taken into consideration when assessing employees' performance, they still can cause stress (5.19, 5.28). This is further exacerbated by the fact that they are time consuming and sometimes require work during the weekends (5.20). On the other hand, for non-mandatory courses they feel more relaxed (5.20) and they like e-learning for the flexibility in time completion when compared to traditional classes (5.30).,

4.2.2 Collaboration and Network Exposure

The Collaboration parameter regards the extent of interactions and group working that the courses assure or allow for. The Network Exposure reflects how the respondents feel or are affected by knowing that others are using the same e-learning system.

R1 responds that the solitude when completing the courses has not been an issue for them, especially that for the more complicated courses they would have a teacher on standby to answer the questions (1.63). In fact, it rather allowed for competing, satisfying in this way their competitive nature (1.32). Sometimes some e-learnings would allow for chatting on online communicators and help each other with the right answers, however most of the times they would be done alone or in a group (1.24). R1 also notes that some younger people might misuse e-learning classes by skipping parts of the course in order to finish it faster and have more time for live interactions with their colleagues during the breaks (1.40).

R2 responds that the gamified e-learning speaks to their competitive nature (2.12), especially that they are able to see the scores of their colleagues or other teams (2.14) and lack of interaction has not impacted them in any negative way (2.34).

R3 responds that coming from the older generation they would prefer to be physically in class and communicate with people, however in the e-learning context they prefer working alone than collaborating in a group.

R4 responds that at this stage of their life they prefer individual work with the flexibility of the choice of time and lecturer, as the e-learning offers, rather than the traditional way of learning in class (4.26). They say that it can be unpleasant to be unable to hear other people's opinion, ask teachers questions or feel the vibe of the classroom. However, the pandemic and the two years of Home Office have gotten them used to working from home and being alone, even if sometimes they miss other people's presence (4.38).

R5 responds that even if the collaboration with the teacher that is assured in the traditional way of learning could be helpful sometimes, the lack of collaboration with others still can be managed by looking for help from other resources (5.30). R5 also reports that seeing colleagues going past them in rankings stresses them out and puts a lot of pressure on them to perform better (5.19; 5.20).

4.3 Outcomes

The outcomes are the actual outputs resulting from using the gamified systems in the context of mediators and moderators. We have analyzed outcomes with regards to their behavioral aspects that have a direct impact on the employee’s willingness to use the gamified system (engagement and motivation), as well as the individual-level outcomes which come as a result of the usage of the gamified system (creativity, productivity, learning experience and user acceptance of a gamified environment)

4.3.1 Gameful Experience and Entertainment

Gameful experience as an outcome of a gamified course reflects the feeling of playing a game while doing the course, the aim of which is to induce within the person positive effects like a game would. Entertainment measures whether they find gamified courses fun.

R1 responds that playing during the course makes it easier for them to understand the topics, therefore they would also like the practical, and not only theoretical, courses to be gamified (1.36). Despite this, for the repetitive courses that have to be taken on a frequent basis the gamified aspect does not manage to make them more fun (1.16).

R2 responds that they learn faster in a gamified format and the competitive element plays a role in that (2.22). They prefer the gamified nature of learning whether for professional or personal use (2.24). They also get a feeling of playing a game from various indicators that show the progress in training, for instance bars that visualize how much of the course is left to complete (2.17).

R3 responds that since they highly dislike the traditional way of learning by reading books, therefore using gamified platforms is a more convenient way of acquiring knowledge (3.30). They find the gamified courses fun and convenient (3.18) and feel that the gamified courses give them necessary diversification when acquiring knowledge (3.22).

R4 responds that for them the gamified way of learning is less painful than the traditional one, it is more productive and enables them to track the progress easier (4.28). Gamification makes the subjects also more interesting, more tolerable and more comfortable (4.19, 4.20).

R5 responds that the gamified courses have all had positive impacts on their knowledge level, however at the same time they have not been deep enough to allow for becoming truly specialized (5.35). For them the courses on soft skills worked better through gamified e-learning than courses on hard knowledge (5.36).

4.3.2 Engagement and Motivation

Motivation expresses the willingness of the respondents to use the gamified systems as a result of their positive impression of them. Engagement reflects how the gamified aspect is able to get the respondents involved in learning through this kind of system.

R1 responds that gamified e-learning allows for a hands-on experience and for an interaction with the rules while learning them, making it a motivating and clever process (1.18). Also, the aspect of competing with other course participants like in a game is what motivates them to make 100% every time (1.32).

R2 responds that they find the competitive character of the gamified e-learning engaging and speaking to their nature (2.12). Also, the nudge techniques used by the gamified courses cause their behavior to change according to the way that the game has been designed which encourages them to finish and learn the topic that the training has been developed for (2.19).

R3 responds that the popularity of e-learning courses among people in the market is what motivates them to update their knowledge in order to remain competitive (3.10). The accessibility of the courses encourages also to turn to them whenever additional knowledge is necessary (3.12).

R4 responds that for some areas they find that gamified courses make the topics more interesting, tolerable, comfortable and exciting than the regular classes, therefore making it easier to take them (4.19, 4.20, 4.28). However, when the courses repeat themselves, R4 feels less motivated to take them again, despite their gamified aspect (4.32).

R5 responds that they do mandatory and individually picked courses in order to help their career, both because the courses develop their skills, but also because it is well perceived in the organization that they are completed (5.10, 5.12, 5.20).

4.3.3 Creativity and Productivity

Here, it is examined if gamified courses increase the respondents' performance at work, both in terms of their productivity, i.e., greater efficiency in the completion of their daily chores, and Creativity, i.e., by fostering inventive thought.

R1 responds that most of the gamified learning systems remain theoretical, while since they prefer hands-on learning, it would be of better use if these courses were more practical (1.36, 1.38).

R2 responds that they learn easier with a gamified format and that the quizzes which check the knowledge at the end force them to recap the learnings, allowing in that way for their better memorization (2.22). The newer, gamified format is their preferred, more efficient method of learning not only at work, but also in their personal experience (2.24, 2.25).

R3 responds that the gamified systems improve their productivity because of the constant updates of the data on the e-learning platforms (3.16). They claim that e-learning allows them to absorb knowledge faster and easier, both because they prefer to learn through voice and videos rather than read books, and because they are in this way able to learn in quiet surroundings, rather than in class with a lot of people around (3.34). They also feel the gamified systems make them more creative (3.32). R3 notes that they do not remember nor apply all the knowledge acquired through e-learning, but the parts related to their current job they definitely will remember, which is around 30% of the content of the courses (3.36, 3.38).

R4 responds that they do not feel like they are more creative after gamified e-learnings, as they don’t think there is much creativity in the learnings they have experienced. Nevertheless, the gamified way of learning makes some topics more interesting, tolerable, comfortable and less painful for them, making it thus easier for them to acquire the knowledge (4.28). They believe they learn things quicker because the courses are shorter, but also because they can manage their time better (4.30). On the other hand, they have also noticed that going faster through courses has often meant forgetting the learnings easier. That was why eventually their organization has required repeating some of the compulsory courses at specific time intervals (4.31).

R5 responds that the limitations and durations of the courses within their organization’s learning platforms are such that they can not learn things in detail or become specialized, and therefore need to complete it with additional, individual learnings (5.16, 5.17, 5.35). However, they stress that for all the gamified learnings they have taken they feel there has been a positive impact (5.34). They feel that gamified learning systems have let them learn faster, but depending on the type of the course not necessarily better (5.38). They admit that they use the knowledge acquired in their daily work (5.40, 5.41). They can also remember most of what

they have learnt, as long as they are interested in the topic and can practice it either at work or in daily life (5.44).

4.3.4 Learning Experience

Learning Experience expresses the general impressions of the respondents on the gamified e-learning systems, including their positive feelings relating to faster or more efficient learning, as well as their negative perceptions of the gamified e-learning method.

R1 responds that they do feel positive effects when taking the gamified e-learning courses, mostly resulting from the competitiveness they create (1.32). They would however prefer that the gamified learning focuses more on practical usage of rules and knowledge, rather than purely theoretical.

R2 responds that they like gamified e-learning systems because they speak to their competitive nature and give an easy overview of how well the person has been performing in the training, which stresses them a little (2.12, 2.14). They also prefer gamified systems to traditional ways of learning because they are developed with behavioral science in mind and nudge techniques that encourage them to learn the topics further (2.19). They underline that the gamified approach relates better to the current world, where the training needs to be quick and flexible in time, attainable from either laptop or phone at a chosen moment, and where it gives evidence of completion at the end (2.20, 2.37). R2 stresses that they learn faster through a gamified format and appreciates the systems' recapitulations (2.22). At work, it is their preferred method of learning (2.25). In return, the negative experience with gamified systems stems from the fact that sometimes they encourage to skip parts of the learning too quickly, potentially creating dangerous gaps in knowledge (2.27).

R3 responds that the usage of gamified platforms is fun for them (3.18). It is more convenient and allows for more flexibility than the traditional ways of learning (3.18). Sometimes they miss the physical presence in the classroom and communication with other people, but then again when doing the courses alone they are less distracted and more productive (3.26, 3.44). They also much prefer the verbal and visual method of learning that gamified systems give over reading books (3.30). They find it positive that gamified systems give the possibility to pause the training and give yourself a needed break (3.40). They would have an even better learning experience if the text in e-learning was replaced even further with pictures and diagrams (3.44).

R4 responds that the gamified e-learning makes the subject more interesting or even more exciting (4.19, 4.28). They also the flexibility of place and time of learning that the gamified systems offer (4.26). R4 feels also that they are able to manage their time better in this format and cover more subjects (4.31). In return, the quick gamified learning is less efficient in that it is easier to forget things faster (4.31). Sometimes the gamified e-learning can be boring or unpleasant for them because of lack of human interactions, and they believe that going through the gamified courses in groups with other participants would give them a better experience (4.42). They also find gamified e-learning suitable only for shorter courses, but anything that would require day-to-day work for a long period of time would not be pleasant to do over a platform (4.44).

R5 responds that for them the learnings provided by the gamified systems are of more superficial nature due to the limitations and durations on the organization’s platforms. The gamified

systems are therefore not a sufficient source of knowledge as one cannot learn things in detail and needs to fill the gaps with other resources (5.16, 5.17, 5.30). However, they feel that the use of the gamified systems allows them for better time management, makes learning faster and has an overall positive impact on them (5.30, 5.34, 5.38). In their experience the usage of e-learning can cause them stress and sometimes boredom (5.46).

4.3.5 User Acceptance

User Acceptance shows how the users of the gamified systems embrace the novelty of the gamified e-learning and if they are willing to switch from the traditional way of learning to this new, modern one.

R1 responds that for them the gamified systems attract them by offering a hands-on experience, as well as by creating a competitive environment which they enjoy (1.18, 1.32). What can hold them back is that there still are too few practical courses and still too many theoretical ones (1.36). R1 admits that the gamified platforms are still not very popular in their company, not only because it is a new concept, but also because they are not yet as fun as they could be (1.51)

R2 responds that they chose gamified learnings over non gamified for the design that puts an accent on behavioral science and makes their behavior change according to the way the game has been designed. This encourages them to learn further (2.19). They also think that the traditional methods fall behind the changing world, while gamified platforms not only make it easier to access learning and track the progress, but are also available on different carriers (2.14, 2.20).

R3 responds that the changing world and the increasing competition is what has made them accept the gamified systems (3.26). They appreciate the diversification of learning methods that the systems offer (vocal, videos, charts, diagrams), as well as the flexibility they give in terms of place and time as compared to traditional ways of learning (3.26, 3.30, 3.44)

R4 responds that the gamified systems make some topics more tolerable and comfortable for them than traditional ways of learning (4.19). They also enjoy the flexibility of the choice of lecturer or the time of completing the course (4.26). In return what they are not willing to fully accept is the solitude while learning, scarcity of communication with other students or the professor, and lack of the vibe of the classroom (4.36).

R5 responds that they feel attracted by the gamified systems mostly because of their popularity in the organization and the role that they play in the career development (5.28). They like that the platforms enable them to manage their time (5.30). However, they cannot accept the gamified systems fully without leaving some space for other sources of knowledge, as they find courses not specialized enough (5.16, 5.17).

5 Discussion

In this chapter, we will discuss our findings in an explanatory process using the causal-chain framework to interpret our data with the end goal of trying to answer the research question: "How are employees affected by gamified e-learning systems in a workplace environment?"

5.1 Moderators

Moderators are the factors that affect the connection between using a gamified system and the experienced factorial outcomes.

5.1.1 Age and Stakeholder Expertise

Two factors that have been known to affect how well someone is handling new technology are Age and Stakeholder Expertise. Younger workers are driven by job-related outcomes, task achievements, and extrinsic rewards, while older workers are motivated by social characteristics (Larsen, 2019). Bai, Hew, and Huang (2020) predict that organizations will use gamified technology to motivate employees and believe this approach will especially help younger personnel born in the digital age. Larsen (2019) states that older workers are less tech-savvy than younger ones, affecting the kind of gamification each group can use.

The respondents are in their 30s or early 40s, and while this factor alone may not indicate any major significance when using a gamified system, it may make a slight difference for R4, who is 43, compared to R1 and R2, who is 31. Indeed, R1 and R2 enjoy the competitive aspect of e-learning, therefore extrinsic rewards like rankings or points play a motivating role for them, as expected by Larsen (2019). R4 in return likes the fact that gamification makes some of the courses easier and more tolerable

Altogether, the respondents rate their technical expertise as overall good or better for their position. R1 and R5 have a somewhat technical education where parts of the education were focused on programming, which could indicate a high likelihood that they will take to the gamification concepts well (Larsen, 2019). R1 and R2 have already had some experience with the gamified concept, which gives them good chances for better advantages of using gamified systems in their organizations (Bai, Hew, and Huang, 2020). R2 and R4 report having been in contact with software daily, which can positively affect the use of a gamified system in a good way (Larsen, 2019). R3 indicates that their expertise is good enough for their position; however, learning in this new format is a challenge for them in itself, just as predicted by Bai, Hew, and Huang (2020).

5.1.2 Voluntariness

Gamification needs to be voluntary to be effective; a problem arises when looking at this factor through an employee's lens, as they may feel compelled or pressured to participate in a workplace setting, as argued by Hammedi (2021). This means that by making the use of gamification a requirement, managers inevitably violate the condition of voluntary participation, which is argued to be necessary for an employee and E-learning context (Hammedi et al.,

2021; Hanus and Fox, 2018). Both studies also show that there could be adverse side effects to engagement and well-being as a result.

All our respondents mentioned that the e-learning courses they did at work were at least partially mandatory. Some studies argue that violating voluntary participation conditions makes gamification, particularly in the workplace environment, non-effective (Hammedi et al., 2021; Hanus and Fox, 2018). Indeed, the respondents' engagement in the gamified system seems to depend on whether the interaction was of their own volition or if they felt required to do it, as stated by R1, R3, R4, and R5. However, of all our respondents, only R1 stated that one of their mandatory courses would not be easier or more fun just because it was held in a gamified format. Yet, even here, the blame for the respondent's frustration had to be put on the fact that the course in question had to be repeated several times. When it comes to the rest of the respondents, they were either neutral on their experience of mandatory gamified courses and the resulting well-being at the workplace or positive, like R1 and R2, who said they were naturally competitive and would engage in the courses in order to compete with their colleagues, whether the courses are mandatory or not, or R3 and R5 that report similarly that they would engage in the gamified systems to stay competitive professionally, and this once again whether the courses are mandatory or not.

All the respondents confirmed their positive experience with voluntary e-learning, as is also expected by the literature.

5.1.3 Goal Alignment and Goal Commitment

These two factors determine whether the goals of the organization align with those of the employees and whether they are committed to them or not (Singh and Verma, 2020). From an organizational view, a gamified workplace aims to promote good outcomes and foster healthy company development in which better performance levels correlate with greater levels of employee engagement and well-being (Ferreira et al., 2017). Ferreira et al. (2017) present the key facets that contribute to this: First, games are a form of engagement that promises to make dull jobs entertaining. Second, games are fair, transparent, and just in assigning tasks and rating participants. And thirdly, games are seen as efficient activities that lead to better outcomes and self-improvement.

Two main reasons guided the respondent in taking the e-learning courses - on the one hand, some of the courses were mandatory, and on the other hand, some courses would teach them useful or necessary skills for their professional development.

In the first case, the goal of the company is to improve its staff's knowledge and skills, whether that is a legal requirement or not, as well as achieve higher employee engagement and greater well-being in order to foster the company's development (Singh and Verma, 2020) is not necessarily aligned with the goal of the employee, who might be taking the training only in order to satisfy this job obligation. That was, for instance, the case for R1, who had to take the GDPR course several times, and while for the company, that was a way to keep their staff on top of the specific legal requirements, R1 as an employee, felt frustrated and irritated and would have otherwise not taken that course by themselves if it was not mandatory. The employee's commitment was thus not present either. One could go as far as saying that the gamified workplace has failed to be created at all because one of the components of a game is that they are a form of engagement that transforms dull jobs into entertaining tasks, as defined by Ferreira et al., (2017) has not been satisfied. Similarly, R3 and R4

differentiate between voluntary and mandatory courses, even though they admit that mandatory courses can also be important and improve them professionally or personally. In that case, their commitment would be secured. R2 and R5 find all types of courses, including mandatory ones, important. Therefore, their goals align with the company's goals, and are committed to executing e-learning tasks.

In the second case, the company's and the participant's goals are aligned - the company provides the training for their staff so that they increase their knowledge and therefore improve their performance for the benefit of the company, and the staff is willing to do the training in order to grow which, as a consequence, will improve their performance and benefit the company. E-learning is, therefore, a game as it is an efficient activity that leads both to better outcomes for the company and self-improvement for the employee (Ferreira et al., 2017). For all the respondents, their commitment would come in this case naturally, as it is them themselves that decide to undergo the training. R5 goes as far as admitting additional work outside of e-learning to gain more complete knowledge on the topic.

On the side, it is worth noting that both R1 and R2 were willing to do the gamified e-learning because it would satisfy their need for competition. This is grounded on another game feature, as Ferreira et al. (2017) stated, that games are fair, transparent, and just in assigning tasks and rating participants. If these are met, the employees with a more competitive nature will indeed "play" e-learning courses as if they were playing a game, gaining both self-development and enjoyment. This could be a great way for the companies to make the important training voluntary, but at the same time interesting and fun enough, so that the employees are spontaneously willing to take them. In this way, the goal alignment and the employee's commitment would be secured.

5.1.4 Skill challenge congruence

This factor is the capacity of the gamified system to align the participant's professional skill level with the difficulty of the activity in the gamified environment (Singh and Verma, 2020). If the objectives are excessively challenging, people are likely to lose motivation and perform poorly, but if the objectives are too simple, they may not present enough of a challenge to engage the participants (Singh and Verma, 2020).

Most of the respondents admit that the gamified courses present some challenges. These can result from different aspects of the courses - for R1, it depends on whether the courses are mandatory or not; for R3, the new way of learning that they are not accustomed to can constitute certain trouble; for R5, the transparency of the systems, enabling to compare results with other participants, causes them stress and is therefore challenging. Most of the respondents, however, were able to accept and overcome a certain level of difficulties that the systems presented. For R2, who is naturally competitive, the elevated level of challenges motivated them and helped them acquire the knowledge better. For R1, in return, the mismatch between what they would logically conclude on the topic and the actual correct answer in the learning was challenging and hence demotivating, as already argued by Singh and Verma (2020). According to Singh and Verma (2020), participants' involvement would be negatively impacted if the e-learning courses were not sufficiently difficult. However, none of the respondents felt this way.

5.2 Mediators

Mediators are the factors that affect the connection indirectly between using a gamified system and the experienced factorial outcomes.

5.2.1 Time pressure

The factor of time pressure is one that organizations have chosen to deal with by giving online training because it eliminates geographical and temporal restrictions, enabling employees to receive training at any time and from any location (Alfaqiri, Noor and Sahari, 2022).

Our respondents treated the time aspect twofold - on the one hand, they spoke about hard deadlines of completing the courses, which in most cases would add stress but also could be a motivator for quicker action, and on the other hand, they mentioned the flexibility that e-learning offers, as compared to traditional classes. When it comes to hard deadlines, gamified learning does not differ in this aspect from regular classes; However, R2 have expressed that the time pressure has gotten them quite stressed is due to their client-based work. When it comes to the flexibility gain, it was unanimously perceived positively, allowing the respondents to complete courses in a relaxed environment (R3, R5) and at the moment of their own choice (R4). The possibility for the employees to receive training at any time and from any location is one of the motivations for organizations to introduce e-learning as their learning tool (Alfaqiri, Noor, and Sahari, 2022).

5.2.2 Collaboration and Network Exposure

These factors gauge whether cooperation with or awareness of colleagues affects the outcomes of using a gamified system, as these courses can help engage employees by facilitating resource transfers, relationships and create mutual well-being (Hammedi et al., 2021).

All respondents mention solitude in completing gamified e-learning as its intrinsic characteristic. For some, the presence of other people and communication in class would have been preferable, but they do not find the lacking of such excessively problematic (R3, R4, R5). However, R5 do find it stressful to be able to see their colleagues go up in rankings. For those with a more competitive nature (R1, R2), the individual way of learning is satisfactory, as R1 also mentions they sometimes chat with others on an online call service while doing the courses. Our empirical findings do not support the assertion made by Hammedi et al. (2021) that e-learning facilitates relationships and promotes reciprocal well-being.

5.3 Outcomes

Outcomes are the results of using the gamified systems based on the effects of moderators and mediators.

5.3.1 Gameful Experience and Entertainment

Hamari, Koivisto and Sarsa (2014) divide gamification into three sections (Figure 2.2): the first section talks about how motivational affordances invoke gameful experiences and

behavioral results in a gamified system. Choosing diverse theoretical viewpoints might be helpful because gamification is rooted in fun and entertainment by using game design aspects to boost user motivation and engagement (Schöbel et al., 2021). In education and learning contexts, gamification improves motivation, engagement, and enjoyment of learning tasks (Hanus and Fox, 2018; Hamari, Koivisto and Sarsa, 2014).

The majority of the respondents find the game design in e-learning positive, effective, engaging, and motivating - playing makes it easier for them to understand the topics (R1), they learn faster (R2), it is more fun, convenient, and diversified (R3), it makes subjects more comfortable and enables to track the progress easier (R4), and it has overall a positive impact on their knowledge level (R5). This is very much in line with theoretical findings which stress that gamification in entertainment fosters user motivation and engagement (Schöbel et al., 2021), especially in education, by improving the enjoyment of learning tasks (Hanus and Fox, 2018; Hamari, Koivisto and Sarsa, 2014).

Literature is silent, however, on any negative effects of the fun aspect of the gamified systems on learning, while one of our respondents (R5) mentioned that the design of the courses makes it very hard, if not impossible, to go deep in the details of the topics, which they find regrettable.

5.3.2 Engagement and Motivation

A gamified workplace attempts to create good organizational and individual results, promoting healthy firms where improved performance correlates with greater employee engagement and well-being (Ferreira et al., 2017). Hamari, Koivisto and Sarsa (2014) found that the gamified context and user attributes affect user engagement and outcomes. Gamification is positioned as the long-sought answer to dwindling employee engagement in changing modern workplaces (Mitchell, Schuster and Jin, 2020). Gamification in education aims to instill in students the same motivation and engagement they have for games which correlate with one of the largest issues in education: raising motivation, participation, and engagement (Osatuyi, Osatuyi and de la Rosa, (2018)).

According to the answers collected in the interviews, gamified courses are engaging and motivating because the very design of the courses is attractive. This is indeed what the literature argues widely, stating that gamification in education aims at raising motivation, participation, and engagement through its proximity to games (Osatuyi, Osatuyi and de la Rosa, (2018)), which in the long run, will change the modern workplace (Mitchell, Schuster and Jin, 2020). Our respondents mentioned that what engages and motivates them is how the gamified e-learning allows for a hands-on experience (R1), how it uses nudge techniques (R2), or how it makes topics more tolerable or exciting (R4). On the other hand, part of the responses focused on the fact that e-learning has a positive impact on engagement and motivation simply because it has become so popular and easily accessible (R3, R4), and, what follows, their completion can be well perceived in the organization (R5). Although R1 doesn't like when courses repeat, they can stay on course because they feel motivated by competitiveness. R4 on the other hand reports feeling demotivated by repeating the same courses.

5.3.3 Productivity and Creativity

Gamification has also been used to reinforce positive patterns in service use, such as increasing user engagement, social connection, or quality and productivity of actions. One example of this would be Facebook's use of gamification to encourage users to like and share posts (Hamari, Koivisto and Sarsa, 2014). Gamification of work processes may drive users to move through increasingly complex tasks, which is analogous to how users are encouraged to progress through different stages of games (Larson, 2019). Improved involvement in corporate operations, more program adoption, and higher levels of productivity may emerge from the usage of games and gamification in the workplace (Larson, 2019).

Most respondents feel that their learning via gamified systems is more productive, as they absorb knowledge faster and more efficiently. That efficiency would, however, in significant part come from the easier management time that the e-learning allows for, rather than greater involvement in corporate operations or higher quality of actions, as some researchers would suggest (Hamari, Koivisto and Sarsa, 2014; Larson, 2019). The majority of the respondents have not felt that they would become more creative thanks to gamification, and they also point to several disadvantages of e-learning that negatively impact productivity, such as too much focus on theoretical knowledge (R1) or superficiality of some courses, which would be short or not go into details enough (R5).

5.3.4 Learning Experience

Learning Experience expresses the general impressions of the respondents on the gamified e-learning systems, including their positive feelings relating to faster or more efficient learning, as well as their negative perceptions of the gamified e-learning method.

R1 responds that they do feel positive effects when taking the gamified e-learning courses, mostly resulting from the competitiveness they create (1.32). They would however prefer that the gamified learning focuses more on practical usage of rules and knowledge, rather than purely theoretical.

R2 responds that they like gamified e-learning systems because they speak to their competitive nature and give an easy overview of how well the person has been performing in the training, which stresses them a little (2.12, 2.14). They also prefer gamified systems to traditional ways of learning because they are developed with behavioral science in mind and nudge techniques that encourage them to learn the topics further (2.19). They underline that the gamified approach relates better to the current world, where the training needs to be quick and flexible in time, attainable from either laptop or phone at a chosen moment, and where it gives evidence of completion at the end (2.20, 2.37). R2 stresses that they learn faster through a gamified format and appreciates the systems' recapitulations (2.22). At work, it is their preferred method of learning (2.25). In return, the negative experience with gamified systems stems from the fact that sometimes they encourage to skip parts of the learning too quickly, potentially creating dangerous gaps in knowledge (2.27).

R3 responds that the usage of gamified platforms is fun for them (3.18). It is more convenient and allows for more flexibility than the traditional ways of learning (3.18). Sometimes they miss the physical presence in the classroom and communication with other people, but then again when doing the courses alone they are less distracted and more productive (3.26, 3.44). They also much prefer the verbal and visual method of learning that gamified systems give

over reading books (3.30). They find it positive that gamified systems give the possibility to pause the training and give yourself a needed break (3.40). They would have an even better learning experience if the text in e-learning was replaced even further with pictures and diagrams (3.44).

R4 responds that the gamified e-learning makes the subject more interesting or even more exciting (4.19, 4.28). They also the flexibility of place and time of learning that the gamified systems offer (4.26). R4 feels also that they are able to manage their time better in this format and cover more subjects (4.31). In return, the quick gamified learning is less efficient in that it is easier to forget things faster (4.31). Sometimes the gamified e-learning can be boring or unpleasant for them because of lack of human interactions, and they believe that going through the gamified courses in groups with other participants would give them a better experience (4.42). They also find gamified e-learning suitable only for shorter courses, but anything that would require day-to-day work for a long period of time would not be pleasant to do over a platform (4.44).

R5 responds that for them the learnings provided by the gamified systems are of more superficial nature due to the limitations and durations on the organization's platforms. The gamified systems are therefore not a sufficient source of knowledge as one cannot learn things in detail and needs to fill the gaps with other resources (5.16, 5.17, 5.30). However, they feel that the use of the gamified systems allows them for better time management, makes learning faster and has an overall positive impact on them (5.30, 5.34, 5.38). In their experience the usage of e-learning can cause them stress and sometimes boredom (5.46).

5.3.5 User Acceptance

User Acceptance shows how the users of the gamified systems embrace the novelty of the gamified e-learning and if they are willing to switch from the traditional way of learning to this new, modern one.

R1 responds that for them the gamified systems attract them by offering a hands-on experience, as well as by creating a competitive environment which they enjoy (1.18, 1.32). What can hold them back is that there still are too few practical courses and still too many theoretical ones (1.36). R1 admits that the gamified platforms are still not very popular in their company, not only because it is a new concept, but also because they are not yet as fun as they could be (1.51)

R2 responds that they chose gamified learnings over non gamified for the design that puts an accent on behavioral science and makes their behavior change according to the way the game has been designed. This encourages them to learn further (2.19). They also think that the traditional methods fall behind the changing world, while gamified platforms not only make it easier to access learning and track the progress, but are also available on different carriers (2.14, 2.20).

R3 responds that the changing world and the increasing competition is what has made them accept the gamified systems (3.26). They appreciate the diversification of learning methods that the systems offer (vocal, videos, charts, diagrams), as well as the flexibility they give in terms of place and time as compared to traditional ways of learning (3.26, 3.30, 3.44)

R4 responds that the gamified systems make some topics more tolerable and comfortable for them than traditional ways of learning (4.19). They also enjoy the flexibility of the choice of lecturer or the time of completing the course (4.26). In return what they are not willing to fully accept is the solitude while learning, scarcity of communication with other students or the professor, and lack of the vibe of the classroom (4.36).

R5 responds that they feel attracted by the gamified systems mostly because of their popularity in the organization and the role that they play in the career development (5.28). They like that the platforms enable them to manage their time (5.30). However, they cannot accept the gamified systems fully without leaving some space for other sources of knowledge, as they find courses not specialized enough (5.16, 5.17).

5.4 Key Findings

Here, we examine the findings that varied from gamification's advantageous outcomes. As we are employing a causal-chain framework, we will use it to establish the relationships between the findings and factors and to explain "How gamified systems affect employees from a workplace perspective."

1. In the *Gameful Experience and Entertainment* outcome we found that R5 regret that the format of the courses makes it hard to dive deep into issues.
2. In the *Engagement and Motivation* outcome R4 reports that there is a dip in motivation whenever the courses repeat.
3. In the *Productivity and Creativity* outcomes, we found that several respondents have various disadvantages that reduce productivity, such as an emphasis on theory over practice (R1) or short (R4) and superficial courses (R5).
4. In the *Learning Experience* outcome R1 and R2 have these competitive tendencies and are expressing enjoyment however R5 is more competitive on a professional scale, R2 and R5 have reported being stressed when learning. R1 prefers gamified learning that emphasizes practical rules and knowledge. R2 reports negative experience with gamified systems originates from the fact that they can force learners to pass over part that pose a risk later. Sometimes R3 miss the physical presence in the classroom and communication with other people, they also much prefer the verbal and visual method. R4 feels gamified e-learning is only acceptable for shorter courses and that long-term, daily effort would be unpleasant on a platform. R5 claims gamified systems' learnings are shallow, owing to platform limits and durations and that they are not an appropriate source of information since they lack detail, hence alternative resources must be utilised.
5. In the *User Acceptance* outcome R1 confesses that gamified platforms aren't popular at their company because it's a new concept and there are too few practical courses and too many theoretical ones. R4 isn't willing to accept learning alone, not communicating with other students or the professor, and losing the classroom vibe. R5 can't fully adopt gamified systems without other sources of knowledge, as courses aren't specialized enough.

The issues found in outcomes brings up 2 key findings and a few smaller ones, and in order to better comprehend the key findings, we must consider how they may have been influenced by Moderators and Mediators.

5.4.1 Lacking Substance and Depth in Courses

One distinct complaint from some of the respondents (R1 and R5) were the lacking substance and depth in the courses, which they all had to take through their gamified E-learning systems. The Antecedent that could be associated with not feeling that courses give what they promise or should, we argue would be a Game Dynamics component called; Achievement. As our respondents may very well feel like they don't achieve what they would've wanted from the courses that were lacking substance and depth. The outcomes factors that are affected depends on the individual respondent. R5 is the only one being affected through the *Gameful Experience and Entertainment* outcome, ruining the experience of playing a game. In the *Productivity and Creativity*, and the *Learning Experience* outcome R1 and R5 are being affected, stumping productivity and killing the enjoyment of the specific task. R1 and R5 are also affected by the *User Acceptance* outcome which makes the respondents unwilling to interact with the gamified system. To know how these outcomes ended up being affected to this degree, we will look at the Moderators and Mediators and how they influenced this.

Looking at the *Age and Stakeholder Expertise* Moderator there doesn't seem to be anything that affects the outcomes poorly in this case. Moving on to the *Voluntariness* Moderator we find that engagement is heavily influenced by this one for all (R1 and R5) which in turn is affected by whether a course is mandatory or not. This indicates that the poor engagement in Achieving what they want is partly based in Voluntariness to engage the course from the start, not fulfilling their expectation, it falls short. Going to the *Goal Alignment and Goal Commitment* Moderator it holds a heavy implication, as it decides the match between what an organisation's goal of the courses are versus the goal of employees. Already here we can gauge that there is a mismatch since the respondents clearly want to Achieve more than the organisation is letting them. R1 would like more practical than they are getting as well as longer and more detailed courses (R1 and R5). R5 shows true Commitment to what they want and have even gone to third party sources to Achieve this. When looking at the *Skill challenge congruence* Moderator, voluntariness sneaks in, the respondents here said that whether they thought it was hard to Achieve what they wanted depended on whether the course was mandatory. The *time pressure* or *Collaboration and Network Exposure* Mediator didn't cause any effect.

5.4.2 Being Competitive and Feeling Stressed

Gamification is the approach of invoking game like concepts to induce users of a gamified system the feeling of playing a game, which is associated for many with enjoyment and entertainment. Some games are competitive by nature and which certain competitive types may enjoy while some may not. These components are known as a game dynamic type and are represented as an antecedent in the causal-chain framework in Figure 2.4. We have found that some of our respondents (R1 and R2) have these competitive qualities and are expressing enjoyment using the gamified systems that belong to their organisation. One of our respondents (R5) its more for professional competitiveness.

However, for both R1, R2 and R5 gamification has resulted in great motivation and engagement when it comes to the *Learning Experience* outcome. One reason why this outcome induces such motivation and engagement could be due to several Moderators and Mediators. One could be that they may still be considered a young generation and they have also had experience with gamification prior to their job (R1 and R2) or a very technical education (R5), making the *Age and Stakeholder Expertise* Moderator a blaring factor to explain this phenomenon. Likewise, their eagerness to compete also shows in the factor *Voluntariness* which

enhances enjoyment of the tasks. Although *Goal Alignment and Goal Commitment* were somewhat lacking for R1 and R2 they actually overcame that with their need to compete, while R5 went and bough extra learning material. Their eagerness and tech level worked well when it came to *Skill challenge congruence* as well.

R1 has further challenged this competitiveness into motivation even when the repetitive nature of some of their courses makes taking the mandatory courses more bearable and they find enjoyment in beating others for high scores. R1 has taken to using their social network from their organisation and are using it to do these together with their co-worker, making use of the *Collaboration and Network Exposure* Mediator.

On the other hand, R2 and R5 has reported that they have met with some unfortunate negative effects as a result of their competitiveness and work-style. This is due to the Mediator *time pressure*, where they report that the pressure of the time constraints is getting to them because of their client-based work for R2 and having to spend weekends in order to complete courses outside of office hours (R5). Additionally, R5 mentioned in the *Collaboration and Network Exposure* Mediator that seeing colleagues pass them in rankings puts them under stress as they now feel like they have to perform better. One could also imagine that the high competitiveness to be the best in rankings is something that drives the stress level up as their time pressure could be affected by this factor. As we can see in Figure 2.3 that shows negative effect in gamification, the effects that are in play here is “Time constraints” (R2 and R5), “Perception of high work load” (R2 and R5).

5.4.3 Age Differences, Lack of Rules and Repeating Courses

These results may be little and unremarkable, but they are distinctive and contribute to the advancement of knowledge. Interesting things have been said regarding how age difference can affect engagement in different ways for different people. R1 observes that some younger employees do not take the organization's courses seriously and perform just the bare minimum. They expressed concern that individuals may abuse e-learning by skipping portions of the course in order to complete it more quickly and have more time for real contacts with colleagues during the breaks. In contrast to the research, which suggests that motivating and engaging younger people who were born in the digital age would be simpler due to their age, this is not the case. But perhaps the literature does not account for the inherent immaturity of younger people. This is a little tidbit of knowledge for individuals who seek to involve younger generations in the future.

Regarding the practice of skipping portions of e-learning courses, we discovered in the *Learning Experience* outcome that R2 had unfavourable experiences with the gamified systems they use at work. They have discovered that due to the way some courses are designed, it is possible to only complete a certain percentage of a course and inevitably skip parts that contain highly relevant information, in the sense that if a user finds themselves in a certain situation and lacks that knowledge, they will inevitably cause harm to themselves or others, posing a significant risk due to these rules that allow for partial completion. It would be wise in the future to take care of what specific parts of a course would be skippable if it is allowed.

Taking a look at the User Acceptance outcome, we discovered that despite the generally good outlook of gamified systems, R4 is unable to accept a future in which you are learning alone, without interacting with other students or instructors, and eventually losing the classroom

atmosphere. R3 also indicates that they miss physical presence in the classroom and communication with other students, primarily because they prefer the verbal and visual methods.

5.5 Summary of Findings

Looking at the *Lacking Substance and Depth in Courses* we have identified, R1 states that they feel less productivity with theoretical courses and their learning experience would benefit more from practical courses, this would also enable engagement as they are a very hands-on person which in turn would increase the user's acceptance of the gamified system. R5 states that their gameful experience is being halted by poor course design and their productivity suffers from superficial courses with inadequate knowledge, ruining the learning experience which leads to an inability to accept the system as a user. Both respondents in this case suffer from the same consequence although with different causes. It clearly shows however, the need for workplaces to include users of their gamified system's wishes and expectations between what they want and what the workplace needs.

When we looked at respondents who were *Being Competitive and Feeling Stressed*, taking R1 and comparing them with R2 and R5, we can observe that taking advantage of your network when you are competitive (R1) against not being competitive (R5) seems to add stress to the users who are not competitive in a gamified system. Whereas comparing R1 and R2 is more workplace context related as it depends on the type of work you do, which correlates with the literature stating that gamification is highly contextual.

When looking at the negative consequences that occur in the *Age Differences, Lack of Rules and Repeating Courses* we can see that any kind of skipping that would lead to more break time is "Gaming the system" as shown in Figure 2.3. It also leads to a "Lack of improvement as those who skips ahead does so often without actually looking at the learning material. Looking to those who miss the old days before E-Learning and gamification the negative effect they are having is "Irrelevance", "Alienation or confusion for non-gamers" and maybe even "Dislike of gamification".

6 Conclusion

The study we have conducted aims at answering the question of how employees are affected by gamified e-learning systems in a workplace environment through comparisons between theory, available in the existing literature on the topic, and empirical findings.

We have found out that in the current state of technology, gamified e-learning is widely accepted by the end users and is becoming the preferred way for the organizations to conduct on-site trainings. Their popularity stems mostly from such aspects as increased enjoyment, time and place flexibility and competitiveness and they overall give a positive learning experience to their participants.

The gamified systems are, however, not without drawbacks, and the ones we have encountered the most in our study were the inability to provide a detailed knowledge, stress resulting from the competitiveness that the systems create, and overwhelming presence of the courses, especially if some are required to be repeated several times.

6.1 Future Research

In the context of increasing popularity of remote working, we are fully convinced that gamified systems are the future of working and learning. For that reason, the findings presented aim at helping to design the future gamified systems in the way to make them even more efficient, responding to the needs of participants, such us better communication with other participants and the teachers, providing more thorough knowledge or making the learnings more fun, in order to spontaneously encourage employees to take the courses.

We also believe that as the popularity of the gamified systems grows, more study will be needed, with a broader pool of respondents and hard, quantitative data on the efficiency of the courses. With the use of machine learning, the systems could learn to discover individual personalities and predispositions, which in turn would enable such developments as automatic suggestions of the learnings, in order to foster the growth of each employee.

Appendix A: Interview Guide

Introduction:

1. Can you tell us about yourself?
    a. How old are you?
    b. What is your role and responsibilities in your organization?
2. What is your level of IT knowledge and how often do you use gamified e-learning?

Positive Effects of using Gamification

3. What is the reason that you took the courses you did?
    a. Is it because it's expected of you?
    b. Is it because you see the benefits of taking courses?
4. Do you perceive the courses as important?
    a. What was the goal of taking those courses?
5. What do you feel about the gamified aspect of e-learning courses?
    a. Do you feel like they challenge you?
    b. Do you feel anything leading up to the course?
    c. Can you work with someone else also taking the course?
    d. Do you feel like you are playing a game?
6. Did you have any time limit to take that course?
7. Do you prefer the traditional way of learning or this new modern way? why?
    a. Do you prefer to study alone or with your colleague?
8. Do you feel any positive effects when you take a gamified e-learning course? Why?
    a. Do you feel more motivated?
    b. Do you feel like you are engaged in your work more?
    c. Do you get a sense that you can be more creative?
    d. Do you feel like you are going to be more productive after taking a course?

9. How did you personally experience the gamified e-learning adventure?
    a. Did you learn things better, faster?
    b. Did you use what you learned in your daily work?
    c. Do you still remember what you have learned?

Negative Effects of using Gamification

10. Have you experienced any negative effects when you engage in gamified e-learning?
    a. Have you felt any stress?
    b. Have you felt any pressure?
    c. Have you felt any boredom?
    d. Have you felt any loneliness?
    e. Have you felt any negative feelings before, while, and/or after taking the course?
11. If you could change anything about gamification in the E-learning platform, what would you change?
12. Any comments, ideas, or suggestions?

Appendix B: Respondent 1

Line	Speaker	Transcribed text	Factor
1.1	MKL	Is it OK if we use your company's name?	
1.2	R1	Of course.	
1.3	MKL	All right. And you would like to remain anonymous?	
1.4	R1	Yes please.	
1.5	MKL	Alright. And is it OK that we record this interview?	
1.6	R1	It is, yes.	
1.7	MKL	Perfect. Alright, so can you tell us about yourself? How old are you and what is your role and responsibilities?	
1.8	R1	My name is [Anonymous], I'm 31. I've been working in IKEA for the past six years. I've been a customer relations specialist and now I'm a customer service generalist, primarily focusing on kitchen sales and support.	SE, UA
1.9	MKL	Alright, perfect. What is the reason that you took gamification courses?	
1.10	R1	It's primarily e-learning courses and we have e-learning in everything we do. Every time you shift a position, you will have to go through new courses in the company and at least 2 times a year you have to take some basic courses which will also be e-learning. Due to Corona we have intensified the use of e-learning in so many ways. And that's the primary reason. But there's more. IKEA has a lot of competitions internally - if you can guess the answers, you will get a prize. But if you take this class, you'll know them and you won't have to guess.	VO
1.11	MKL	That is pretty smart.	
1.12	R1	It is.	
1.13	MKL	What is your personal perception of the importance of these courses? Do you find them useful?	
1.14	R1	Depends on the course. When you've had GDPR course twice a year for six years, you get tired.	GA, CO
1.15	MKL	Even with gamification? Does it make it easier?	
1.16	R1	It still doesn't make it more fun. It's still the same class you have to go through every single time.	GE, EN, EG
1.17	MKL	I see. So what do you feel generally about the gamified aspect of e-learning?	
1.18	R1	I think it's a good concept. I've been studying computer games when I went to UNI, and we actually used gamification a lot. I think it's a motivator, especially for younger people to learn and to interact with these rules. It's a good way of learning because you actually get to have a hands-on experience with the rules, the teachings, while you learn them. So it's a clever process.	SE,EM,MO, EG
1.19	MKL	Alright, so do you feel like they challenge you?	
1.20	R1	At times.	

1.21	MKL	At times in which way?	
1.22	R1	Again, it depends on the course. Depends on the way it's been used. So if you have to get a certain amount of points or there is a certain process going during these gamificated e-learnings, it can be challenging - especially if it goes against your better judgment, and sometimes it will.	SCC
1.23	MKL	Do you work with someone else when you're taking the course? Can you cooperate?	
1.24	R1	Sometimes. The past few e-learnings I've made, we've been chatting on Teams while doing them. So we can help each other with the right answers. But usually it's something you do alone or in a group.	CO, NE
1.25	MKL	Do you have a time limit when you take these courses?	
1.26	R1	On some of them. Some of them are unlimited and you will just have to keep going until you get everything right and you make at least 90%. Some you can skip right through and actually finish without winning.	TP
1.27	MKL	What do you think about the time limit concepts?	
1.28	R1	I think it can be a good motivator, depending on the people that need to take the class or who needs to do the learning. But it can also be a motivator to skip important parts in order to make the time limit.	TP
1.29	MKL	Do you prefer the traditional way of learning or more this gamified e-learning?	
1.30	R1	I do like the gamified e-larning, I think it's a good motivator to actually consider what you're learning while doing it.	
1.31	MKL	Do you feel any positive effects when you take these gamified e-learning courses?	
1.32	R1	Of course. I'm a competition person so I like to make 100% every time and be the best at whatever I'm doing. So I will be motivated to kick the rest of the team out.	VO, EM, MO, LE , UA, CO, NE, EG
1.33	MKL	Nice, very nice. How do you personally experience the gamified e-learning adventure?	
1.34	R1	How do you mean?	
1.35	MKL	Like, do you learn things better or faster? Or are you using what you learn?	
1.36	R1	Most of my classes are theoretical, more than the practical use of it. I would kind of wish that they spend more time developing the practical courses into gamified learning, because having the time to actually play around with stuff just makes it easier to understand, for me personally.	GE, PR, CR, UA, EN
1.37	MKL	Right. So you're more of a hands-on?	
1.38	R1	Absolutely.	PR, CR
1.39	MKL	I see. Alright. So we would like to ask you, have you experienced any negative effects when you are engaged with gamified e-learning?	

1.40	R1	Yes, I have. In my company if you finish your e-learning fast, you'll just get more break time afterwards, which encourages people to skip through important stuff and just guess at the answers. Especially when you don't have to make 100% or 90%, you'll just skip right through it and go to break. I've just finished a two week course where 70% of it was e-learning. I could see that the younger people in my course didn't get the good results, and you can actually feel that now they are lagging behind, but they had a lot of fun time in the break room.	CO, NE
1.41	MKL	Have you felt any stress to do these courses?	
1.42	R1	Not stress, I've felt annoyance.	
1.43	MKL	Annoyance?	
1.44	R1	Again, when you have to do the same e-learning for the 80th time, it just sounds annoying.	
1.45	MKL	I see. If you could change anything about gamification in e-learning, what would you change?	
1.46	R1	I'd like to make the e-learning I work with more interactive. Again, I'm a hands-on kind of person, I like to see the practical use of what I learn while I do it, and a lot of the practical courses we have are still traditional learning. I think you could get a long way with making it into interactive gamificated e-learning, if that makes sense.	
1.47	MKL	I see what you mean, alright.	
1.48	HE	So to just wrap it up, to conclude - are you usually taking these courses because it was manager who requested, or it was volunteer, or of your willingness, or for fun, or any specific reason?	
1.49	R1	The primary use of e-learning is mandatory courses. I use it as well to develop skills that I find useful in my career. So when I have half an hour where I don't really know what to use my time for, I'll find the course. I don't like to be bored. I don't like to waste time. So I will find random courses to complete. And then of course we have these voluntary based competitions where people can do it for fun.	VO, GA, CO
1.50	HE	You said you liked to be challenged and it was challenging you. But do you feel like you're playing a game actually?	
1.51	R1	Gamification in e-learning in my company is still rather new, it's something that's been more implemented during Corona than it has been used before, but still a new concept for the company. It's a big international company that needs to make sure that everybody can follow the same rules and follow the same courses. So at this point it's not as much fun as it could be. I'd like to see it be more fun because I think it could really encourage people to use it. We have a huge platform for e-learning and most of my colleagues have no idea what's on there.	UA
1.52	HE	So when you take these courses, after that do you feel you're more engaged in your work? Or it doesn't change anything regarding engagement?	

1.53	R1	Again, depends on the course. For some things I will absolutely be more engaged. I will be more attentive to what I've learned because I've actually had to challenge myself when learning it. So I find it really useful in that way.	GA, CO
1.54	HE	So are you more productive or creative after taking these courses? Or you haven't felt any of these yet, you just take the course and that was it?	
1.55	R1	I'll probably argue that I'm more creative after completing one of these courses because I've got a new set of tools I can use for my work and that will make me creative in my ways of working. But I don't like being stuck, so for me it's a good thing to be creative.	
1.56	HE	So when you finish the course, actually you can do things better, faster, maybe you can use it in your daily work? Or not really?	
1.57	R1	I can use it in my daily work. It won't always make me faster, but I will implement it.	
1.58	HE	Do you still remember what you have learned?	
1.59	R1	Most of it.	
1.60	HE	You told us you have never felt stress, but you've been annoyed by some of the e-learning courses. Have you felt pressure? Or you got bored? Or have you felt that you've been alone?	
1.61	R1	I felt bored most of all and some things have been made gamified that didn't need to be it, you could have just read a folder on this subject, instead of trying to make it something new and exciting for people. It didn't have to be. The use of gamification could be redundant in that concept. But for a lot of stuff it will be a good way to implement it into your work.	
1.62	HE	Have you ever felt that it would be good to have a teacher in front of you, classmates, like in a traditional way of learning? More interacting with people and socializing? Have you ever felt alone at home, not understanding and maybe needing somebody to help?	
1.63	R1	No, not really, but for the more complicated courses we will have a teacher on standby to answer questions during the e-learning.	CO, NE
1.64	HE	My last question is - do you have any comments, ideas, suggestion, anything you want to add on?	
1.65	R1	I don't think so, I can't remember anything else.	
1.66	HE	Very good.	
1.67	MKL	I think that wrapped it up pretty well.	
1.68	HE	Thank you so much for your time.	
1.69	MKL	Yes, thank you a lot.	
1.70	R1	You're welcome.	

Appendix C: Respondent 2

Line	Speaker	Transcribed Text	Factor
2.1	MKL	Can you tell us about yourself?	
2.2	R2	I'm [Anonymous]. I'm a senior consultant at Deloitte and I work on HR Strategy and innovation projects.	AG, SE
2.3	MKL	What is your level of IT knowledge and how often do you use gamified e-learning?	
2.4	R2	Quite advanced. I've used the gamified e-learning throughout my career, because I've worked for the government as well, and I have IT experience, as I have to use a range of different softwares and programs as part of my day to day job.	AG, SE
2.5	MKL	What is the reason that you took the courses that you did?	
2.6	R2	Do you mean university courses or training courses, the gamified ones?	
2.7	MKL	The gamified one.	
2.8	R2	The gamified ones were for corporate awareness and knowledge, and in order to gain a qualification for my jobs that I've had. The first games are probably introduction process and onboarding videos. The second would be health and safety training when I've been a store manager. The third would be line management training, when you become a line manager in the organization and there's levels, so you can be like a bronze, silver or gold leader, and then it shows other people in your area. This is how you relate to other line managers in your team area or in your region.	VO
2.9	MKL	Do you perceive these courses as important?	
2.10	R2	Yes, I think all training is important actually, because capability needs are usually identified and then training is developed in line with that. So it means you need to improve yourself or your capabilities and skills in a particular area, so of course it's important.	VO, GA, CO
2.11	MKL	How do you feel about the gamified aspect of e-learning courses?	
2.12	R2	I like it because I'm a competitive person. If I find out that another line manager has got a better score than me, I want to beat them. Also, if I find out that another team has a better engagement rate than me, I want to beat them. So, I'm just being honest with you guys, it really speaks to my competitive nature and also it speaks to performance management, right? Because if you've got numbers, the gamified element also enables you to collect data.	GA, CO,VO, EM, MO, LE, SCC, NE, EG
2.13	MKL	Right.	
2.14	R2	So then I know in my team who's the best leader, who's got the best sales figures, all that sort of stuff because of the way the information is presented. And also gamified approaches to learning enable you to tell a story as well, like - this is the level, this is a color, this is how far I am from the finish line. So that's why I like it.	VO, LE, UA, GA, CO, NE
2.15	MKL	Nice. Do you have any time limits when you take these courses?	

2.16	R2	When you're completing the training courses, normally you have a month to complete the course and then usually on the course it will tell you how long it takes from start to end to complete it. So I like to use those two metrics in order to identify when I need to dedicate time to do it in my diary.	TP
2.17	R2	It has like a thing along the bottom, which is a bit of a game - this is how much you've got left of the course to complete.	GE, EN
2.18	MKL	OK. Do you prefer the traditional way of learning or this new, modern way, and why?	
2.19	R2	Throughout my professional career, at the start I have done very boring, non gamified courses and then gamified ones. I think I prefer gamified because they're developed with behavioral science in mind as well and nudge techniques, so my behavior is changing according to the way that the game has been designed and it encourages me to finish and learn the topic that the training has been developed for. So I prefer that.	EM, MO, LE, UA, EG
2.20	R2	Traditional methods I think are becoming outdated because if we think about consumer behavior and the way that we consume information now, it's very different from what we had before TVs were invented, for example. So I think the nature now is that it has to be quick, it has to be attainable and you want evidence that you've done it at the end, and a gamified approach enables that. You get a badge or you get a digital certificate of completion. So those kinds of things are quick. And then the timings - you can do it from your phone, you can do it from your laptop, it's accessible. You don't have to go into an examination hall, for example.	LE, UA
2.21	MKL	Right. Do you feel any positive effects when you take a gamified e-learning course?	
2.22	R2	I think it depends what that means. I've shared already that I do learn easier when it's in a gamified format, so yes. And again, the competitive element ensures that I'm listening and when I'm quizzed, because obviously when it's teaching you, then it asks you to recap, it asks you questions at the end. It's really important to have that approach. I prefer learning that way.	GE, EN, PR, CR, LE, SCC
2.23	MKL	How did you personally experience the gamified learning adventure? Are you learning things better? Faster?	
2.24	R2	I do learn faster. In my personal experience I use an app called Uptime that enables you to learn very quickly about different topics, you can put top books in there, things like that. I like using that because it's a very gamified nature of learning about topics in my spare time.	GE, EN, PR, CR
2.25	R2	And then at work I way prefer the courses, the e-learning that's in the newer format than the old school style. So it's my preferred method of learning.	PR, CR, LE
2.26	MKL	Interesting. Have you experienced any negative effects when you engaged in gamified learning?	
2.27	R2	I think the only thing I would say is sometimes with quizzes. If the courses tell you the answers that are wrong or right, then you'll just skip learning the content and skip straight to the quizzes. If the	LE

		courses are teaching about critical topics, say there's a legislative impact of that learning, then I think in the design of these courses you want to make sure that the individual has either signed an agreement that they're learning at their own risk if they're skipping content, or if they're participating in it, then each sliding window or part of the story board could be fixed like you can't skip to the quiz. You have to read the material, go through each of the pages, windows for example.	
2.28	MKL	Have you felt any stress because of these courses you've taken?	
2.29	R2	I think sometimes when the time frame is restricted. So it says you've got a month to do it, and then you can't extend it. That can be quite stressful sometimes, given the nature of my work is quite client led, with client demands, so if I don't have a lot of time it can add an extra layer of stress, because I need to make sure I do that course on time. And sometimes because the reminders are auto scheduled, they will fall on weekends and that then infringes on work life balance and employee well being outside of work.	TP
2.30	R2	So I think there are two things just to think that gamifying courses and course providers need to bear in mind when they're designing their services.	
2.31	MKL	Have you felt any pressure? Or maybe that goes under the stress as well?	
2.32	R2	I think it's similar to what I've said. If there's no option to give yourself extra time to complete the course, if there's a legislative time frame for why you have to do it within six months of starting your role, anything that means it's a hard deadline can be a little bit stressful or add pressure I think. Especially if the job is demanding.	TP
2.33	MKL	Have you filled any boredom or loneliness because of these courses?	
2.34	R2	No, I don't think so.	CO, NE
2.35	MKL	Alright. if you could change anything about gamification in e-learning, what would you change?	
2.36	R2	It would be those things I've mentioned earlier to you both. If it's mandatory learning that has a legal need for the individual to understand the information, then it's really important that you can't skip the screen and go ahead straight to the quiz. And then the second thing is just about the time frames and enabling individuals to be able to extend the time if they need more time. So they're the two main things.	
2.37	R2	The 3rd and final thing I would say is just about nudge techniques. I think there's ways that games can be designed or courses can be designed with even more human centered design in mind, like is it accessible from a phone? Not all courses that I access are accessible from my mobile - so maybe introducing that, making it easy to use.	LE
2.38	HE	Perfect. Thank you so much. And now you've heard the questions so are you OK to use the company name?	
2.39	R2	Yes that's fine because I think all of the answers I've given are from my different jobs.	

2.40	HE	To be honest, the point is not the companies, but the individual person experience with the gamified e-learning.	
2.41	R2	Yeah, that's fine. Really happy for that to be included.	
2.42	HE	Thank you so much. Thank you for helping us.	
2.43	MKL	Yes, thank you so much.	
2.44	R2	No problem. Bye. Wish you all the best with finalizing this. And I'd love to see the final product.	

Appendix D: Respondent 3

Line	Speaker	Transcribed Text	Factor
3.1	HE	Hi.	
3.2	R3	Hi.	
3.3	HE	Thank you so much for joining me for this interview. If you don't mind, I'm going to record this and it's going to be anonymous. Is that fine if we use your company name and your position? Otherwise it just goes totally anonymous.	
3.4	R3	It's absolutely all right for me. I'm working in Novo Nordisk and my position is project manager in one of the production departments.	AG, SE
3.5	HE	How old are you?	
3.6	R3	I'm 37 years old.	
3.7	HE	What is your IT knowledge? Good, bad, very good?	
3.8	R3	In my opinion it's quite good for the position I'm working at.	AG, SE
3.9	HE	What is the reason that you took any of those gamified e-learning courses?	
3.10	R3	We are at the moment in time that everybody is trying to learn and update themselves. I do the same. I need to just keep updating my knowledge to compete with other colleagues and other people in the market.	GA, CO, VO, EM, MO, EG
3.11	HE	So it was mostly volunteer? You did it because of your willingness or was it the manager's request?	
3.12	R3	I would say both. It depends. For some of the projects that I was working with, they required specific knowledge, so I have asked to go for this e-learning that was needed, or sometimes they provide the courses for us. But for other things I always try to update myself by some of those online platforms.	VO, EM, MO, GA, CO, EG
3.13	HE	Do you perceive, consider these courses you have taken as important?	GA, CO
3.14	R3	Yes, I do.	GA, CO
3.15	HE	So there was some improvement in productivity, right?	
3.16	R3	Yes, definitely, of course. I always try to use those platforms, they keep updating their data.	PR, CR
3.17	HE	What do you feel about the gamified perspective, or aspect, of an e-learning course? When it's more gamified, when you're more like playing - what do you feel about it?	
3.18	R3	It's quite fun, I think these are nice things that they are using for e-learning. That's my opinion. Convenient too, let's say.	GE, EN , LE
3.19	HE	Have you felt challenged while taking these courses?	

3.20	R3	Yes, some of the times when they provide this gamified e-learning it's challenging for me because our generation in the past has never had these things, this is quite new for us. Of course in the future new things will be coming as well and always it's going to be challenging for us.	SCC
3.21	HE	Do you feel you're playing a game or you're just focusing mostly on the content of the e-learning?	
3.22	R3	I would say both of them. Sometimes you need to be more diversified through your learning. I've always done it, even in the past. So I would say both.	GE, EN
3.23	HE	When you were taking those courses, did you have any time limit to take it or was the time up to you?	
3.24	R3	It was up to me, definitely. Right now it's not that much necessary for me because my position is quite settled - so not like in the past, when you are in the university, you have to sit down and just focus on the education. So of course now I was with the phone sometimes, having my glass of wine and watching those videos.	TP
3.25	HE	Do you prefer the traditional way of e-learning where you go to school, sit down and have a teacher teaching you, or you prefer to do this modern way, and why?	
3.26	R3	Well, I would say the world is getting changed. This new area is quite new for us. I'm definitely adapting myself, even though I'm old fashioned minded, I would like to be physical in the place, seeing people and communicating. But of course this new platform that they provided for people as e-learning is more convenient I would say. You are more flexible.	LE, UA
3.27	HE	Do you prefer to study alone or with your colleagues?	
3.28	R3	In this situation honestly I prefer to study alone.	
3.29	HE	Do you feel any positive effect when you take the gamified learning course - like you're more motivated or you're more engaged, or any positive point for you?	
3.30	R3	For me as a person who always hates to study and read through the book, it's more convenient and I will prefer to use a platform that mostly provides videos and video games. I hate reading, so I prefer to have it verbal, a video.	GE, EN , LE, UA
3.31	HE	Do you feel or do you sense you are more creative?	
3.32	R3	I do.	PR, CR
3.33	HE	How did you personally experience the gamified e-learning adventure? Did you learn better? Faster?	
3.34	R3	For me it was working quite fast and quite peacefully, I would say. If I want to compare it with the past, the traditional way, sometimes in the past you would not be able to focus because of the atmosphere, because of a lot of people around you, also you you've been a teenager. At the moment I would say it was mostly productive for me, positive.	PR, CR
3.35	HE	Have you had the opportunity to use what you've learned in the daily work?	

3.36	R3	You know, you're not going to use all of them in real life, definitely, but there are some parts that you can use, I would say like 30% of it.	PR, CR
3.37	HE	Do you still remember what you have learnt?	
3.38	R3	Yes, some of the things that were necessary and were helping me in my future or current projects definitely I'm still remembering. But those that weren't related to my job of course not.	PR, CR
3.39	HE	Have you experienced any negative effect when you engaged in a gamified e-learning? For example you felt bad, stressed, pressured, bored, lonely?	
3.40	R3	Bored, yes, some of the times that I couldn't understand what they were talking about, it wasn't clear for me or it wasn't familiar. Those parts of the education. I was feeling that I was getting bored. And also if I'm not understanding. But the good thing about those platform for gamified e-learning is that you can just pause it and give yourself a break. Go and have a walk outside maybe, or have a glass of water, or talk with your partner and then come back again and focus on it. But when you go to the classes you just need to keep focusing on this. I think your brain is going to be dead.	LE
3.41	HE	But you didn't feel the stress or pressure or loneliness or any of those?	
3.42	R3	No, not at all. Because you can stop it and give a space for yourself, and then come back again and continue.	
3.43	HE	If you could change anything about gamified e-learning platform, what would that change be?	
3.44	R3	I don't have any suggestion because I have never been a teacher or able to teach people so that that's my weakness. But maybe in the future those videos could be made in a way that there is less text on the videos but more charts and diagrams. I like those parts of the e-learning - more pictures, more diagrams, rather than just text that keeps on coming in bullet points.	LE, UA
3.45	HE	Very good. Thank you so much. Do you have any comments, ideas, suggestions, anything at the end?	
3.46	R3	No, I think it was everything clear.	
3.47	HE	Thank you so much. It was perfect. Thank you for your time.	
3.48	R3	It was a pleasure, you're welcome.	
3.49	HE	Thank you and have a good day.	
3.50	R3	You're welcome. You too. Cheers. Bye.	
3.51	HE	Bye bye.	

Appendix E: Respondent 4

Line	Speaker	Transcribed Text	Factor
4.1	SE	Hello, how are you?	
4.2	HE	I'm good. How are you?	
4.3	R4	Good. Thank you.	
4.4	HE	Thank you so much for your time and joining me for this interview. If you don't mind, I just need to inform you this is the interview for Lund University. And if you don't mind, you're going to be totally anonymous. But, also, if you don't mind, we're going to use your organization name and your position. Is that OK with you?	
4.5	R4	Yeah, that's alright.	
4.6	HE	OK. Can you tell us your organization and your position please?	
4.7	R4	Yes, I'm working for Red Cross in the capacity of employment and engagement officer.	AG, SE
4.8	HE	Very nice. Just to formalize this interview, may I know your level of IT and IT knowledge? Generally good? Bad? Advanced?	
4.9	R4	I reckon I'm good at using IT. I'm always using online platforms, and actually these days of the pandemic we are all working from home - so yes, I am working with IT.	AG, SE
4.10	HE	As I had an introduction, introducing you to our research topic, it's about gamified e-learning courses within the organization. What are the reasons that you took these courses so far? Is it because of management request or was it your willingness or volunteering or any other reason?	
4.11	R4	We have an e-learning portal which has a combination of the compulsory courses that we should do because of our job or our role or our responsibility, and sometimes there are some courses that we do voluntary because we want to know more about that or up-skill ourselves.	VO
4.12	HE	OK, so you also take some courses by your willingness.	VO
4.13	R4	Yes, correct.	VO
4.14	HE	What are the goals of taking those courses? Is it for improvement? Or why?	
4.15	R4	There are things happening in different areas that are not my focus in the job. Sometimes I think I need to learn more about it to cover my weaknesses, and sometimes I have some knowledge about them but I like to expand it.	GA, CO, VO
4.16	HE	So it's mostly for improvement or have you ever taken any courses for fun or to be more productive?	
4.17	R4	Yes, I'm actually doing a course right now of which the title is "How to improve self confidence?" and it's focusing on women and what they're experiencing in their work life.	VO
4.18	HE	What do you feel about the gamified aspect of e-learning courses? Do you feel like you have been challenged, or was it to	

		work better, or what are the aspects? I know the question is a little bit fluffy, but it's the purpose that I want to hear more about.	
4.19	R4	Yeah, I can say that. Basically, sometimes this kind of e-learning with gamifying aspect makes the subject interesting. I remember that I was doing a child care and child safety course which had many of the painful examples and the sad experiences of the client or the kids.	GE, EN , EM, MO, LE, UA, SCC, EG
4.20	R4	It's hard by itself actually to deal with these subjects. Gamifying was making it a little bit more tolerable or comfortable. And while we were doing some actions, like changing the mouse or clicking on something or playing and watching a video, it made it less, I can say, painful.	GE, EN , EM, MO, EG
4.21	HE	Very good point, thank you. Did you have any time limit to take these courses?	
4.22	R4	Yes, this was a special course, it was mandatory so we should have finished it by a specific date.	
4.23	HE	Do you prefer the traditional way of learning or this new modern way, and why?	
4.24	R4	If we talk about traditional way as reading the books and the academic things…	
4.25	HE	Or attending classes?	
4.26	R4	I'm not sure about classes. I think that I'm not enjoying the specific time, specific place and specific lecturer. I like having the option of choosing my time, my place and my lecturer. Yes, I prefer it. I think at this stage of my life I prefer to be more flexible and learn something when I need and when I want.	TP, LE, UA, CO, NE
4.27	HE	Do you feel any positive effects when you take these gamified learning courses? Are you more motivated or engaged or creative?	
4.28	R4	I can't say I'm I creative. There's not much creativity in this kind of learning that I have experience in. I can't speak for all of the education or all of the platforms, but what I experience is not very creative. It's just something that you should do and make it less painful sometimes. So you can see the progress, you can see you have done something. I physically feel that I gain some progress. But sometimes I reckon for some courses it is more exciting to do that this way.	GE, EN , EM, MO, PR, CR, LE, SCC, EG
4.29	HE	How do you personally experience the game before e-learning adventure? You learn faster? Better? Do you use whatever you have learned in your daily work?	
4.30	R4	I think that I learn them quicker. And I can cover more subjects because the courses are shorter. I don't need to go through a ten months course to finish a certificate. I can do that faster and the time is actually better managed.	PR, CR
4.31	R4	But what I have noticed is that as much as I learn faster, it seems that I forget faster as well because I'm not repeating that course so often. In our organization I reckon they recognized that, so we are repeating some of the courses that we have compulsory. For	PR, CR, LE

		example I've done a course last year and I finished that, and there is a repeated one again. So this year I should finish that again.	
4.32	R4	And if it is exactly the same like the previous year, I feel less motivated. They try to make it with little bit of changing of the subject examples, or they do something in order to make it more appealing, I can say.	EM, MO, EG
4.33	HE	So how much as a percentage do you feel you use of what you've learned in your daily work?	
4.34	R4	Some subjects that we use every day, we practice them every day and I make a note of the important parts of that, usually in my notebook with pen and paper. Sometimes I actually copy and paste parts of the training and put it in somewhere so I can refer to that. It depends really on the course. Sometimes I just do a course to do a course, to finish a course.	
4.35	HE	Yes, true. Have you experienced any negative effects when you engage in gamified learning? Like you feel lonely or stressed, pressured, bored?	
4.36	R4	Yes, I can say bored. Yes, sometimes because you started doing a course and it's all by yourself, and you can't ask any questions or you are not at the presence of the lecturer, or you can't hear the other people's opinion, or if you have any questions there is no person to answer that at that time so we should send an email to someone. Sometimes it's not very pleasant. I could say that sometime I miss the classroom and the vibe of the presence of a lecturer.	UA
4.37	HE	So you feel lonely maybe?	
4.38	R4	Yes and no, because of the pandemic. If it was before this pandemic, I would say yes, definitely lonely. But I reckon during the two years of the pandemic and working from home or being at Home Office, I kind got used to being by myself. Yes, maybe sometimes I miss other people's presence.	CO, NE
4.39	HE	Have you felt that you're under pressure or stress because of the time limit, or because you might be compared with other employees or any kind of these feelings? Or you have never actually felt that?	
4.40	R4	I don't think, or at least I'm not aware of it, that they are comparing employees in our organization. But there are some compulsory cases and some compulsory courses and sometimes when you see the list of them and how many you should do, you just get nervous because "Oh my God, I'm so behind", I should do this and I should do this while I'm working full time, and I don't have enough time for training or for this education. Yes, sometimes I feel stressed.	
4.41	HE	The last two questions. If there is anything you could change about a gamified e-learning platform, what would that be?	
4.42	R4	I can say I still like this kind of interactions, but I'd prefer for example if I was doing that at the same time with other colleagues, at the same place. For specific painful courses that we are experiencing together, finishing the course or having a break in	LE

		the middle and having a chance to communicate with each other while we are using the platform would be better. So maybe a combination of the old way, ancient way of classes with this gamification platform would be nice.	
4.43	HE	Last question, you've probably answered it already - any comment, idea, suggestion?	
4.44	R4	No, I reckon in general I'm positive to that, but I can't do this kind of courses or learning, for example, for five hours a day. I can do that in a short time and I reckon it's more suitable for the vocational education. So when you're doing something for your career and it's an hour or so, it's OK. But I can't imagine doing this kind of courses for getting a Master. It seems too much. I haven't tried that, but I think it's too much for me.	LE
4.45	HE	Very good. Thank you so much for your time.	
4.46	R4	My pleasure. Thank you.	
4.47	HE	Have a good day and goodbye.	
4.48	SE	Good luck. Thank you. Bye bye.	

Appendix F: Respondent 5

Line	Speaker	Transcribed Text	Factor
5.1	HE	Hello.	
5.2	R5	Hello.	
5.3	HE	Thank you so much for having me today and giving me your time. Just for the sake of this interview, I would like to ask if you're OK. So this interview is going to be anonymous, but I would like to know your position and the name of your organization. We are not going to use any of this knowledge anywhere any we are not going to publish it [The name of the respondent]. It's just for the study purpose.	
5.4	R5	OK. So, I'm working as a senior consultant project manager in Amaris Consulting.	AG, SE
5.5	HE	Very good, thank you so much.	
5.6	HE	Just to be a little bit more clear, I know you have a master degree in computer science, but what is your IT knowledge? Is it good? Very good?	AG, SE
5.7	R5	IT knowledge in terms of if I want to apply it on the project like programming, or some technical background? In my daily working life I don't apply them, and instead I manage the IT projects. But this in terms of more functional, not technical stuff.	AG, SE
5.8	R5	So I'm not that much technical as an IT-IT, but I'm able and I'm capable to manage the IT projects, even though they are technical.	AG, SE
5.9	HE	As we discussed, this is about gamified e-learning. What are the reasons that you took those courses? Is it because it has been expected from your managers or you took it because of you, or were they giving you some benefits, or what are the reasons?	
5.10	R5	Actually it depends. I'm taking different courses, like interpersonal to develop my interpersonal skills, or soft skills, and then some of them I can just say are technical in terms of developing my project management skill. Those I can divide in two categories. Some of them I'm taking for the sake of my career and to develop my soft skills, like for example if I would like to know how to manage the stakeholders in my project. This is something I'm really interested to learn because on a daily basis of my work I should deal with different kinds of stakeholders, and then with different personalities for sure. So I would like to develop this because it really helps me to develop my career.	VO, EM, MO, EG
5.11	R5	But on the other hand, there are some courses that depend on the client that we are working with. For example, one client uses different methods for managing projects. We have different methodologies to develop the project. Today the client would like to apply this method on one project, tomorrow it can be something different. So I would like to learn.	VO

5.12	R5	Recently the client asked the organization to develop a learning path for ourselves based on their suggestion to do these courses. So as I said before, I can divide it into two categories - some I'm choosing to learn, the others, well I don't like to use the word "force" but we are obliged to do these courses.	EM, MO, EG
5.13	HE	Can I say it's mandatory?	
5.14	R5	Yes, it's mandatory. Yes, thanks	
5.15	HE	Do you think, when you take these courses, are they really important? Or are they just for you to see? Do you feel they are productive?	
5.16	R5	The limitations and durations of the courses within the organization's learning platform are such that you cannot just learn the things all in detail, to be professional, like for example on those methodologies they can consider.	PR, CR, LE, UA, GA, CO
5.17	R5	In my case I had to buy a book, I had to just do more hours. I just paid for myself to understand and get deep knowledge, because if I'm the one who should apply this methodology to manage the project, going through the learning platform in my organization wasn't enough.	PR, CR, LE, UA, GA, CO
5.18	HE	Do you feel you're challenged when you're taking these courses?	
5.19	R5	Actually yes, I feel a bit stressed sometimes. There are some reasons. I'm not going to compare myself with the colleagues, but I can just see that sometimes they are passing them and then share it on their profiles that they passed this course, and then I still don't have time to do it because maybe I'm overloaded with the activity of managing my project. It's really time consuming. Then I really cannot manage my time to succeed in the course.	TP, SCC, CO, NE
5.20	R5	Sometimes I had to spend 5-6 hours during the weekend to pass these courses because I wanted to show that I pass them. For sure it's also for my knowledge. But when you're obliged, when it is mandatory, you have to show that you've just done it. So it's really stressful for me. But if I have to do it, I will do it. Also I'm satisfied that I'm doing it, but it's really stressful for me - for those that I'm obliged to do. For the ones I'm choosing I can just do them when I'm relaxed, when I have time, I can manage myself.	EM, MO, SCC, EG
5.21	HE	Thank you, that was a very good point, because the purpose of this study is to get to know - when it's mandatory or volunteer, what kind of feeling it will give you. So it was very nice you've mentioned it.	
5.22	R5	And then if I can add, I don't know if I can mention the name of the course?	
5.23	HE	It's up to you.	
5.24	R5	For example, the organization asks us to put more hands on the Scrum Master. In our platform I can find it for two or three hours, but after I registered for the course I then found a book for 400 pages. This you cannot just pass in a two hours course, within the organization platform that they provided. So I was thinking that if I had time, I would	

		just have to take some days off from work in order to pass this certificate or to be more knowledgeable in this course. So when I'm talking about these stressful moments, I'm talking about this kind of stuff.	
5.25	HE	So do you feel like you're playing a game or you're not that engaged with the gamified system - it's more a structure and the study?	
5.26	R5	Yes I believe so, because imagine that I go to the course, I finish it and then at the end the knowledge I just took from the course is not sufficient, I couldn't, for example, pass the quizzes. I don't know if I understood the question?	
5.27	HE	Yes, that's the thing. So did you have any time limits to take those courses? For example that you had to finish within a month? Or it was like up to you?	
5.28	R5	Before the organization asked us to share a certain list of the courses, we didn't have any time box to pass these courses or to take them. So I was doing it when I when I was free, I didn't have that much to manage on a daily basis. I would do them even in the weekends, because I would like to. But there wasn't any strict timeline, I could just spend 1h, sitting on the couch and taking this course. But now that they are talking about the KPI of the learning path, I feel it is mandatory and I believe that at least by the end of the year we have to pass a certain number of the courses. They didn't say it, but they are talking about the KPIs so I believe that by the end of this year we have to.	TP, UA
5.29	HE	Do you prefer the traditional way of learning, like going to school and taking exams and all of these things? Or this modern way?	
5.30	R5	I like e-learning because you can manage your own time, you're not obliged to go to school in the certain time. So I like e-learning because it gives me more possibility to first of all manage my time, and then maybe if I don't understand something within the platform or the course, I can just look for more resources. I feel it's a modern way of learning. Sometimes it helps, but having a teacher in front of you and then asking questions real time can be useful. But these days we are used to rely on the e-learning courses. I like it.	LE, UA, CO, NE
5.31	HE	Do you feel you are more motivated or more engaged while you are taking the courses? Maybe you're more creative?	
5.32	R5	Creative in terms of what? When I'm taking a course or when I I'm choosing the course?	
5.33	HE	No, do you feel any positive effect when you're taking these courses?	
5.34	R5	Ah yes, for sure. I can say that for all the courses that I'm taking, there is a positive impact.	PR, CR, LE
5.35	R5	But my only concern is that I'm taking sometimes a lot of sequences of the courses, and I cannot be specialized in one or two of them. When the organization makes a list of for example 10 courses that you have to follow, it's 5 minutes for all but you cannot be specialized in all.	GE, PR, CR, EN
5.36	R5	To me some soft skill course is OK because you can learn it - you just pass the course. But for my organization can I rely on the e-learning platform? Having a 2 hours course on the deep methodologies of the	GE, EN

		project management can help, can give me an idea what's going on, but I cannot be specialized afterwards. I cannot apply it anywhere.	
5.37	HE	So can I say that you learn things faster and better?	
5.38	R5	Faster yes, but better? So-so. It depends. It depends on what type of course you are taking.	PR, CR, LE
5.39	HE	Did you use what you've learned in your daily work? If so, what percentage?	
5.40	R5	Yes, sure. For example, I discussed earlier this stakeholder relationship management - this I applied. Or how to deal with difficult people in the project, because to me the project itself is always easy but managing people is really challenging, at least in my case.	PR, CR
5.41	R5	So I'm taking this course for soft skills and I really can apply it. If I have someone in my project that I cannot deal with easily, I pass this course and so I can remember - what can be the good way to manage or deal with the person?	PR, CR
5.42	R5	So yes, for the soft skills and for some of the technical courses regarding project management, I applied things on the daily basis to be honest.	
5.43	HE	Do you still remember what you have learned?	
5.44	R5	Yes, kind of. Not all because there are many, but for those I'm really interested in - yes. I cannot say 100%, but the majority - yes, I can remember because I practice it. Even I try to practice some of them in my daily life, in my private life as well. When you are living with someone and then something can happen, you can just manage the situation, the critical situation. Maybe your partner or whoever we are living with has a different personality than yours. Then sometimes I can apply those skills I learned to my life as well. Sometimes, not always.	PR, CR
5.45	HE	You talked about feeling stressed sometimes. What other negative effects it might give you? You said you might be under pressure and stress. Have you got bored or lonely? Or any negative effects before, while and after taking these courses?	
5.46	R5	Apart from stress, which is related to my time management, yes sometimes I feel bored. To be honest with some of the courses I have to take them but I don't feel really they are useful. Why do I have to take it? I don't know the reason behind. They just share with us that you have to take it and I don't see a point. Sometimes I go through my phone and then I'm just trying to pass the videos. Some of them I don't really pay attention.	LE
5.47	R5	Then I can just go through the quiz and I know the answers so why did I have to take this course? Or I don't know it at all, I don't understand what's going on with this course. So yes, I'm not really paying attention for some of them.	
5.48	HE	If you could change anything about gamification in e-learning platform, what would that be?	
5.49	R5	OK, difficult, challenging question. I don't know. Maybe you can guide me a bit?	

5.50	HE	For example, to design it better, to get you more engaged and gainful, or remove the time pressure and time limits, or get you more engaged with what you're working on and learning, so that what you learn you will be able to use in your daily work, or make it more accessible. Anything you feel that this platform could be better if it's been in this way?	
5.51	R5	Sometimes you cannot pass the course, even though you are using the things in your daily work always. So I lose my confidence sometimes. So how am I doing? How? I'm just applying all this but I cannot pass the course. If the organization knows that you are doing it on your daily basis, why do you have to pass the course? For me seeing the scores there really makes you anxious.	
5.52	HE	Thank you so much for your time, it was great.	
5.53	R5	OK, useful to you?	
5.54	HE	It was perfectly useful and you just opened some other aspects in our mind. Thank you so much for it.	
5.55	R5	No problem, no problem. Thank you. Bye bye bye.	
5.56	HE	Bye bye.	

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