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The relationship between the employees' perception of gamification and their intrinsic motivation at work: a systematic literature review

Marina Fragkiskou

Dissertation

presented as partial requirement for obtaining the Master's degree in Information Management, with a specialization in Information Systems and Technologies Management

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Supervisor: Dr. Celso Augusto de Matos

Co-supervisor: Dr. Anton Manfreda

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STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledge the Rules of Conduct and Code of Honor from the NOVA Information Management School.

[Marina Fragkiskou]

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ABSTRACT

In the era of a technologically immersed workforce, gamification has emerged as a compelling strategy employed by organizations to enhance employee engagement and motivation. This study conducts a systematic literature review to unravel the intricate relationship between employees' perceptions of gamified enterprise systems and their intrinsic motivation at work. It sheds light on the critical aspects of enjoyment, recognition, informativeness, and control within the workplace gamification landscape. After analyzing 18 selected studies from 2016 to 2023, the review finds that when employees perceive gamification as enjoyable and recognizing of their contributions, their intrinsic motivation is positively affected. Furthermore, the greater the gamification systems are seen as valuable tools for skill acquisition and personal development, the higher the likelihood that they will contribute to higher intrinsic motivation. On the contrary, gamification strategies emphasizing control or external regulation tend to be detrimental for intrinsic motivation. Based on these findings, the study suggests four key propositions, which can serve as a foundation for future empirical research. Moreover, these propositions offer valuable insights for organizations seeking to optimize existing gamification strategies or design new ones to increase employee engagement, job satisfaction, and overall performance in the workplace. The work finishes with a discussion of the main findings and conclusions for the literature as well as managerial practices.

KEYWORDS

Workplace Gamification; Perceived Recognition; Perceived Enjoyment; Perceived as Informational; Perceived as Controlling; Intrinsic Motivation

Sustainable Development Goals (SGD):

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LIST OF ABBREVIATIONS AND ACRONYMS

AE	Aesthetic Experience
CET	Cognitive Evaluation Theory
ECS	Enterprise Collaboration System
ERP	Enterprise Resource Planning
FE	Flow Experience
FLE	Front-line Employee
FT	Flow Theory
HCI	Human-Computer Interaction
HRMS	Human Resources Management System
IT	Information Technology
IS	Information System
KMS	Knowledge Management System
MDA	Mechanics, Dynamics, and Aesthetics
MDE	Mechanics, Dynamics, and Emotions
OIT	Organismic Integration Theory
PMS	Performance Management System
PSS	Perceived Supervision Support
SGD	Sustainable Gamification Design
SDT	Self-Determination Theory
UX	User Experience
WMS	Warehouse Management System

1. INTRODUCTION

In recent years, as the generation that has grown up with technology and video games increasingly dominates the workforce, gamification has gained significant academic interest in the workplace sector (Cardador et al., 2017). This had led to the emergence of gamification as a notable strategy used by numerous organizations to enhance employee engagement and motivation. Gamification is defined as the act of using information technology (IT) for the application of game-like elements such as points, levels and leaderboards into areas or activities, which are not considered to be games with the main purpose to increase the user motivation, engagement, and participation (Bizzi, 2023; Kalafatoğlu, 2020; Miciuła & Miluniec, 2019). This act can be useful in many different contexts like education, i.e., through the application of gamifying activities such as Kahoot! or Educational Escape Rooms, marketing, healthcare, transportation and of course business (Encarnação et al., 2021).

The list of companies incorporating gamification elements into their operations and systems continues to expand steadily, including prominent names such as Cisco, Nike, Deloitte, Samsung, Siemens, and Google (Oxarart & Houghton, 2021). In the context of implementing gamification in the workplace, which is also known as enterprise, work or internal gamification, the overarching objective is to stimulate and involve staff in supporting an organization's business goals, such as enhancing service and business processes, fostering talent development, generating innovative ideas, and promoting productive collaboration practices (Ruhi, 2015).

Over the last decade there has been considerable research exploring the actual impact of gamification on employees' motivation at work (Buvaneswari & Swetha, 2019; Encarnação et al., 2021; Oxarart & Houghton, 2021). In general, research suggests that incorporating gamification in the workplace can result in a positive effect on employees' motivation for work (Buvaneswari & Swetha, 2019).

The Self-Determination Theory (SDT) of Deci and Ryan (2000) distinguishes motivation in two main forms based on the reason or goal that leads to a particular action: the ***intrinsic motivation***, which refers to engaging in an activity merely because it is inherently satisfying or pleasurable, and the *extrinsic motivation,* which refers to engaging in an activity because it results in a distinct, separate outcome such as rewards or feedback (Mekler et al., 2013; Ryan & Deci, 2000a). Considering that the main aim of gamification is to influence user behavior by leveraging user motivation through incentives typically found in games, and that the desired user behaviors are believed to arise from experiences that are inherently motivating (Hamari et al., 2014; Nicholson, 2012), we can infer that gamification primarily aims to impact and, in particular, enhance intrinsic motivation.

Nevertheless, in practical applications, gamification has been marked by a focus on integrating game-like reward and feedback mechanisms (Hamari et al., 2014; Seaborn & Fels, 2015), as given in the abovementioned concept's definition itself. The offer of these extrinsic incentives, such as rewards or feedback, has been shown to decrease the level of intrinsic motivation that a person initially had for an activity (Deci et al., 1999). This could imply that the reward systems among other extrinsic motivators used in most gamified systems may have a detrimental impact on intrinsic motivation, rather than augmenting it (Dahlstrøm, 2017). Therefore, as intrinsic motivation is linked to an individual's enhanced psychological well-being, its impairment has a detrimental impact on the level

of the effort that people put forth into a given task, which results in their subpar performance, creativity and learning outcomes.

Certainly, there remains a substantial ongoing debate regarding the kind of impact that gamification and its various elements have on user intrinsic motivation with the existing literature failing to establish a consensus on the matter. Some researchers argue that it has no effect at all (Mekler et al., 2013), while others suggest that it can have positive (Buvaneswari & Swetha, 2019) or negative effects (Meske et al., 2017) on intrinsic motivation. Yet, it is suggested that gamification can be a strong motivator and a highly effective tool, helping to stimulate employees' curiosity and increasing their desire to explore and learn, based on the majority of literature, including findings from some systematic literature reviews on the topic (Buvaneswari & Swetha, 2019; Miciua & Miluniec, 2019).

However, a crucial aspect that, despite being explored in the literature (Meder et al., 2013; Vaishnavi Prasad et al., 2019), still lacks clarity is how employees perceive the concept itself and its elements. Perception pertains to how the individuals understand, interpret, and experience the gamification process (Ebina Justin & Manu Melwin, 2022). Some studies conclude that the effect of external events on intrinsic motivation depends on the individual's perception of these events, i.e., if they are informational or controlling (Deci et al., 1999). In the same way, enterprise gamification and its elements might impact in different ways the employees' intrinsic motivation, based on how they perceive them. This perception is highly dependent on the way the gamification process is designed and implemented. A bad design and application of an enterprise gamification solution and its elements (i.e., they do not reflect the nature of the employees' tasks, or it is limited in capturing the quality) has the potential to harm the social and psychological health of the employees in the workplace (Shahri et al., 2014). This issue is in line with the estimation that approximately 80% of gamification initiatives fail to achieve their intended business goals due to poor game design (Van der Heijden et al., 2020).

Therefore, more research is necessary to comprehend employees' perspectives on gamification in the workplace and its impact on their intrinsic motivation. Such understanding will enable to inform and better design enterprise gamification systems and consequently enhance their performance. Specific gamification strategies and techniques can be tailored to fit the employees' receptiveness to and perception of gamification at their workplace, pursuing its effective implementation. These insights will prove to be valuable not only to organizations that are currently implementing gamification techniques for motivating and engaging their staff, by assisting them in refining and optimizing their approach, but also to organizations that are contemplating the use of gamification.

Hence, the main goal of the present work is to enhance our understanding of gamification studies in the workplace, particularly focusing on the gamified systems employed to engage and motivate employees. Specifically, it seeks to explore *the relationship between employees'* experiences *and perceptions of gamified systems and processes, and their intrinsic motivation during their work-related tasks*, drawing from existing research in this field. A systematic literature review is adopted as a methodological approach to provide a clearer understanding and of the proposed relationships and to achieve the research aims. To the best of my knowledge, such a review has not been conducted up to the present day. However, within this expansive scope of perception, my research will concentrate on four distinct dimensions of how employees view gamified systems: enjoyable, recognizing, informational, and controlling.

The study is organized into six sections, each serving a specific purpose in the research. In the Introduction, the study sets the stage for the reader by providing an overview of the research and its significance. The context and motivation for the study is also established. The Theoretical Framework delves into the theoretical underpinnings, including the concept of gamification, its different models and frameworks, as well as its interdisciplinary nature. The chapter also discusses some common game design elements, and it addresses the perception of a gamified system and intrinsic motivation, which are crucial elements in the study's context. In the Methodology chapter the research methodology is outlined, including data collection methods and criteria for selecting studies, as well as the data analysis techniques employed. In Results and Discussion, the findings of the study are presented and discussed. The chapter Implications discusses the theoretical and practical implications of the study's findings, shedding light on the broader significance of the findings. This chapter also addresses the study's limitations and suggests avenues for future research. Finally, the study is concluded in the Conclusion summarizing the key findings and their implications and offering a concise synthesis of the research.

2. THEORETICAL FRAMEWORK

2.1. GAMIFICATION

While there is no consensus on the exact time when the term "gamification" was first introduced, many argue that it started to gain prominence in late 2010s (Bruke, 2014; Walz & Deterding, 2014). As aforementioned, gamification is defined as game elements that are "*embedded into activities that are not themselves games*" (Cardador et al., 2017). While this definition has a wide scope, it serves to distinguish the concept from other related ones that are frequently confused with it, such as serious games (Oxarart & Houghton, 2021). Serious games are characterized by their explicit and well-planed educational objectives, and they are not primarily designed for entertainment or enjoyment purposes (Broer, 2017). Gamification, in contrast, operates under the assumption that incorporating design game elements can inject fun and playfulness into existing information systems (IS) to make mundane tasks more engaging and enjoyable for individuals (Mollick & Rothbard, 2014; Suh et al., 2017). For instance, points, badges, and leaderboards are some of the most commonly used and easily understood gamification elements (Oxarart & Houghton, 2021). Another distinction in the definitions of these two concepts noted by Deterding et al. (2011) is that while both involve integrating non-game contexts (e.g., training) with games, serious games involve the utilization of entire games, rather than just elements borrowed from games, as is the case with gamification (Deterding et al., 2011).

2.1.1. Work Gamification

Work gamification, at its essence, uses the metaphors, language, and features of digital and computer games to frame work (Cardador et al., 2017). Building upon the definition of gamification as "the application of lessons from the gaming domain to change behaviors in non-game situations", these situations can encompass work activities, and gamified experiences can target either business processes (e.g., customer acquisition) or outcomes (e.g., improving employee sales) (Robson et al., 2015). These experiences can engage participants both external (e.g., collaborating with customers) and internal (e.g., enhancing employee satisfaction) to the organization (Robson et al., 2015). The latter aspect is the primary focus of the current paper.

Cardador et al. (2017) suggest that we can view work gamification as a business strategy that leverages technology to enhance the enjoyment of tasks related to work and provide immediate access to performance with the goal of maintaining individuals' intrinsic motivation (Cardador et al., 2017; B. I. J. M. Van der Heijden et al., 2020). Specifically, the authors put forth a theory suggesting that work gamification operates through two main routes: the affective pathway and the informational pathway. The affective pathway advocates that work gamification enhances task enjoyment by making them more playful, while the informational pathway advocates that work gamification offers employees access to performance information in real-time, promoting motivation and learning through visibility and comparability (Cardador et al., 2017; Gerdenitsch et al., 2020).

Many large companies have adopted gamification in their business processes, as evidenced in the literature. As first example, Deloitte, one of the world's largest multinational professional services networks, encountered a lack of employee engagement in its corporate training activities. To address this, they gamified their executive training program, known as Deloitte Leadership Academy. They

introduced game mechanisms like points, badges to reward lesson completion and achievements, and leaderboards, that were weekly reset to ensure equal competition for executives with varying time availability. The gamified training approach motivated executives to finish lessons and inspired them to begin new ones. As a result, Deloitte witnessed a significant 37% increase in user engagement on the portal and higher completion rates for their corporate training program (Meister, 2013).

Another great example of successful gamification is Microsoft's Language Quality Game. Microsoft, a software company that distributes globally, needed to improve translation accuracy of the text in the software across languages. Thus, they created a gamified platform where employees earned points for finding translation errors and competed on leaderboards. This gamified approach motivated employees, even for tasks beyond their usual responsibilities. In this instance, gamification fostered intrinsic motivation among employees, leading to enhanced productivity and team cohesion (Gryaznova, 2019).

Despite the fact that many organizations have used gamification for employee engagement with success, this wasn’t always the case. For instance, Omnicare, a pharmacy service provider, attempted to address long waiting times at their helpdesk by introducing leaderboards. They aimed to boost productivity and offered cash bonuses to employees who worked faster. Unfortunately, the outcome was disastrous, leading to high employee turnover and dissatisfaction among both customers and employees. The failure can be attributed to managers not understanding their employees' true motivations. They focused on existing motivation and short-term rewards rather than intrinsic motivation, and the gamification system was poorly designed (Gryaznova, 2019).

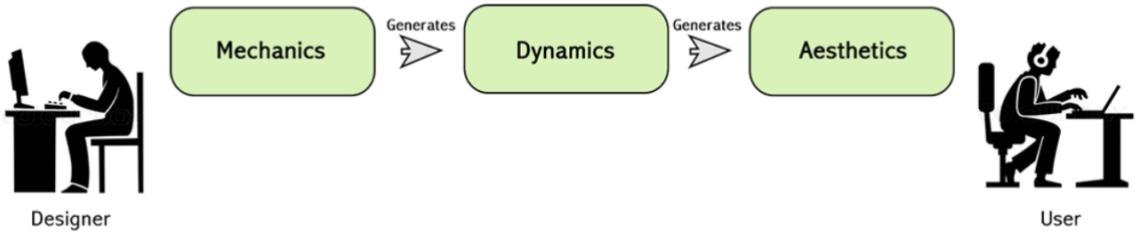
Researchers argue that the main challenges in implementing gamification for employee motivation stem from not understanding players' interests, the risks of improper implementation, and the potential for coercive tactics (Gryaznova, 2019). To navigate these challenges, it's essential to begin by comprehending the organization's industry, its organizational culture (Kumar, 2013), and then defining clear business objectives and the purpose behind engaging individuals (Gryaznova, 2019). Equally important is understanding the players and their motivations within the company. These initial steps are key to designing effective gamification strategies for successful employee engagement (Gryaznova, 2019).

2.1.2. Gamification models and frameworks

When it comes to implementing gamification and shaping the definition and design of gamified systems, both researchers and practitioners have relied on established theoretical game design models and framework. One well known and widely used framework is the mechanics, dynamics, and aesthetics (MDA) framework (Hunicke et al., 2004). In this framework, designers create functions (mechanics, e.g., rules), which, in turn, give rise to various user interactions (dynamics, e.g., competition), ultimately evoking emotions and experiences for the user (aesthetics, e.g., creativity). The MDA framework, as shown in Figure 1, aids in visualizing the relationship between the designer and the user, typically represented as a one-way flow from the designer to the user (Ruhi, 2015).

Figure 1: The MDA framework and its one-way relationship between designer and user

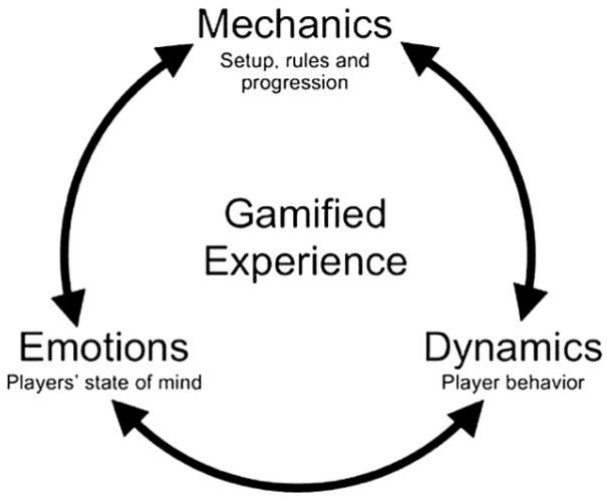
Source: (Landsell & Hägglund, 2016)



Over time, the MDA framework has been adapted to fit different context and given rise to new versions like the Mechanics, Dynamics, and Emotions (MDE) framework. In MDE, "aesthetics" is replaced with "emotions" to better describe user experience. Robson et al. (2015) argue that aesthetics relate to desirable emotional responses in players (e.g., fantasy), which isn't entirely fitting for gamification as it's not a game. Thus, they suggest that "emotions" better aligns with engagement outcomes for businesses from employees (Robson et al., 2015). In addition, the authors stress that successful gamification results from the interaction between mechanics, dynamics, and emotions as depicted in Figure 2. They suggest that a player's emotions and the dynamics of their interactions with the system should influence the mechanics that shape the overall gameplay, in contrast to the one-way relationship in the MDA framework.

Figure 2: The MDE framework and the interaction between mechanics, dynamics and emotions

Source:(Robson et al., 2015)



Lastly, the Sustainable Gamification Design (SGD) framework, created by Marigo Raftopoulos in 2014, was tailored for enterprise gamification design. It focuses on value creation and destruction risks, covering seven key themes: engagement, analytics, learning & collaboration, behavior shaping,

empowerment, transformation, and fun (Raftopoulos, 2014). This human-centered framework also prioritizes ethical considerations aiming for responsible and sustainable outcomes. According to the author taking these factors into account, the framework will "*potentially produce more responsible and sustainable results*" (Raftopoulos, 2014) .

2.1.3. The interdisciplinary nature of gamification

As evident from the previous examples and those to be presented in the forthcoming systematic analysis review, gamification is consistently examined within the realm of technology and digital media. This entails either the gamification of digital media themselves (e.g., a corporate e-learning course (Loughrey & O'broin, 2019)) or their use to gamify analog activities (e.g., knowledge sharing practices(Silic & Back, 2017)).

Although the definition we examined earlier does not demand the use of technology or digital media, but just a "non-game context" (Cardador et al., 2017), there are several reasons why these aspects are frequently emphasized. To begin with, computers make tracking user behavior and rule enforcement much easier saving a lot of manual record-keeping, which would be required for even for basic gamification approaches if done by humans (Broer, 2017). In addition to this, computers are generally impartial, which is important because non-game contexts that are usually considered to be gamified, are not well-suited for human judge (Broer, 2017). When considering gamified fitness, for example, it wouldn't be practical to have a human observer present every time an individual exercises Another reason could be that the most frequently used gamification elements (e.g., badges) have their origins in digital games, implying that gamification often involves transferring elements from digital games (rather than traditional games) into non-game contexts, or to be more precise, into digital systems (Broer, 2017).

It is also important to note that gamification is closely tied with the domain of user experience (UX) defined in ISO standard 9241-110: 2010 as involving "*a person's perceptions and responses that result from the use and/or anticipated use of a product/system or service*" (*International Organization for Standardization*, 2019). Indeed, this is evident in the primary objectives of gamification, that are to engage and motivate users, making their experience feel like a game. Now, when dealing with digital systems, UX is considered a component of the Human-Computer Interaction (HCI) field (Law et al., 2009). As such, UX – and with it gamification – inherently adopts a multidisciplinary approach, incorporating insights from computer science, social science, and behavioral sciences (Carroll, 2006).

However, while understanding technology and digital media is important in grasping the concept of gamification, its essence lies in how users experience it and the motivation it creates. Motivation typically falls within the realm of psychology, but the increasing focus on users in fields like HCI and IS underscores the need for interdisciplinary collaboration (Broer, 2017). Thus, for a practitioner designing a gamified system, it's crucial to comprehend how their design choices influence the user's experience and motivation.

2.2. GAME DESIGN ELEMENTS

In general, anything that can be used to create and design a game is commonly known as “game element”. Therefore, given that the primary objective of gamification is to transform non-game experiences into game-like ones, they also serve as the fundamental blocks for the development of gamification applications and systems (Deterding et al., 2011; Werbach & Hunter, 2015).

Several authors have provided lists of frequently encountered game design elements within the domain of games and gamification (Kapp, 2012; Reeves & Read, 2019; Robinson & Belotti, 2013; Werbach & Hunter, 2012, 2015; Zichermann & Cunningham, 2011). For instance, Reeves and Read (2019) in their work presented the “Ten Ingredients of Great Games” covering among others, self-representation via avatars, narrative context, feedback, competition and team dynamics (Reeves & Read, 2019). While in 2015, Werbach and Hunter outlined 15 essential components for gamified applications, including avatars, badges, leaderboards, points, and teams. Particularly, they placed special emphasis on the “PBL triad”, highlighting the interplay of points, badges, and leaderboards as a defining characteristic of gamified applications (Werbach & Hunter, 2012). While there are similarities, and overlaps in these lists, there are mostly different. This shows that the decision on which building blocks to define as characteristic game design elements is often subjective and somewhat arbitrary (Sailer et al., 2017). Every gamified application is unique, requiring individual assessment within its specific context to decide the most suitable game elements for that particular situation. However, the core value of an effective gamified system heavily depends on this selection.

According to Werbach and Hunter (2012) the game elements can be categorized based on their abstraction level as: *dynamics, mechanics,* or *components* (Werbach & Hunter, 2012). *Dynamics* represent the “big-picture aspects of the gamified system”(Werbach & Hunter, 2015) and are closely linked to the business objectives; it is the most abstract among the three categories(Alcivar & Abad, 2016). In essence, game dynamics establish the patterns of how the game and its players will evolve over time. Among the most popular game dynamics are narrative (involving a captivating storyline) and progression (Kee Man, 2021). *Mechanics* are the basic processes that keep the game moving and bring the dynamics to life. They are what motivate players to get involved (Alcivar & Abad, 2016; Liu et al., 2017). Common game mechanics include competition, challenges, and the win-state, all of which contribute to the game's appeal and player engagement (Kee Man, 2021). Finally, the least abstract category, *components*, refers to the tangible elements serving as building blocks for game mechanics and dynamics to function effectively (Alcivar & Abad, 2016). These include common elements like points, badges, and leaderboards. They can be viewed as materials or tools carefully chosen to “run” specific mechanics or dynamics (Kee Man, 2021).

Some of the elements that have been identified as frequently used in gamification systems implemented in workplace settings are also briefly described in this section. The focus on this particular selection of elements is based on their prevalence within the literature reviewed for the present research.

Points, also known as experience points, domination points, scores etc.*,* are elements that fall under the category of components*.* They serve as a numerical representation of the progress or the in-game behavior of a user (Stanculescu et al., 2016). In addition, they are typically rewarded for the successful

completion of specific activities within the gamified environment, offering in that way continuous and immediate feedback (Sailer et al., 2013, 2017). Point is the most basic element present in nearly all gamified applications (Dichev & Dicheva, 2017). This centrality is due to the fact that many other elements are built upon it (e.g., rewards, levels, badges).

Oftentimes, when a user accumulates a specific number of points, they are rewarded with *levels* (Oxarart & Houghton, 2021). Levels are also considered components within the classification of game elements, and they signify a hierarchy that grants the user new advantages as they progress within the environment (Toda et al., 2019). They drive the users' motivation by challenging them with tasks that are increasingly more difficult and to complete as they advance(Suh & Wagner, 2017).

Another illustration of a component is *badges*, also known as trophies, achievements etc. They can be defined as visual and easy-to-read representations summarizing a user's accomplishments (Stanculescu et al., 2016; Werbach & Hunter, 2012) and acknowledge a specific set of their actions (Toda et al., 2019). Obtaining a badge can be dependent either on earning a specific number of points or engaging in particular in-game activities (Werbach & Hunter, 2012). For instance, an employee who engages in a certain number of interactions with colleagues through the system could receive a "Socializer" badge, while contributing a certain number of times may result in the award of a "Contributor" badge. Similar to points, badges also provide feedback in the way that they indicate the players' performance. (S. Rigby & Ryan, 2011). In general, badges typically have no narrative meaning, can be beyond the normal required scope of a task or job and there is no obligation to collect them (Oxarart & Houghton, 2021; Sailer et al., 2017).

Leaderboards are components used in the gamified systems to introduce the social aspect to points and badges, which will probably be competitive (Suh & Wagner, 2017). They usually feature a ranking system that highlights the top performers within the gamified system. These rankings can be determined by factors such as progress, levels, points, or overall performance (Oxarart & Houghton, 2021). Moreover, they are visible to the participants, making it easier for them to compare their progress with others', which can trigger a sense of competitiveness (Alcivar & Abad, 2016; Stanculescu et al., 2016). *Competition* is an intrinsic concept classified under mechanics in the hierarchy of game elements. In its context, users face each other to pursue a common goal (Toda et al., 2019).

On the contrary, *teamwork*, also referred to as cooperation, collaboration, or team playing etc., represent the mechanic element where the users must collaborate and work together to achieve a common goal. It can be seen as the opposite of competition, even though both concepts can coexist and be used together (Toda et al., 2019). Cooperation can be fostered particularly by introducing the component of *teams* (Sailer et al., 2017), known also as groups etc.

Progression is also another prevalent dynamic element employed in gamification systems. It provides users guidance regarding their progress in the environment, allowing them to locate themselves and track their advancement (Toda et al., 2019). This is achieved through the use of a component known as *progress bar*, sometimes referred to as a performance bar or graph. A progress bar informs players about their own performance in comparison to their preceding performance in a game (Sailer et al., 2013). Thus, in contrast to the leaderboard, performance bar is not based on a social reference standard – assessing a player's performance relative to other players – but rather on an individual

reference standard. By graphically depicting a player's performance over a specific timeframe, it focuses on improvements (Sailer et al., 2017).

Avatars, also known as Artificial Intelligence (AI) personalities. Avatars are another example of elements categorized as components and they serve as visual representations of players within a gamification environment (Werbach & Hunter, 2012). Players have the freedom to select or even create their avatars (Kapp, 2012), which can range from simple pictograms to more complex three-dimensional representations (Sailer et al., 2017). Avatars allow the players to adopt ore create distinct identities, to uniquely identify themselves, providing them with significant meaning, and to become part of the game's community (Oxarart & Houghton, 2021; Sailer et al., 2017).

Feedback is probably the most significant mechanism used in the gamification systems and applications. It is basically provided to the users through the majority of the abovementioned components – points, badges, leaderboards, and progress bars – and informs the users "where they stand in relation to hitting their goals" (Kie & Nguyen, 2021). Users typically receive instant feedback in the form of for each activity they complete, allowing them to assess their decisions and enhance their learning through the gamified process (Alcivar & Abad, 2016). Notifications and points represent the most basic types of feedback. For instance, a simple "Great Job!" popping up is a common occurrence in various gaming environments. In gamification, providing instant feedback is crucial to keep players constantly aware that they are on the right track and to make them feel closely connected to their progress (Kie & Nguyen, 2021).

Challenges, known also as missions, goals, quests, etc., are powerful mechanics used in gamified systems to motivate users to take the desired actions and advance in their contributions or learning processes (Kanazawa, 2023). Facing a challenge requires users to apply their skills and knowledge, and in doing so, they often improve their abilities through this experience (Kim et al., 2015). Maintaining a balance between the level of challenge presented and a user's skills is suggested to be crucial for achieving an optimal user experience (Csikszentmihalyi, 1990). As users progress and acquire new skills, the difficulty level increases accordingly to provide a continuously engaging experience.

Narratives, often referred to as themes, and the *meaningful stories*, known also as storytelling and storylines, are also common dynamic elements frequently encountered in the gamified systems. The gamified application can be embedded in a narrative context, which adds significance to in-game activities and, and gives them meaning going beyond the sole objective of earning points and achievements (Kapp, 2012). Moreover, narrative offers a clear purpose that users can connect with and become part of, encouraging them to invest their time and effort in a meaningful cause or mission (Kie & Nguyen, 2021). Narratives and stories can vary widely in both complexity and substance; from simple, like a horse racing, to complex involving intricate worlds and histories, where participants interact and change the worlds in fantastic ways (Oxarart & Houghton, 2021). Thus, the main purpose of a narrative and a story is to convey information to through a chronological order of events and stories within the user experience, so take actions accordingly (Kie & Nguyen, 2021; Toda et al., 2019). This experience is shaped by the choices of actions that the players make (Toda et al., 2019).

Choices, often called freedom of choices, are an element that even though is frequently used in gamified systems, are seldom studied as a common gamification element (Rollings & Morris, 2000).

However, they are undeniably a vital part of games and gaming environments (Oxarart & Houghton, 2021). As noted by Rolling and Morris (2000), "a game is a series of interesting choices" (Rollings & Morris, 2000). In fact, the efficacy of many gamification elements the depend on this fundamental game element. Points, for example, serve as feedback for choices made (better choices leading to more points). Likewise, the creation and selection of avatars involve a series of choices made by the user (Oxarart & Houghton, 2021).

2.3. PERCEPTION OF A GAMIFIED SYSTEM

A formal definition for perception given by Jennifer M. and Gareth R. in their book Understanding and Managing Organizational Behavior (2021) is "*the process by which individuals select, organize, and interpret the input from their senses (e.g., vision, hearing etc.)*" (George & Jones, 2021). According to the authors, the perception can be broken down into three components: the perceiver; who attempts to interpret the incoming information, the target of perception; which is what the perceiver tries to interpret, and the situation; which provides the context for the perception process (George & Jones, 2021). If we apply this definition to the context of work gamification, we can identify the employee as the perceiver, the gamified system as the target of perception, and the workplace as the contextual setting. In other words, in this specific context, perception refers to the employees' experiences of a gamified system and processes at their workplace and how they comprehend and interpret these experiences (i.e., how fun, or useful it is) (Mulcahy et al., 2020; Sarangi & Shah, 2015; Tan et al., 2017).

Employees' perception can play a pivotal role in the effectiveness of any gamified experience, and it acts as a gateway to motivate behaviors in non-game contexts. If employees view a behavior or intervention in the gamified context as having an immediate positive impact or value, they are more likely to feel motivated to engage in the desired behavior (Tan et al., 2017). For instance, let's consider the feedback given to employees through a gamified process. If they perceive it as an opportunity for self-improvement, there is a higher probability that they will be motivated to actively participate in that process (Ebina Justin & Manu Melwin, 2022). However, it's important to emphasize that is that perception of feedback as beneficial that cultivates motivation, not the feedback itself (Tan et al., 2017). On the other hand, a different employee might perceive such feedback as coercive or manipulative, which can result in skepticism about the system and ultimately harm their motivation (Ebina Justin & Manu Melwin, 2022). Hence, it is important to recognize that the mere inclusion of game design elements does not inherently generate motivation or influence behavior. Nevertheless, these elements do effectively capture and center user attention by making the value of actions more readily perceptible to users (Tan et al., 2017).

This statement aligns with the idea proposed by some authors that the impact of an event or intervention is contingent upon an individual's perception of this event (Deci et al., 1999). Therefore, employees' perception of a gamified system and its components emerges as an influential factor of system use and should particularly be considered when designing modern multipurposed systems like gamified ISs (Köse et al., 2019).

This relationship can be better understood using Affordance Theory, which emphasizes that a technology's capabilities depend on how users interact with it in specific contexts (Treem & Leonardi, 2012). Users can employ the same technology in different ways according to their individual needs

and preferences (Gibbs et al., 2013). Thus, an affordance represents the combination of a technology's actual and perceived properties in particular situations (Norman, 1988). For instance, some employees might see leaderboards in gamification as a means of competitions, whereas others may consider them as tools for tracking progress. Therefore, the key takeaway is that understanding how users perceive and use game elements is crucial for explaining the success of gamification (Deterding et al., 2011; Hamari et al., 2014).

Hence, this research places significant emphasis on addressing this aspect, which has remained relatively unclear in the existing literature. A deeper understanding of this aspect can provide valuable insights to enhance the design of gamified systems, ensuring they evoke the desired perceptions in employees and, in turn, motivate them to actively participate and become more engaged in their work. However, the research will have a specific focus, concentrating on four key dimensions of employees' perception of gamified systems, which will be defined and elaborated upon below. These dimensions encompass the perception of a gamified system as enjoyable (Perceived Enjoyment), recognizing (Perceived Recognition), informational (Perceived as Informational), and controlling (Perceived as Controlling).

2.3.1 Perceived Enjoyment

Perceived enjoyment *refers to the degree to which the act of utilizing a particular system is seen as enjoyable and pleasurable, without considering any anticipated outcomes or performance implications* (Davis et al., 1992). When employees are engaged to a task, they seek to minimize the gaps between the desired and actual performance, while also want a positive and enjoyable experience throughout this process (Cardador et al., 2017).

Studies conducted on the concept of "turning work into play" have indicated that when a task is framed or defined as "play" can enhance the overall enjoyment experience while performing this task (Csikszentmihalyi & LeFevre, 1989; Sansone et al., 1989). In its core essence, a game can be defined as "*a problem-solving activity approached with a playful mindset and attitude"* (Schell, 2008). Accordingly, gamification is rooted and guided by an instrumental logic that suggests *that "work isn't always fun, games are fun, so turning work into a game will make work fun, and lead to happier employees"* (Mollick & Rothbard, 2014). This viewpoint works on the premise that integrating game-related elements designed for fun and engagement, such as elements from video or board games, can infuse otherwise dull activities with enjoyment and captivating aspects, thus making them more appealing and enjoyable for people (Mollick & Rothbard, 2014). Consequently, from this standpoint, it can be inferred that 'fun' and 'enjoyment' are closely interrelated terms.

This inference can be also supported by the study of Nah and co-authors (2019), in which they conducted a literature review on gamification, pinpointing eight key strategies that possess the capability to motivate and captivate users (Nah et al., 2019). Among these, "Fun Orientation" was defined as the process of *"creating interest, curiosity, and enjoyment in a task or environment*" (Nah et al., 2019). Furthermore, Cook (2013) supported the notion that fun is essential in gamified processes, asserting that *'gamification creates a virtual environment that allows individuals to be productive and still have fun* (Cook, 2013)*'.* In other words*,* the interaction between the user and the system - in this case, through work gamification elements - creates an affective value that promotes a sense of fun.

Hedonic value is also a concept closely associated with our focal variable - perceived enjoyment. This connection becomes evident when considering the definition provided by Suh and Wagner 2017) for their study, which describes hedonic value as the degree to which individuals experience a sense of fun and enjoyment when interacting with an IS or application (Suh & Wagner, 2017). Indeed, the term “hedonic” is derived from “hedonism”, a concept that emphasizes pleasure or happiness as the ultimate or primary good in one’s existence (Merriam-Webster, 2014). Hedonic systems are designed to offer users a sense of self-fulfillment and enjoyment during their usage (H. Van Der Heijden, 2004). In other words, the two terms, hedonic value and perceived enjoyment, are interconnected and refer to the same idea of experiencing pleasure and fun in the context of using ISs or applications.

Another theory that some researchers argue includes fun and enjoyment as integral elements (Silic & Back, 2017), while others contend, they have a positive impact on it (Jo, 2022; Matute-Vallejo & Melero-Polo, 2019) , is the Flow Theory. This theory proposes that an individual experiences a mental state of "flow" when engaged in an activity (e.g., playing a game), characterized by complete and energized concentration, along with a high level of enjoyment and satisfaction in the process of that activity (Silic et al., 2020; Silic & Back, 2017). Work gamification aims to facilitate the achievement of this state of "flow," wherein an employee's mental state is characterized by focused motivation and interest while performing work tasks (Silic & Back, 2017).

Matching Game Design Elements to Perceived Enjoyment

Some game elements that have been associated with perceived enjoyment include the narratives and meaningful stories, as well as the use of avatars (Nah et al., 2019; Sailer et al., 2017; Xi & Hamari, 2019). A well-crafted storyline has the potential to enrich dull, barely stimulating contexts, especially when it aligns with the personal interests of the employees (Sailer et al., 2017). Moreover, employees are more likely to perceive a task enjoyable when they can find a sense of meaning and purpose in it and if they have the freedom to make choices related to this task. A narrative immerses one into a story, making a task more meaningful and relatable (Nah et al., 2019). Stories can assist players in perceiving their own actions as meaningful and willingly engaging (Sailer et al., 2017), At the same time, avatars provide a sense of ownership and control over their “character” and their decisions (Kie & Nguyen, 2021). Additionally, avatars can be employed to create interactivity, promote social connectivity, and introduce fun components (Nah et al., 2019).

In their study, Mulcahy et al. (2020) examined the impact of specific game design elements that can be used in gamified systems - points, feedback, character, and challenge - on individuals’ perceived enjoyment. The result of this study demonstrated the capacity of these elements to impact enjoyment, with “challenge” to be proved the most influential factor (Mulcahy et al., 2020). The opportunity to create characters and accomplish “missions” makes mundane tasks more engaging, captivating, and interesting(Cardador et al., 2017).

Finally, social connectivity and interaction with others have been established as significant factors contributing to the experience of the "flow" state (Sweetser & Wyeth, 2005). In a work context, social connectivity with colleagues can be fostered by forming teams that provide opportunities for collaborative task completion. Through gamified systems, employees can work in teams to collaborate on challenges, quests, or other shared goals. This collaborative approach enhances three key

dimensions of the flow state: focused concentration, a distorted sense of time, and enjoyment (Fui-Hoon Nah et al., 2015). Social connectivity promotes a sense of social relatedness, which in turn generates shared goals and a feeling of relevance (Sailer et al., 2017).

2.3.2. Perceived Recognition

Perceived recognition *is defined as an individual's perception of receiving a judgement concerning their contributions, reflecting their performance and commitment in their work* (Brun & Dugas, 2008). It pertains to the social feedback individuals receive regarding their actions or behaviors (Hamari et al., 2013). It is therefore linked to the idea of concern for others, to the focus on results and the effects of actions taken (Brun & Dugas, 2008).

In the context of work, it signifies the employees' perception that their managers acknowledge and appreciate their efforts of a job well done, making them feel valued and integral to the organization (Agarwal & Ferratt, 1999). Moreover, it can be seen as a type of positive reinforcement that encourages desirable behaviors and communicates value to employees (Skinner, 1965). In this study, recognition practices denote non-monetary rewards that organizations use to express appreciation and provide encouragement for employees' outstanding work achievements. They also encompass the organization's initiatives to thoughtfully evaluate employee suggestions and offer them positive feedback (Paré & Tremblay, 2007).

An important concept closely associated with the notion of perceived recognition is Perceived Organizational Support. It assesses the degree to which employees believe that the organization not only recognizes and values their efforts and contributions but also demonstrates genuine concern for their well-being (Eisenberger et al., 1986). Gamification is regarded as an effective method for organizations to achieve this, because it is purposefully designed to support employees and improve their work conditions. Simultaneously, it enhances their well-being by incorporating enjoyable gamified tasks into their work processes (Cardador et al., 2017). One could argue that implementing gamification initiatives alone can signal to employees that the organization is making an effort to empower them (Bruke, 2014).

It is worth noting that some studies established the positive impact that perceived recognition of employees has on their perceived reciprocal benefit (Hamari et al., 2013; Silic et al., 2020). Perceived reciprocal benefit can be viewed as a type of social benefit within a process or a system. In simpler terms and specifically in the context of gamification, employees are more likely to actively participate in a gamified process if they believe they will gain some form of benefit from it (Lin & Bhattacherjee, 2008). The authors argue that when employees receive recognition from their peers or supervisors, it encourages them to reciprocate by recognizing others when using a service. This suggest that acknowledgment and recognition lead to reciprocal benefit (Hamari et al., 2013; Silic et al., 2020).

Matching Game Design Elements to Perceived Recognition

Points, levels, leaderboard, and badges are the fundamental game design elements frequently linked to the perception of recognition (Kie & Nguyen, 2021; Mulcahy et al., 2020; Nacke & Deterding, 2017; Nah et al., 2019). Through quantifying employees' contributions with points and levels, and visualizing their performance on leaderboards, gamification enables manager to easily identify hardworking

individuals. This visibility allows managers to appreciate their employees' dedication and reward them, fostering a sense of recognition among employees (Kie & Nguyen, 2021).

These elements can be viewed as the primary tools for implementing a positive reinforcement approach and potentially shaping employees' behavior (Kie & Nguyen, 2021). Points act as immediate positive reinforcement, providing feedback that acknowledges their efforts. Badges serve as a proof of success and achievement and leaderboards, in turn, visually display these achievements (Nacke & Deterding, 2017). By earning points, employees can see tangible evidence of their work, which can be rewarding. And then, as employees advance to higher levels, they receive recognition for the dedication and skill development.

In other words, employees are not only rewarded for their hard work through the use of points and levels; they also receive recognition for their efforts in the form social achievement rewards, such as badges. They receive social status, which is visible to both superiors and their peers, through leaderboards, highlighting their achievements and contributions within the organization (Robson et al., 2016).

2.3.3. Perceived as Informational

In this study, the perception of gamified systems as informational is defined based on Cardador et al.'s (2017) framework, specifically the informational pathway they proposed in gamification. According to Cardador et al. (2017), a gamified system is *perceived as informational if it provides workers with timely access to performance information associated with motivation and learning* (Cardador et al., 2017). In other words, if *"it improves the visibility, comparability and immediacy of performance information"* (Cardador et al., 2017).

Workplace gamification simplifies the process of receiving feedback on employee performance, enabling them to identify areas where improvements are needed and understand how to make those improvements (Cardador et al., 2017). This, in turn, aids in reducing the gap between actual and desired performance, as proposed by Ashford and Northcraft (1992). Additionally, gamification promotes comparability, allowing workers to gauge their performance and progress relative to their peers, fostering healthy competition and facilitating learning and growth. (Cardador et al., 2017). And then it also improves the immediacy of performance information, allowing employees to receive timely, and even real time, feedback (Cardador et al., 2017). In the workplace, it can be challenging for employees to feel like they are making progress towards their goals (Humphrey et al., 2007). This is because goals are often too distant, making it difficult for workers to experience a sense of achievement regularly. However, incorporating game-like elements that align with work-related objectives can address this issue by providing employees with constant and frequent feedback on their goal accomplishments, creating a more immediate and ongoing sense of achievement (Cardador et al., 2017).

The integration of technology in gamification, (Dale, 2014), ensures that employees receive clear and accurate performance feedback without the need for direct interactions with others, such as supervisors or colleagues (Cardador et al., 2017).

Returning to the eight key gamification strategies proposed by Nah and their co-authors (2019) for motivating and engaging users (see section 2.3.2), one strategy, "Challenge" (Nah et al., 2019) , aligns with the informational perspective of gamification. This strategy offers employees opportunities for growth, learning, and development (Nah et al., 2019). By providing feedback and visibility of performance information, gamification motivates employees to learn and enhance their work, creating an incentive for advancement.

An important concept closely related to the perception of gamification as informational is "Challenge Stressors," a term introduced by Bizzi to describe job demands that employees perceive as opportunities for personal growth (Bizzi, 2023). These demands challenge employees to work diligently and are a key component of gamification, which, according to Cardador et al. (2017) aims to transform work experiences into opportunities for growth (Cardador et al., 2017). This is achieved by creating competition with predefined success rules (Kumar, 2013), motivating employees to work hard to meet their goals and advance (Bruke, 2014).

Matching Game Design Elements to Perception as Informational

Game elements such as points, badges, leaderboards, and progress bars are effective tools for enhancing visibility, comparability, and immediacy of performance data for employees. These elements are referenced in numerous studies and have been shown to make performance feedback more readily available and noticeable to workers (Alcivar & Abad, 2016; Bizzi, 2023; Loughrey & O'broin, 2019; Mohanty & Christopher, 2023; Suh & Wagner, 2017; Wiethof et al., 2022). They enable employees to consistently "know their score" and gain a better understanding of how they are performing in comparison to expected or desired performance standards (Cardador et al., 2017).

Additionally, as noted by Xi and Hamari in 2019, these game elements along with quests and missions (which can be categorized as challenges) offer employees the opportunity to acquire new skills, establish clear objectives, and receive feedback (Xi & Hamari, 2019). Undoubtedly, feedback on the accuracy of responses to quiz questions, for example, including whether the response is correct and what the correct answer is, can significantly aid employees in enhancing their knowledge, practicing, and even acquiring new information (Stanculescu et al., 2016). But also challenges, that can be individual, or team-based, unquestionably serve as catalysts for fostering learning, problem-solving, and creativity, as highlighted by Nah et al. in 2019 (Nah et al., 2019) .

2.3.4. Perceived as Controlling

Employees may view *a gamified system as controlling if they perceive it as imposed by management to regulate their behavior and emphasize work performance*. This imposition can create stress and pressure, pushing employees to strive for better performance (Hammedi et al., 2021).

An employee might continue using a gamified application not out of personal motivation or genuine enjoyment but rather because they are obligated to do so in order to meet performance criteria and earn virtual rewards. Alternatively, they may do so to avoid the guilt associated with disappointing their manager or because they believe it's an obligation to be considered a part of the team. This sense of social pressure can influence their behavior, making them feel as though they are being controlled by external expectations (Mitchell et al., 2020).

According to Shahri et al. (2014), when organizations collect detailed information about their employees, it can create a sense of pressure for employees to maintain a consistent level of performance. Employees typically experience variations in their productivity levels throughout the workday, which can be described as periods of high and lows. As a result, employees often prefer to have control over their performance and only reveal the final results to their managers, without disclosing the specifics of how they perform during the process to achieve those results (Shahri et al., 2014).

However, gamification can easily track and collect these details, providing managers with insights into the working patterns of their employees. This increased visibility into the process of performance can lead employees to feel like they are constantly under scrutiny and control by their managers in terms of how they perform (Shahri et al., 2014).

Matching Game Design Elements to Perception as Controlling

According to Affordance Theory "*people use different technologies in similar ways or the same technology in different ways*" (Suh & Wagner, 2017) . This theory establishes a meaningful connection between the features of a technology and the experiences of the users. It suggests that the capabilities of a technology do not solely reside in its specific functions or features, but rather emerge from the interplay between the user and the technological artifacts within a particular context (Suh et al., 2017). In the context of this theory, it can be inferred that the effectiveness of a leaderboard or any other game element is not solely determined by the element itself and its function, but also by how employees perceive and interact with this element in a given situation. The user's experience and interpretation of these game elements are shaped by the specific context in which they are employed.

Moreover, Causality Orientation Theory (Deci & Ryan, 1985), one sub theory of SDT (Vansteenkiste et al., 2010) posits that individuals vary in the degree to which they view their actions as self-determined. This, in turn, affects their perception of feedback as either informative or controlling. Therefore, a person's causality orientation serves as a moderator for the impact of feedback on their need satisfaction (Mekler et al., 2017).

Individuals with a strong orientation toward autonomy are more inclined to act in alignment with their own interests and values, and they tend to interpret external feedback as a source of information rather than as a form of control. In contrast, those with a more control-oriented outlook are more likely to act in response to external demands and perceive external feedback as exerting pressure on them (Deci & Ryan, 1985; Vansteenkiste et al., 2010).

In a similar vein, like feedback, all the game elements we've discussed so far, including points, levels, badges, leaderboards, progress bars, and the like, can be perceived as controlling or informational, enjoyable, or recognizing, depending on individuals' personalities and the specific situational context. People's unique causality orientations and the circumstances they find themselves in play a significant role in how they interpret and respond to these game elements.

2.4. INTRINSIC MOTIVATION

In the realm of human behavior, intrinsic motivation is widely recognized as the most powerful driving force (Deci & Ryan, 2000; Ryan & Deci, 2000a). As we have previously established, intrinsic motivation represents one of the two primary forms of motivations identified by Ryan and Deci (2000) within the framework of the SDT (Ryan & Deci, 2000a). It characterizes the most self-determined type of behavioral regulation (Peng et al., 2012). In essence*, **intrinsic motivation** is a high-quality type of motivation to engage in an activity "when the activity itself is its own reward"* (C. S. Rigby & Ryan, 2018), rather than other outcomes unrelated to the activity, as is the case with extrinsic motivation (Peng et al., 2012).

Cognitive Evaluation Theory (CET), a sub-theory within SDT, provides further insight by positing that humans possess three fundamental needs: autonomy, competence, and relatedness (Ryan & Deci, 2000b). It has been suggested and empirically demonstrated that the fulfillment of these three needs plays a pivotal role in fostering an individual's intrinsic motivation (Mitchell et al., 2020; Ryan & Deci, 2000b). In simpler terms, individuals tend to experience more self-determined forms of motivation when the activities they engage in offer them a sense of autonomy (feeling in control and having the freedom to make their own choices), competence (feeling capable and effective in performing the activity), and relatedness (experiencing authentic social connections with others) (Peng et al., 2012).

In the body of literature concerning gamification in workplace settings, Intrinsic Motivation has been connected to various other elements or concepts that are related or characterize employees' experiences in the workplace. One such connection is with employees' engagement in their work activities, often termed as *job, work,* or *employee engagement* in scholarly discussions (Prasad & Mangipudi, 2021; Silic et al., 2020; Silic & Back, 2017). Kahn's Theory of Engagement (1990) defines engagement as the harmonious alignment of one's "preferred self" in task behaviors that connect them to work and others (Kahn, 1990). Accordingly, engaged employees would be characterized as fully present, attentive, connected, focused, and integrated in their roles and activities (Kahn, 1990; Silic & Back, 2017). This concept is closely tied to motivation, as it involves "bringing in" personal resources in performance and the intensity and persistence with which these resources are applied (Kanfer, 1990). It suggests that engagement encompasses various psychological dimensions, such as effort, involvement, flow, and intrinsic motivation (Kahn, 1990). This explains why many studies have found a positive link between intrinsic motivation and employee engagement, both in regular work activities and in gamified contexts.

Employees' intrinsic motivation has also been linked to their job satisfaction (Raza et al., 2015; Trisno & Abror, 2019). *Job satisfaction* is a measure of the rate at which employees are satisfied and happy with their work (Dawal et al., 2009). It can be understood as an emotional state of human beings that reflects the positive and pleasant feeling of a person which is follow on the assessment of their job or job experience (Johnson & Sohi, 2014; Locke, 1976). Therefore, is easy for someone to see that intrinsic motivation and job satisfaction go hand in hand; Intrinsic motivation drives employees to take ownership of their work, find purpose, and feel a sense of accomplishment. This leads to a positive emotional state associated with their job – job satisfaction. On the flip side, employees that are content and happy in their work, they are more likely to be motivated to excel in their tasks.

Employee commitment (also known as work/organization commitment), which involves aligning with the company's goals and values, is associated with employees who take initiative for the organization, even if it inconveniences them (Alfalla-Luque et al., 2015; Brzeziński & Bąk, 2015). This commitment has a positive connection with intrinsic motivation (Trisno & Abror, 2019), suggesting that highly motivated employees, especially those driven by intrinsic motivation (Ateş & Bekir, 2015), actively contribute to the organization's success and intend to remain with it for the long term (Bytyqi, 2020).

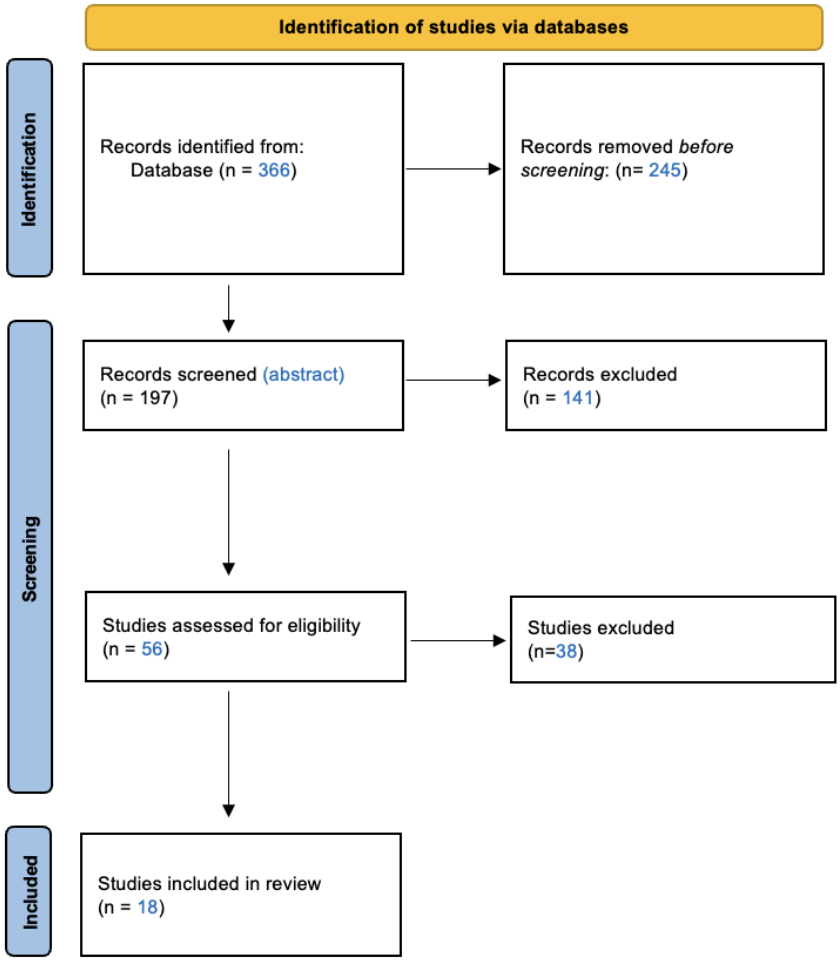
Intrinsic motivation has also been found to positively correlate with *job performance*, which measures how well employees meet their job requirements (Jnaneswar & Ranjit, 2022). Intrinsically motivated employees tend to approach their work with heightened interest, diligence, and persistence, leading to higher and better-quality job performance (Lloyd et al., 2017; Tran et al., 2020).

Michel et al. (2020) demonstrated that intrinsic motivation plays a mediating role in the relationship between employees' satisfaction of autonomy and competence needs and their behavioral intentions, positively influencing these intentions (Mitchell et al., 2020). This finding aligns with extensive research indicating that intrinsic motivation significantly shapes human behavior (Lloyd et al., 2017; Tran et al., 2020). Behavioral intention relates to the desire or willingness to engage in specific behaviors (Setiawan et al., 2022). In the context of gamification, as we will further explore in the literature review, behavioral intention can be understood as the employees' willingness to use and continue using gamification applications in the workplace (Suh et al., 2017). This entails active participation in gamification processes and systems employed by their organization, (i.e., contribute their knowledge in a gamified Knowledge Management System (KMS) (Suh & Wagner, 2017), or be actively engaging in a gamified Enterprise Resource Planning (ERP) training process (Alcivar & Abad, 2016).

3. METHODOLOGY

In this work, a Systematic Literature Review was carried out following the guidelines outlined in the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocol (PRISMA-P) (Page et al., 2021). The Figure 3 with the PRISMA flowchart visually illustrates the journey from the initial query results to the ultimate collection of studies that meet the specifies inclusion criteria (Appendix B). This process is also comprehensively explained in the section titled "Criteria for Selection of Studies" below.

Figure 3: PRISMA Flowchart



From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi 10.1136/bmj.n71

For more information, visit: http://www.prisma-statement.org/

3.1. DATA COLLECTION

3.1.1. Database Search

The database "Web of Science" was utilized to conduct a literature search. At the outset, the search query designed for locating articles and papers within the database consisted of fundamental words along with their respective synonyms or related terms, encompassing the core variable under investigation, namely: gamification, employees, enjoyment, recognition, informational, controlling, and intrinsic motivation. Nevertheless, after the completion of the abstract screening as a component of the PRISMA process, less than ten articles were considered eligible for inclusion in the analysis. One of the primary reasons contributing to this situation is that most of the articles were not pertinent to the implementation of gamification in organizational settings; instead, they primarily focused on different areas such as education. In cases where there was a connection to a business context, the focus was often on customer engagement rather than employee engagement within the company.

To address this issue, two distinct approaches were employed in an attempt to broaden the research query. The first approach involved a "backwards" strategy, wherein existing articles were examined, to identify and compile the gamification design elements employed by organizations to foster employees' perceptions of enjoyment, informativeness, control, and recognition. In other words, the relationship between these elements and the independent variables in my research was illustrated. A more detailed explanation of which elements were associated with these perceptions and their respective contributions was provided in the "Perception of a Gamified System" section of the paper's theoretical background. The second approach involved a "forwards" strategy, where aspects or terms mentioned in other articles that were strongly correlated with the independent variable of intrinsic motivation, were identified. This included terms like employee satisfaction or engagement, among others, as highlighted in the "Intrinsic Motivation" section, also in the theoretical background. The extra terms and keywords found through both approaches were incorporated in my research query.

Thus, the Appendix A presents the final query developed and used to search for keywords present in titles, abstracts, author keywords and keywords plus and resulted in 366 papers.

3.1.2. Criteria for Selection of Studies

The data used in this study is sourced only from literature that was written in English and published between the years 2016 and 2023. The selection of this cutoff point is attributed to the notable increase in the volume of publications focusing on gamification to enhance employees' engagement and motivation, that began in 2016 and continued thereafter. By applying these specific filters within the database and restricting the selection to journal articles and proceeding papers, the number of articles was reduced to 197.

With the objective of ensuring that my analysis will be relied on empirically tested assumption and theories, a screening of the abstracts of these papers was conducted. During this process, papers that did not qualify as empirical studies using qualitative, quantitative, mixed, or case study methodologies, were excluded. This additional step further decreased the number of papers to 56.

Subsequently with the primary focus of the current article being on investigating gamification experiences within a workplace setting, specifically from the perspective of employees, articles that centered on gamification research in various other contexts such as education or healthcare, were eliminated. Additionally, papers that concentrated on the overall impact of the general concept of

gamification on employees' intrinsic motivation or related aspects, rather than on the influence of specific perceptions of the concept or related to these game elements, were also excluded. Consequently, a total of 18 articles were left for analysis.

The inclusion and exclusion criteria of this paper, as described above, are summarized in the Appendix B.

3.2. DATA ANALYSIS

After the papers were gathered, they were read thoroughly to understand their content and gather data for analysis. To facilitate this process, an Excel file was created with columns for important details such as publication year, research goals, methods and tools used, variables studied and their relevance with my variables of interest (see Appendix C). While reading and analyzing the eighteen papers, the spreadsheet was filled in, and personal thoughts were noted to aid in better understanding. Excel's features, such as data filters, proved to be quite handy for drawing initial conclusions for each part of the study.

The next step was to follow common procedures for thematic analysis of the data in a systematic literature review (Popenoe et al., 2021). An important column that assisted this process was the one that listed the game elements used in each study. This column helped to clarify the specific aspect of employees' perception each paper focused on, especially when it wasn't clear away. Consequently, it was also easier for the data to be organized and categorized according to the four dimensions of perception of gamified systems (variables of interest) described in the theoretical framework (Perceived Enjoyment, Perceived Recognition, Perceived as Informational, Perceived as Controlling). This categorization facilitated the easier uncovering of patterns among these categories, which will be explained and elaborated in the forthcoming results and discussion section. In Appendix D, the outcomes of the thematic analysis can be found, along with the depiction of the relationship between this study's analyzed dimensions of employees' perception of gamification and their intrinsic motivation, as revealed in each study.

4. RESULTS AND DISCUSSION

To conduct this study and address the central research question of the paper, which explores the connection between employees' perception of gamification systems and their intrinsic motivation while participating in work-related tasks, 18 publications on gamification implemented in various workplace settings and industries (such as IT, financial services, retailing, manufacturing etc.) between 2016 and 2023, were analyzed. The list of the analyzed studies can be found in the following Table 1 (for more information regarding the papers, as previously mentioned, see Appendix C). The most cited definition of the concept of gamification in the analyzed studies aligns with the definition provided by Deterding et al. in 2011: "the use of game design elements in non-game contexts" (Deterding et al., 2011).

Table 1: Selected Studies for Review and Analysis

No.	**Reference**	**Title**
1.	Mohanty & Christopher, 2023	A study on role of gamification elements in training outcomes: comparing the mediating effect of intrinsic and extrinsic motivation
2.	Bizzi, 2023	Why to gamify performance management? Consequences of user engagement in gamification
3.	Wiethof et al., 2022	Gamifying the Human-in-the-Loop: Toward Increased Motivation for Training AI in Customer Service
4.	M A & Joy, 2022	Exploring Intrinsic Motivating Factors in Gamified Context: A Mixed-Method Study
5.	Setiawan RIATMAJA et al., 2021	The Effect of Using Game Dynamics Towards Employee Work Engagement: An Empirical Study in Indonesia
6.	Hammedi et al., 2021	Uncovering the dark side of gamification at work: Impacts on engagement and well-being
7.	Van der Heijden et al., 2020	Gamification in Dutch Businesses: An explorative Case Study
8.	Passalacqua et al., 2020	Playing in the backstore: interface gamification increases warehousing workforce engagement
9.	Silic et al., 2020	The effects of a gamified human resource management system on job satisfaction and engagement
10.	Mitchell et al., 2020	Gamification and the impact of extrinsic motivation on needs satisfaction: Making work fun?
11.	Loughrey & O'broin, 2019	Designing and Evaluating a Gamified Corporate eLearning Course
12.	Suh & Wagner, 2017	How gamification of an enterprise collaboration system increases knowledge contribution: an affordance approach
13.	Silic & Back, 2017	Impact of Gamification on User's Knowledge-Sharing Practices: Relationships between Work Motivation, Performance Expectancy and Work Engagement
14.	Suh et al., 2017	Gamification in the Workplace: The Central Role of the Aesthetic Experience
15.	Liu et al., 2017	Gamification's impact on manufacturing: Enhancing job motivation, satisfaction and operational performance with smartphone-based gamified job design
16.	Elm et al., 2016	CLEVER: Gamification and Enterprise Knowledge Learning
17.	Alcivar & Abad, 2016	Design and evaluation of a gamified system for ERP training
18.	Stanculescu et al., 2016	Work and Play: An Experiment in Enterprise Gamification

The dataset comprises approximately 72% of articles in journals (13 studies) and 28% proceeding papers (five studies). Appendix 5 provides a comprehensive list of the journals and conferences where the studies included in this research were published or presented. Under the criteria were applied for selection, all the studies in the dataset are empirical in nature. Among them, around 72% employed quantitative research methods, utilizing tools such as surveys and experiments (13 studies). About 11% of the studies used qualitative research methods, incorporating tools like focus groups and semi-structured interviews (two studies). Another 11% of the studies adopted mixed research methods, combining both qualitative and quantitative tools (two studies). Lastly, only the 6% of the studies was identified as an exploratory study, using qualitative methods for its data collection (one study).

Upon closer examination of the countries with the highest number of publications included in the analysis of this paper, it becomes evident that the United States and India lead in terms of the quantity of papers related to gamification in a business context, particularly in its application for engaging and intrinsically motivating employees. While it's worth noting that some studies do not specify the country of research, other countries, among them Hong Kong, China, the U.K., the Netherlands, Ireland, and France, also make notable contributions to this body of research.

Furthermore, it's essential to highlight that the papers analyzed discuss various types of gamified systems. These include, but are not limited to, Performance Management Systems (PMS), Human Resource Management Systems (HRMS), systems that facilitate knowledge management and sharing practices within the organization, as well as systems designed to support learning, training, and development practices. Table 2 summarizes the descriptive analysis of the sample of study.

Table 2: Descriptive Analysis of the papers of study

	N=18
Years of Publication	
2016-17	7
2018-19	2
2020-21	5
2022-23	4
Paper Type	
Journal Articles	13
Conference Proceedings	5
Research Methodology used	
Qualitative	2
Quantitative	13
Mixed method	2
Case study	1
Country of publication	
India	3
U.S.A.	3
Hong Kong	2
UK	2
European Countries	4
Non-specified	4
Type of gamified systems	
PMS	2
HRMS	1
KMS	4
Learning/ Training Systems	3
Computer Numerical Control Machines	1
WMS	1
Non specified/Multiple	6

Lastly, the theories that received the most attention in the papers are the SDT and the CET. This aligns with their widespread use and recognition in the realm of human motivation, particularly concerning intrinsic motivation – the very aspect that the application of gamification seeks to enhance (Hamari et al., 2014; Setiawan RIATMAJA et al., 2021). Nevertheless, the analysis also identified the frequent appearance of the Organismic Integration Theory (OIT), Flow Theory, and Affordance Theory. These theories have been elaborated upon more comprehensively in the theoretical framework of the present study.

The remainder of this section is structured according to the four distinct ways in which employees might perceive gamified systems, as previously defined in the paper; Perceived Enjoyment, Perceived Recognition, Perceived as Informational and Perceived as Controlling. In each subsection, the analysis results from the papers that address and explore the respective aspect will be presented and discussed. Ultimately, these discussions will lead to a corresponding proposition for each category.

4.1. PERCEIVED ENJOYMENT

The influence of employees perceiving gamified systems as enjoyable on their intrinsic motivation was explored in 12 papers (see Appendix D). Among these papers, four of them directly employed 'Perceived Enjoyment' as a variable (Ebina Justin & Manu Melwin, 2022; Setiawan RIATMAJA et al., 2021; Silic et al., 2020; Silic & Back, 2017), while the remaining utilized game elements or other variables (such as hedonic value) that, as indicated in our theoretical framework, were shown to be associated with the perceived enjoyment of employees in gamified systems.

Nearly all these papers demonstrated a positive correlation between the enjoyment and fun that employees derive from using a gamified system and their intrinsic motivation when participating in work activities. For instance, in a mixed-method study (2022) first interviewed managers who were using a gamified PMS to verify its ability to boost intrinsic motivation among employees. Their findings highlighted the significant influence of perceived supervisor support (PSS), a factor that measures how much employees believe their supervisors acknowledge their contributions and care for their well-being, in shaping the impact of the gamified system on intrinsic motivation. Later, a survey of IT employees who used a gamified PMS confirmed that PSS serves as a partial mediator in the positive connection between perceived enjoyment and intrinsic motivation (Ebina Justin & Manu Melwin, 2022).

Drawing upon the affordance theory, another study, from Suh and Wagner (2017), examined how the affordances induced by applying gamification in an enterprise collaboration system (ECS), specifically named by the authors rewardability, competition and visibility and achievement, impact employees' knowledge contribution in an organization. The results revealed a positive impact on both the quality and quantity of knowledge contribution, with this effect largely mediated by hedonic value, which as previously discussed, closely tied to our current focus; perceived enjoyment (Suh & Wagner, 2017).

Several studies have demonstrated that elements enhancing fun and enjoyment in gamified systems can have a positive impact on satisfying the needs of competence, autonomy, and relatedness among employees. In line with the SDT's premise that fulfilling these core psychological needs results in enduring intrinsic motivation (C. S. Rigby & Ryan, 2018). As an example, Elm et al. (2016) gamified a learning module in an online enterprise KMS named "CLEVER". They integrated game elements like teamwork (addressing the need of relatedness), strategy and trivia challenges (addressing the need of competence), leading employees to find the system entertaining and exciting. In addition, granting them choice, such as picking question categories, enhanced their sense of autonomy (Elm et al., 2016). Likewise, findings from a subsequent exploratory study on Dutch businesses (2020) implementing gamification to engage employees revealed that these businesses effectively employed elements like fun, surprise, story line, choice, and social interaction to meet the abovementioned psychological needs. This resulted in employees to derive pleasure from the gamified systems and find them more appealing (B. I. J. M. Van der Heijden et al., 2020).

Yet, in a study by Liu Huang and Zhang (2017), blending gamification and smartphone apps revealed a negative link between freedom of choice – a vital factor for employee enjoyment in gamified system – and performance. Specifically, in their study they conducted an experiment introducing the gamification element of goal setting, assigned and self-set, in a Warehouse Management System (WMS) interface. Surprisingly, employees who had assigned goals performed better than the ones

who opted to set their own. However, the authors clarified that this disparity was attributable to the extrinsic motivation (and not to the intrinsic) experienced by the former group, driven by external factors such as pressure from authority figures, which appeared to be more potent (Liu et al., 2017).

Based on the examination of the previously discussed papers, it is evident that the vast majority of them showcased a favorable correlation between employees' perceived enjoyment of a gamified system and their intrinsic motivation. As a result, it is reasonable to infer that when employees actively engage with a gamified system, it is probable to create a rewarding and satisfying work environment. This establishes a nexus between the enjoyment experienced through gamification and the overall enjoyment associated with the job (Mollick & Rothbard, 2014). Therefore, if employees find the gamified system engaging and enjoyable, it is highly likely that gamification will boost their intrinsic motivation. Consequently, I put forth the following proposition:

Proposition 1: The perceived enjoyment from a gamified system is positively related to employees' intrinsic motivation.

4.2. PERCEIVED RECOGNITION

There were 11 papers that explored the influence of employees considering the gamified system as a tool for recognizing their efforts and contributions within the organization on their intrinsic motivation (see Appendix D). Much like the previous section on perceived enjoyment, three of these papers specifically used 'Perceived Recognition' as a variable (Ebina Justin & Manu Melwin, 2022; Silic et al., 2020; Silic & Back, 2017), while the others incorporated related game elements or alternative variables, such as perceived organizational support.

Every paper examined in this section confirmed that organizations utilizing gamification as a means to express appreciation and provide encouragement for employees' performance successfully intrinsically motivate and engage their employees in their work tasks. In 2020, a year-long study that involved employees of a multinational company that gamified its HRMS was performed. The aim of this study was to investigate how gamification antecedents, including perceived recognition, impact job satisfaction and engagement (Silic et al., 2020). Results showed a positive correlation between perceived recognition and both job satisfaction and engagement. Notably, these connections were further influenced by the mediating effects firstly of reciprocal benefits, and secondly, the performance expectancy. The latter involves individuals anticipating their productivity and effectiveness to enhance as a result of their contributions to a process or system (Silic et al., 2020).

Similarly, Mario Silic and Andrea Back (2017), inspired by Flow Theory and Kahn's Theory of Engagement, claimed that when employees feel recognized for their efforts, they become more motivated to participate in a particular activity, which, in turn, enhance their engagement to it. They supported this idea with the results of a survey with a sample of employees in a large organization that used gamification to encourage knowledge sharing. These results showed that when employees received recognition and encouragement for sharing their knowledge, they were more motivated to do so (Silic & Back, 2017).

In another recent study (2023), based on SDT, it was proved that experience points, earned by employees upon completing work tasks or activities and seen as a significant game element

contributing to employee recognition, have a positive impact on their intrinsic motivation. More precisely, intrinsic motivation was found to serve as a mediating factor in the positive relationship between experience points and the training outcomes of employees through organizational programs designed to enhance their knowledge and skills (Mohanty & Christopher, 2023).

Lorenzo Bizzi in one of his studies (2023) introduced a model that shows how employees' engagement in gamification can change their cognitive perceptions in three distinct aspects: PMS, job, and organization. The model also demonstrates how these changes can result in different attitudes and behaviors (Bizzi, 2023). The aspect most relevant to the perception discussed in this section is the one of the organizations, specifically the concept of perceived organizational support, as it refers, as previously explained, to the extent to which employees feel that their organization values their contributions and their well-being. Survey results from employees in an Indian company using a gamified PMS for several months indicated that when employees perceive the organization's care for them through the gamified system, they tend to reciprocate with increased care and commitment to the organization, resulting in higher organizational commitment (Bizzi, 2023).

From the thorough analysis of the papers discussed in this section, it's clear that the literature points to a positive connection between employees' perception of recognition within a gamified system and their intrinsic motivation. Hence, when employees believe that their contributions and efforts within a gamified system are acknowledged, supported, and their well-being is prioritized, it is highly probable that gamification will significantly enhance their intrinsic motivation. As a result, I propose the following assertion:

Proposition 2: The perceived recognition from a gamified system is positively related to employees' intrinsic motivation.

4.3. PERCEIVED AS INFORMATIONAL

Ten research papers have investigated the way employees perceive gamification as a tool for acquiring information, personal development, and skill acquisition, and how this perception affects their intrinsic motivation (see Appendix D). All these papers incorporate, and study game elements or variables related with our focal point in this section, which is 'Perceived as Informational', such as challenge stressors. The majority of them show a positive influence on employees' intrinsic motivation.

As a case in point, in (2016), Stanculescu et al. created "Work & Play," a web app that combined gamification, learning, sharing, and social features. They used it to conduct an experiment in a large multinational company to investigate if gamification could enhance social interaction and learning among employees. The study found that using both badges and leaderboards together, rather than separately, led to increased user engagement. These elements, according to the authors, informed employees of their progress, provided feedback, and encouraged competition by allowing performance comparisons with colleagues (Stanculescu et al., 2016).

In the same year, another group of researchers (Alcivar & Abad, 2016) also implemented gamification in an online ERP training program. Similarly, they included various game elements like points, levels, progress bars, leaderboards, performance stars, and feedback. Their study also showed that when

employees engaged with this gamified training, it led to improved learning outcomes and increased satisfaction with the training process (Alcivar & Abad, 2016).

Additionally, in the previously mentioned study by Mohanty and Cristopher (Mohanty & Christopher, 2023), which focused on the influence of the gamification element, experience points, they also demonstrated the substantial effect of a progress bar on enhancing employees' inherent motivation which in turn leads to better training outcomes (Mohanty & Christopher, 2023).

Nonetheless, within the subset of studies examined in this section, two of them revealed that when employees perceived a gamified system as informational, it did not necessarily have an impact on their intrinsic motivation (Bizzi, 2023; Suh & Wagner, 2017). The first one is the earlier-discussed study which focus was on how shifts in employees' cognitive perceptions led to varying attitudinal and behavioral responses (Bizzi, 2023). In this context, our primary interest lies in the cognitive aspect related to job perception, particularly regarding challenge stressors, which refer to how employees view job demands as chances for personal growth, motivating them to put in more effort. In the study's results, it was observed that challenge stressors did not have a significant mediating effect on either of the two relationships: between user engagement in gamification and employees' job satisfaction or between user engagement in gamification and employees' overall performance (Bizzi, 2023).

The second study looked at how Flow Experience (FE) (a user's state of mind when absorbed completely by the experienced activity) and Aesthetic Experience (AE) (a user's deep sense of meaning and understanding of the experienced events) can help us understand why employees continue to use a gamified system (Suh et al., 2017). Additionally, they used the affordance theory to identify and clarify what comes before these experiences, which they call gamification affordances commonly present in gamified IS: rewards, status, self-expression, and competition. Competition, in particular, is interesting in this part of the study because it lets users of a system see how well they're doing compared to others. To meet their research goals, the authors surveyed employees in a global consulting firm that had incorporated gamification into their IS. The findings showed that while competition had a significant impact on both the employees' FE and AE, it didn't directly or indirectly affect their intention to continue using the system like other gamification affordances such as status and self-expression did (Suh et al., 2017).

Based on the comprehensive analysis of the studies discussed in this section of the paper, we can conclude that the employees' perception of a gamified system holds informational value, and the factors and gamification features contributing to this perception have a positive relationship with their intrinsic motivation. In other words, when employees view gamified as tools for tracking their progress, comparing it with their peers' performance and as aids for self-improvement, learning and challenging themselves, they tend to be more intrinsically motivated to engage with these and complete their work-related activities. Therefore, I suggest that:

Proposition 3: The perception of a gamified system as informational is positively related to employees' intrinsic motivation.

4.4. PERCEIVED AS CONTROLLING

Two empirical studies investigated how employees perceive control when exposed to gamified systems in their work environment and activities and how this impacts their intrinsic motivation (Hammedi et al., 2021; Mitchell et al., 2020) (see Appendix D). Both studies found that when some game elements encourage external motivation rather than fulfilling employees' basic psychological needs like competence, autonomy, and relatedness, can sometimes make employees stressed and less engaged. This, in turn, leads to a decrease in their inner motivation, indicating a negative relationship between the two variables.

The research carried out by Hammedi et al. (2021)., employed a mixed-method approach to examine how gamification impacts the engagement and well-being of front-line employees (FLEs) in the fields of retailing and telemarketing. Specifically, the interviews with FLEs and their managers indicated that some employees might interpret management's use of gamification as an external control strategy, often described as a "carrot-and-stick" method. This external regulation can motivate employees through external rewards and job performance emphasis. However, the effect of gamification on job satisfaction, engagement, and performance appears to depend on the employees' willingness to participate in gamified activities (Hammedi et al., 2021).

OIT, a sub-theory of SDT, challenges the notion that extrinsic motivation is a stark contrast to intrinsic motivation. Instead, OIT suggests that extrinsic motivation can be understood as a continuum of regulatory styles, varying in the degree to which the motivation has been internalized. This continuum spans from the most externalized motivation, known as external regulation, to the most internalized, referred to as integrated regulation (Deci & Ryan, 2002). The author based on this theory and budling upon the abovementioned findings, they conducted two experiments in the mentioned fields (Hammedi et al., 2021). The results indicated that when employees engage in gamified work activities, their job satisfaction decreases, leading to lower levels of engagement and performance. However, this adverse impact diminishes when employees willingly to participate in gamified work activities (Hammedi et al., 2021).

In a different study, the researchers explored the mechanisms behind how gamification affects employees' behavior (Mitchell et al., 2020). They were inspired firstly, by the suggestion of the SDT that enhancing employees' intrinsic motivation involves satisfying their psychological needs - autonomy, competence, and relatedness. And secondly, by previous literature indicating that gamification's impact may not always originate from these psychological needs satisfaction but rather from being a source of extrinsic motivation (Mekler et al., 2017). They also investigated its potential negative effects and the role of extrinsic motivation in this context (Mitchell et al., 2020).

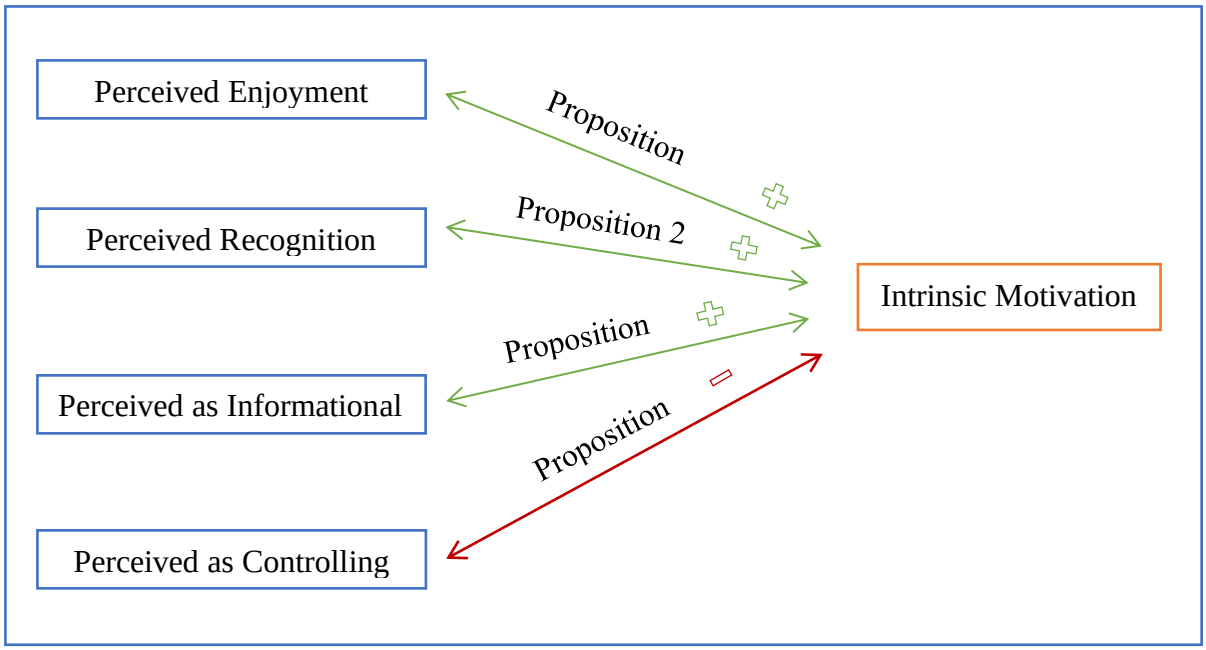
The authors, also based on OIT, conducted a survey involving individuals using workplace gamification and explored how different regulatory styles affected their satisfaction of psychological needs. They found that when employees believed gamification provided valuable benefits (internalized style), it fulfilled their autonomy, competence, and relatedness needs. In contrast, those with an external regulatory style, driven by social pressure for rewards or to avoid punishment, reported lower psychological needs satisfaction from gamification (Mitchell et al., 2020).

While the available literature on this topic may be somewhat limited, the analysis of the two studies just discussed strongly suggests a negative connection between the employees' perception of gamified systems as controlling and their intrinsic motivation. These studies emphasize that when gamification is used with an emphasis on control, social pressure, or rewards and punishments, it can actually reduce employees' satisfaction of their psychological needs and, consequently, their inherent motivation. In light of this, I propose the following statement:

Proposition 4: The perception of a gamified system as controlling is negatively related to employees' intrinsic motivation.

Figure 4 illustrates the proposed theoretical model that combines the propositions of the study is illustrated. The model posits that the positive influences on intrinsic motivation stem from perceived enjoyment, recognition, and information received through the gamified system. Conversely, the presence of perceived control is anticipated to have a detrimental effect on intrinsic motivation.

Figure 4: Proposed Conceptual Model:
Exploring the Relationship Between Employees' Gamification Perceptions
and Intrinsic Work Motivation



5. IMPLICATIONS

5.1. THEORETICAL IMPLICATIONS

Within the field of extant literature, the predominant emphasis centers on how the concept of gamification directly affects employees' motivation at work. This study, however, explores the pivotal role that employees' perceptions have when it comes to gamification and its constituent game elements. The study acknowledges that perceptions held by employees act as a bridge between gamification and intrinsic motivation. By shedding light on this mediating role, the study enriches the theoretical foundation of workplace gamification, aimed at enhancing employee motivation and engagement. This aspect, previously understudied in the literature, now emerges as a critical factor influencing employees' intrinsic motivation – a valuable contribution to the field.

To be more precise, this study systematically categorizes employees' perceptions of gamified systems into four distinct dimensions – Perceived Enjoyment, Perceived Recognition, Perceived as Informational, and Perceived as Controlling. This categorization not only adds clarity and structure to the analysis of how gamification impacts employees' intrinsic motivation but also deepens our understanding in this area. While previous studies acknowledged that gamified systems impact intrinsic motivation (e.g., Loughrey & O'broin, 2019; M A & Joy, 2022; Setiawan RIATMAJA et al., 2021; B. I. J. M. Van der Heijden et al., 2020), this study takes a step further by breaking down this impact into specific dimensions. It goes beyond a general comprehension of motivation and provides a thorough investigation of the diverse factors within gamification and its perception by the employees, which contribute to their intrinsic motivation.

The analysis' findings align with key motivational theories, including SDT, CET, OIT, and Flow Theory. Gamified systems that are perceived enjoyful, recognizing, and informative, align with CET, subtheory of SDT, by satisfying the psychological needs for autonomy, competence, and relatedness, and thus, enhancing intrinsic motivation (Mitchell et al., 2020; Ryan & Deci, 2000b). OIT's concept of the internalization of motivation (Deci & Ryan, 2002) is reinforced by the observation that controlling aspects in gamification can mitigate intrinsic motivation, especially when external rewards and punishments are prominent. The findings also resonate with Flow Theory (Silic et al., 2020; Silic & Back, 2017) suggesting that enjoyable and pleasurable gamified experiences, which offer challenges, feedback, and a sense of progress, can promote flow states and ultimately enhance intrinsic motivation.

Lastly, the study concludes by introducing four propositions that summarize the relationships between these four perceptions and employees' intrinsic motivation. These propositions offer clear and testable statements that contribute to the theoretical development in the areas of gamification of enterprise systems and employee motivation. Importantly, these propositions are not arbitrary; they are firmly rooted in the extensive literature review that was undertaken and are supported by empirical evidence. This enriches the existing literature by adding more substantial support for the relationships under investigations.

Hence, the current work contributes to the more recent works about gamification and its impact on employees' intrinsic motivation, such as the one by MA and Joy (2022) or the one by Silic et al (2020)

(Ebina Justin & Manu Melwin, 2022; Silic et al., 2020), in analyzing the factors associated with employees' intrinsic motivation in a context of gamification. Future studies can advance such findings by empirically test such links, as well as the boundary conditions.

5.2. PRACTICAL IMPLICATIONS

The study's findings and propositions offer practical guidance for organizations integrating gamification strategies in their enterprise systems and internal processes. By emphasizing the importance of perceived enjoyment, recognition, informativeness, and avoiding perceptions of control, this study provides a roadmap for designing gamified systems that successfully increase intrinsic motivation.

Furthermore, the study delineates and discusses various game elements employed in gamified systems, such as points, badges, leaderboards, avatars, and feedback, and their association with each dimension of perception. By analyzing the impact of these game elements on employees' perceptions, and in turn, on intrinsic motivation, the study offers further practical insights for informed design of gamified systems.

In practical terms, to design engaging and enjoyable gamified systems, it's vital to integrate game elements that provide a sense of challenge, excitement, meaning, and social interaction (such as compelling narratives, avatars, quests, or cooperative tasks). Furthermore, to ensure that these systems are perceived as appreciative and supportive by employees, it's important to incorporate elements that offer clear recognition and acknowledgment for their efforts (like points, levels, and badges). Subsequently, to foster gamified systems that motivate employees to utilize them for personal growth and learning, the inclusion of game elements that assist employees in acquiring knowledge, developing their skills, and tracking their progress and development is crucial (such as leaderboards, progress indicators, challenges, and feedback mechanisms). Lastly, to avoid an excessive emphasis on control within a workplace where a gamified system is in use, it's essential not to establish an overwhelming sense of external regulation and to avoid gamification strategies that heavily rely on rewards and punishments. Employees should have a sense of autonomy and choice in how they engage with the gamified system.

Moreover, the study underscores the significance of considering factors such as organizational culture, employees' willingness to participate, and their specific preferences when assessing how well gamification works. It is essential to ensure gamification strategies fit the unique organizational context and meet the workforce's needs. Involving employees in the design and development process is a useful strategy for achieving this, and it can be accomplished through techniques like surveys, focus groups, and feedback mechanisms. Additionally, educating employees about the purpose and benefits of gamification, as well as how it can enhance their own and their career's development (e.g., through training sessions or workshops), will increase their excitement and engagement with these systems.

Lastly, it's crucial to highlight that, in contrast to the more common focus on general motivation that takes into account extrinsic factors, the study explicitly focuses on the use of gamification initiatives to boost employees' intrinsic motivation. This is noteworthy because intrinsic motivation is widely acknowledged as a potent and long-lasting motivator. Organizations that

apply the guidelines provided in this study are therefore more likely to see long-term benefits, than the short-term effects of concentrating only on employees' extrinsic motivation.

5.3. Limitations and Future Research

The primary constraint of this study relates to the limited number of studies chosen for review and analysis. The diversity of gamification implementations might not be adequately captured by the 18 articles that made up the small sample size that was ultimately analyzed. This can raise concerns about the overall comprehensiveness and representativeness of the study's findings within the gamification landscape. This limitation, however, can be partially attributed to the novelty of gamification in workplace contexts as well as the study's particular focus on perceptions, which greatly reduced the amount of material that could be analyzed. Additionally, the studies reliance on a single database, Web of Science, raises the risk of selection bias and incompleteness, as relevant studies that are not indexed or prioritized in this chosen database may have gone unnoticed.

This study's emphasis on contributions from various countries and industries is another noteworthy limitation. There might be uncontrolled and unaddressed variations of how gamification and intrinsic motivation are perceived and experienced across different cultural and industrial contexts. To elaborate on this, different cultures exhibit unique norms, values, and attitudes towards work, motivation, and technology. Similarly, industries also vary in terms of their work environments, organizational structures, and objectives. Therefore, gamification strategies that work well in one culture or industry may not yield the same outcomes in another.

While this research has its limitations, it also suggests new directions and opportunities for future studies. First, the study's four propositions can serve as a foundation for empirical research, allowing scholars to employ qualitative and quantitative research methods to gather real-world data. The findings from these studies can either validate or question the proposed relationships, leading to a deeper understanding of the ways in which gamification and employees' perceptions impact their intrinsic motivation. By testing and refining these propositions, researchers can add to the body of knowledge in the field of gamification and its applications in the workplace, ultimately benefiting both academia and industry.

In the context of workplace gamification, researchers can also investigate potential moderating variables (i.e. boundary conditions) that might influence the relationship between employees' perceptions and intrinsic motivation. For example, exploring individual differences, like personality traits and contextual factors, like organizational culture, could provide a deeper insight into how these factors affect the impact of gamification on intrinsic motivation. As a result, researchers will be able to pinpoint the best practices, optimal game design elements, and contextual factors that contribute to the success of gamification in the workplace.

Finally, comparing different types of gamified systems across industries, organizational settings, and with varying game elements is a valuable approach for understanding which strategies work best for improving employees' perception and intrinsic motivation. This will help to understand which approaches are most effective in various scenarios, enabling organizations to make informed decisions and design gamified systems that suit their specific settings, goals, and employee needs.

6. CONCLUSION

In conclusion, the systematic literature review presented in this study has delved into the dynamic relationship between employees' intrinsic motivation and their perception of gamified systems in the workplace. The review analyzed 18 empirical studies conducted between 2016 and 2023, focusing on four dimensions of employees' perception of gamification: perceived enjoyment, perceived recognition, perceived as informational, and perceived as controlling. Each dimension has distinct implications for intrinsic motivation, providing insights on the intricate interplay between gamification and employee motivation and engagement. These insights provide valuable implications for both researchers and practitioners seeking to leverage gamification as a tool to enhance employee engagement and motivation in the workplace.

First and foremost, the perceived enjoyment derived from gamified systems emerged as a powerful driver of intrinsic motivation. Employees are more likely to experience heightened intrinsic motivation, when they find that using gamification is fun, interesting, and fulfilling. This finding highlights the importance of designing gamified systems that captivate employees' interest and provide them with a pleasurable experience.

Furthermore, perceived recognition, when employees feel appreciated and valued for their efforts within gamified systems, also plays a significant role in boosting their intrinsic motivation to engage in their work-related tasks. As a potent intrinsic motivator, the idea of recognition underscores the significance of acknowledging and rewarding employees for their accomplishments through gamification.

The perception of gamified systems as informational resources and tools for skill acquisition and personal development is another vital factor influencing intrinsic motivation. Employees who view gamification as educational and supportive of their self-improvement tend to be more intrinsically motivated. This suggest that gamified systems can foster a culture where continuous learning and self-improvement are valued, contributing to employees' intrinsic motivation.

It is crucial to acknowledge, though, that gamified systems can also have adverse effects on intrinsic motivation when perceived as controlling or emphasizing social pressure, external motivation through rewards and punishments. This perception can cause tension, lead to stress, decrease engagement, ultimately diminishing intrinsic motivation. This finding emphasizes the importance of balancing the use of game elements to avoid overreliance on external motivation strategies that might negatively impact employees' psychological needs satisfaction.

In summary, this study provides a thorough grasp of how different facets of employees' perceptions regarding gamification impact their intrinsic motivation. These findings contribute to the corpus of information on gamification in the workplace and offer practical insights for organizations aiming to enhance employee engagement and motivation. It is vital for organizations to carefully design and implement gamified systems that prioritize enjoyment, recognition, and informational value, while avoiding anything that can be perceived as controlling. By doing so, they can foster a work environment that not only motivates employees but also enhances their overall job satisfaction and performance.

In the dynamic realm of gamification, it is crucial for both researchers and practitioners to stay responsive to the evolving ways in which employees perceive and are motivated by gamification. By continuously adapting and refining gamification strategies, organizations can create a harmonious and motivating workplace environment that meets the evolving needs and expectations of their employees.

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APPENDICES

APPENDIX A

Database Search Query

TS= ("gamif*"
AND ("work*" OR "organi*ation" OR "enterprise" OR "compan*" OR “business”)
AND ("employee*" OR "labo*r" OR “staff” OR “worker*”)
AND ((“game elements” OR "game” OR “elements” OR “points” OR “levels” OR “badges” OR “leaderboards” OR “story*” OR “feedback” OR “avatar*” OR “reward*” OR “award*” OR “challenge” OR “competition” OR “choice” OR “customization”)OR (“enjoyment” OR “fun” OR “playful*” OR “recognition” or “accomplishment” OR “achievement” OR “information*” OR “learn*” OR “development” OR “growth” OR “control*” OR “monitor*” OR “stress*” OR “pressur*”))
AND ("intrinsic motivation" OR “competence” OR “autonomy” OR “relatedness” OR "motiv*" OR "satisfaction" OR "engagement" OR "performance" OR “behavio*r”))

APPENDIX B

Inclusion and Exclusion Criteria for selection of studies

	INCLUSION CRITERIA	EXCLUSION CRITERIA
1	Written in English language	Written in a language other than English
2	The publication year is no earlier than 2016	The publication year is earlier than 2016
3	The document type is Journal Article or Proceeding Paper	The document type is other than Journal Article or Proceeding Paper
4	Empirical study that uses qualitative, quantitative, mixed, or case study methodology	Review paper or paper that includes assumptions and theories not empirically tested
5	Focus on gamification implemented in organizational/workplace contexts	No focus gamification at all, or focus on gamification implemented in other contexts than business (such as education, crowdsourcing etc.)
6	The data sample consists of employees	The data samples consist of population other than employees (such as students)
7	Includes specific perceptions of gamification or game elements and focuses on their impact on employees' intrinsic motivation or related aspects	Focus on the impact of the general concept of gamification on the employees' intrinsic motivation or related aspects

APPENDIX C

Main information related to the Selected Studies for Review and Analysis

No.	Reference	Paper type	Research Methods and Tools	Sample Size	Dependent Variables	Independent Variables	Mediators	Main Findings of interest
1.	Mohanty & Christopher, 2023	Journal Article	Quantitative [A **questionnaire** was distributed through social media (WhatsApp & LinkedIn)	260	- Training Outcomes	- Experience Points - Progress Bar	- Intrinsic Motivation - Extrinsic Motivation	- Intrinsic Motivation serves as a mediator of the positive relationship between the game elements of Experience Points and Progress Bar and Training Outcomes. In contrast, Extrinsic Motivation does not mediate this relationship.
2.	Bizzi, 2023	Journal Article	Quantitative [An online **survey** was administered to the employees of an HR service organization]	268	- Overall Job Performance (Behavioral response)	- User Engagement in Gamification	Cognition about the performance system: - Perceived Justice Cognitions about the job: - Challenge Stressors - Hindrance Stressors Cognition about the organization: - Perceived Organizational Support	- Challenge Stressors have not a mediating effect in the correlation between User Engagement in Gamification and Job Satisfaction. - Perceived Organizational Support plays a significant mediating role in the correlation between User Engagement in Gamification and Organizational Commitment.
3.	Wiethof et al., 2022	Conference Proceeding	Design Science Research Qualitative [**Semi-structured interviews** of domain experts with experience in customer service in the phase of evaluation of the gamified customer service process prototype designed**]**	11	- Motivation of expert users to participate in training AI learning	- Implementation of the combination of Gamification and HITL (human-in-the-loop) in a customer service prototype		- A good mixture of game elements (and not one alone) is able to trigger the motivation of individual users to participate and elevate their continuance to use the prototype.

4.	M A & Joy, 2022	Journal Article	Mixed method Qualitative (Study I) [**Semi-structure interviews** to managers who have used PMS for a minimum of two years] Quantitative (Study II) [A **survey** was conducted involving employees from four IT companies that have been using a gamified PMS for a minimum of two years]	18 (Study I) 500 (Study II)	- Work Effort - Work Quality (Study II)	- Perceived Enjoyment - Perceived Recognition (Study II)	- Intrinsic Motivation (Study II)	Study I: - Gamified PMS enhances employees' work performance, driven by intrinsic motivation. - PSS emerged as a critical moderator of the relationship between gamified PMS and Intrinsic Motivation. Study II: - Strong positive connection of Perceived Enjoyment and Perceived Recognition from gamified PMS with Intrinsic Motivation. - Partial moderating effects of PSS on these relationships. - Intrinsic Motivation acts as a mediator, affecting Work Quality and Work Effort based on Perceived Enjoyment and Perceived Recognition.
5.	Setiawan RIATMAJA et al., 2021	Journal Article	Quantitative [A **questionnaire** was administered to employees of a startup LLC]	226	- Work Engagement	- Game dynamics	- Intrinsic Motivation - Enjoyment	- Game dynamics (PLB) impact positively employees' Intrinsic Motivation but have no impact on their Enjoyment. - Intrinsic Motivation positively affects Enjoyment but has no impact on Work Engagement. - Enjoyment positively impacts employees' Work Engagement.
6.	Hammedi et al., 2021	Journal Article	Mixed method Qualitative (Study I) [**In-dept interviews** with front line employees (FLEs) and team managers of two firms specializing in call center activities operating in the telemarketing sector] Quantitative (Study II & III) [Two **field experiments**, one with FLEs from a telemarketing (II) call-center the other from retailing (III)]	26 (Study I) 94 (Study II) 200 (Study III)	- Job Performance	- Gamified Work	- Job Engagement (Study II) - Job Satisfaction (Study III)	Study I: - Management-imposed gamified practices on FLEs might be perceived as an attempt of performance regulation and control, causing stress. The impact on Job Satisfaction, Job Engagement, and Job Performance depends on the employees' willingness to participate. Study II: - Gamified work has negative impact on employees' job performance, mediated by job engagement. Study III: - Gamified work has negative and significant impact on employees' job satisfaction with the moderating effect of employees' willingness to participate. - Job satisfaction also mediates the negative impact of gamified work on employees' job performance.

7.	Van der Heijden et al., 2020	Journal Article	Exploratory case study using Qualitative methods for data collection [**Semi structure interviews** with representatives from gamification-applying organizations (cases)]	6 cases 12 representatives	Psychological needs: - Competence - Autonomy - Relatedness	- Game Dynamics		- The need for Competence can be satisfied with the use of the game elements fun, surprise (perceived enjoyment), opportunities for personal development (perceived as informational), feedback and ownership. - The need for Autonomy with the use of choice and the need for Relatedness with the use of story lines and social interaction.
8.	Passalacqua et al., 2020	Journal Article	Quantitative [**Experiment** with participants that had no experience as warehouse pickers]	21	- Emotional Engagement - Cognitive Engagement - Performance	- Gamified Interface - Two experimental factors: goals and feedback		- Gamification with either type of goal setting (self-set or assigned) enhanced employees' performance compared to no gamification. - But, participants were significantly more performant when goals were assigned, rather than self-set.
9.	Silic et al., 2020	Journal Article	Quantitative [**Longitudinal (one year) quasi-experiment** and **survey** of employees of a large multinational company operating in the financial industry that introduced a gamified HRM system]	398	- Job Satisfaction - Job (Employee) Engagement	- Perceived Enjoyment - Perceived Recognition - Perceived Usefulness - Perceived Motivation	- Reciprocal Benefit - Performance Expectancy	- Perceived Enjoyment is positively associated with Job Satisfaction. - Reciprocal Benefits mediate the positive relationships between Perceived Recognition and Job Satisfaction and Job Engagement. - Motivation has a positive relationship with Job Engagement.
10.	Mitchell et al., 2020	Journal Article	Quantitative [Online **survey** was carried out with individuals that either were presently using a gamified application in their workplace or had used one within the previous three months]	291	- Behavioral Intention	External Regulatory Style - External Regulation - Introjected Regulation Internalized Regulatory Style - Identified Regulation	- CET Needs Satisfaction (Competence & Autonomy) - Relatedness Satisfaction	- High levels of External Regulation in gamified systems and practices are associated with significantly lower CET Needs but higher Relatedness Needs Satisfaction. - Introjected Regulatory Styles in gamification does not significantly impacts CET or Relatedness Needs Satisfaction. - High levels of Identified Regulation in gamified systems are associated with higher satisfaction in both CET and Relatedness Needs.
11.	Loughrey & O'broin, 2019	Conference Proceeding	Design Science Research **Quantitative** [Experiment involving corporate learning designers and developers]	15	- Intrinsic Motivation	- Competitive Game Elements in the e-Learning course		- An increase in the Intrinsic Motivation was shown in the gamified course compared to the non-gamified one. Thus, the inclusion of Competitive Game elements did enhance employees' Intrinsic Motivation in the e-Learning experience.

12.	Suh & Wagner, 2017	Journal Article	Quantitative [An online **survey (questionnaire)** was distributed consulting firm that had implemented gamification concepts within its ECS to facilitate the exchange of knowledge]	166	- Quality of Knowledge Contribution - Quantity of Knowledge Contribution	- Rewardability - Visibility of Achievement - Competition	- Hedonic Value	- Hedonic value proved to impact the quantity and quality of knowledge significantly and positively. - This impact is mediated by the employees' perception of greater affordances in rewardability, visibility of achievement and competition.
13.	Silic & Back, 2017	Conference Proceeding	Quantitative [An **online survey** was conducted among employees from a large company that had introduced social engagement and motivational systems to enhance internal knowledge-sharing initiatives]	147	- Work Engagement	- Perceived Reciprocal Benefit - Perceived Recognition - Perceived Enjoyment	- Job Motivation	- Job Motivation acts as a mediator of the positive relationships between Perceived Reciprocal Benefit, Perceived Recognition, and Perceived Enjoyment with Work Engagement.
14.	Suh et al., 2017	Journal Article	Quantitative [**Survey** of employees of a global consulting company that implemented a gamified IS]	178	- Continuance Intention to Use	- Rewards - Status - Competition - Self-Expression	- Flow Experience (FE) - Aesthetic Experience (AE)	- The effect of Status Affordance (Perceived Recognition) on employees' Continuance to Use the gamified system was shown to be partially mediated by both FE and AE. - Status Competition (Perceived as Informational) had no impact on employees' Continuance to Use the gamified IS.
15.	Liu et al., 2017	Journal Article	Quantitative [**Experiment** of employees from two manufacturing factories]	60	- Job Motivation - Job Satisfaction - Operational Performance	- Smartphone-bases gamified job design (SGJD) - Consent to SGJD		- Job motivation and Job Satisfaction of the employees that participated in the experiment had been increased with the implementation of SGJD. - The total processing time of the employees had been also decreased with the implementation of SGJD, meaning that their Operational Performance had been improved.
16.	Elm et al., 2016	Conference Proceeding	Qualitative [**Focus Group** of employees of a software development company that played the game – CLEVER – for 30 minutes]	9	- Intrinsic Motivation - Extrinsic Motivation (to interact with a KMS)	- Gameful Elements		- The gameful elements significantly contributed to enhance the employees' intrinsic motivations to interact with a KMS.

17.	Alcivar & Abad, 2016	Journal Article	Quantitative [**Experiment** to test a designed (by the scholars) gamified system involving employees that need to learn how to use an ERP system]	34	- Learning Results in an EPR Training Process - Satisfaction in an EPR Training Process	- Gamified Training (Gamification to the ERP Training Process)		- The group that received Gamified ERP Training Process perceived the system used as more enjoyment and showed better performance in learning and satisfaction. - Thus, implementing gamification to the ERP training process contributes to improved Learning Results and higher Satisfaction.
18.	Stanculescu et al., 2016	Conference Proceeding	Quantitative [**Experiment** involving employees from a multinational company that interacted with the experimental tool for two months]	206	- User Engagement - Social Online Behavior - Learning	- Leaderboard - Badges		- The use of leaderboards or receive badges proved to effectively drive user engagement in the gamified application, with the effect to be more pronounced when the two elements are combined.

APPENDIX D

Thematic Analysis of the selected studies

No.	Reference	Dependent Variables	Independent Variables	Mediators	Game Elements used in the study		Variables of interest
1.	Mohanty & Christopher, 2023	- Training Outcomes	- Experience Points - Progress Bar	- Intrinsic Motivation - Extrinsic Motivation	- Points - Progress bar		- Perceived Recognition (+) - Perceived as Informational (+) **Intrinsic Motivation**
2.	Bizzi, 2023	- Overall Job Performance (Behavioral response)	- User Engagement in Gamification	<u>Cognition about the performance system:</u> - Perceived Justice <u>Cognitions about the job:</u> - Challenge Stressors - Hindrance Stressors <u>Cognition about the organization:</u> Perceived Organizational Support	- Points - Levels - Feedback	- Leaderboard - Competition	- Perceived Recognition (+) - Perceived as Informational (NI) **Intrinsic Motivation**
3.	Wiethof et al., 2022	- Motivation of expert users to participate in training AI learning	- Implementation of the combination of Gamification and HITL (human-in-the-loop) in a customer service prototype		- Points - Levels - Progress Bar - Avatar	- Teamwork - Competition - Feedback	- Perceived Enjoyment (+) - Perceived Recognition (+) - Perceived as Informational (+) **Intrinsic Motivation**
4.	M A & Joy, 2022	- Work Effort - Work Quality (Study II)	- Perceived Enjoyment - Perceived Recognition (Study II)	- Intrinsic Motivation (Study II)	- Challenges - Teamwork - Points - Badges	- Leaderboards - Levels - Feedback	- Perceived Enjoyment (+) - Perceived Recognition (+) **Intrinsic Motivation**
5.	Setiawan RIATMAJA et al., 2021	- Work Engagement	- Game dynamics	- Intrinsic Motivation - Enjoyment	(PLB) - Points - Levels - Badges		- Perceived Enjoyment (+) **Intrinsic Motivation**
6.	Hammedi et al., 2021	- Job Performance	- Gamified Work	- Job Engagement (Study II) - Job Satisfaction (Study III)	Study II: - Competition Study III: - Cooperation - Competition		- Perceived as Controlling (-) **Intrinsic Motivation**
7.	Van der Heijden et al., 2020	<u>Psychological needs:</u> - Competence - Autonomy - Relatedness	- Game Dynamics		- Competition - Storytelling - Challenges	- Choice - Collaboration - Feedback	- Perceived Enjoyment (+) - Perceived as Informational (+) **Intrinsic Motivation**
8.	Passalacqua et al., 2020	- Emotional Engagement - Cognitive Engagement - Performance	- Gamified Interface - Two experimental factors: goals and feedback		- Goals - Feedback		- Perceived Enjoyment (+) - Perceived as Informational (+) **Intrinsic Motivation**
9.	Silic et al., 2020	- Job Satisfaction - Job (Employee) Engagement	- Perceived Enjoyment - Perceived Recognition - Perceived Usefulness - Perceived Motivation	- Reciprocal Benefit - Performance Expectancy	- Challenges - Teamwork - Points	- Badges - Leaderboard - Feedback	- Perceived Enjoyment (+) - Perceived Recognition (+) **Intrinsic Motivation**

10.	Mitchell et al., 2020	- Behavioral Intention	<u>External Regulatory Style</u> - External Regulation - Introjected Regulation <u>Internalized Regulatory Style</u> - Identified Regulation	- CET Needs Satisfaction (Competence & Autonomy) - Relatedness Satisfaction			- Perceived as Controlling (-) - **Intrinsic Motivation**
11.	Loughrey & O'broin, 2019	- Intrinsic Motivation	- Competitive Game Elements in the e-Learning course		- Badges - Points - Levels	- Performance graph - Challenges - Choices	- Perceived Enjoyment (+) - Perceived as Informational (+) - **Intrinsic Motivation**
12.	Suh & Wagner, 2017	- Quality of Knowledge Contribution - Quantity of Knowledge Contribution	- Rewardability - Visibility of Achievement - Competition	- Hedonic Value	- Points - Levels - Badges - Leaderboards		- Perceived Enjoyment (+) **Intrinsic Motivation**
13.	Silic & Back, 2017	- Work Engagement	- Perceived Reciprocal Benefit - Perceived Recognition - Perceived Enjoyment	- Job Motivation	- Leaderboards - Points - Levels	- Badges - Teamwork - Challenges	- Perceived Recognition (+) - **Intrinsic Motivation**
14.	Suh et al., 2017	- Continuance Intention to Use	- Rewards - Status - Competition - Self-Expression	- Flow Experience (FE) - Aesthetic Experience (AE)	- Points - Levels	- Badges - Leaderboard	- Perceived Recognition (+) - Perceived as Informational (NI) - **Intrinsic Motivation**
15.	Liu et al., 2017	- Job Motivation - Job Satisfaction - Operational Performance	- Smartphone-bases gamified job design (SGJD) - Consent to SGJD		- Points - Badges - Leaderboard - Challenge	- Competition - Choice - Feedback	- Perceived Enjoyment (-) - Perceived Recognition (+) - **Intrinsic Motivation**
16.	Elm et al., 2016	- Intrinsic Motivation - Extrinsic Motivation (to interact with a KMS)	- Gameful Elements		- Points - Levels - Competition - Feedback	- Narrative and Storytelling - Teamwork - Challenges - Choices	- Perceived Enjoyment (+) - Perceived Recognition (+) - Perceived as Informational (+) - **Intrinsic Motivation**
17.	Alcivar & Abad, 2016	- Learning Results in an EPR Training Process - Satisfaction in an EPR Training Process	- Gamified Training (Gamification to the ERP Training Process)		- Points - Levels - Badges - Leaderboard - Progress Bar - Avatars	- Choices - Story telling - Challenges/Missions - Teamwork (Cooperation) - Feedback	- Perceived Enjoyment (+) - Perceived Recognition (+) - Perceived as Informational (+) - **Intrinsic Motivation**
18.	Stanculescu et al., 2016	- User Engagement - Social Online Behavior - Learning	- Leaderboard - Badges		- Points - Leaderboard - Badges	- Feedback - Challenge - Choices	- Perceived Enjoyment (+) - Perceived Recognition (+) - Perceived as Informational (+) - **Intrinsic Motivation**

(+) Positive Relationship with Intrinsic Motivation
(-) Positive Relationship with Intrinsic Motivation
(NI) No Relationship with Intrinsic Motivation

APPENDIX E

Outlets for selected papers: Journals and Conferences

Journals	Conferences
International Journal of Human-Computer Interaction	Conference on Artificial Intelligence in HCI
Human Resources Management Journal	Conference on Computer Supported Cooperative Work (CSCW)
Journal of Asian Finance	Conference on Computer Supported Cooperative Work, CSCW
The Learning Organization	European Conference on Games-based Learning
Information and Management	50th Hawaii International Conference on System Sciences
Journal of Business Research	
Journal of Knowledge Management	
SAGE Open	
Journal of Management Information Systems	
Human Factors and Ergonomics in Manufacturing	
Industrial Management and Data Systems	
Computers in Human Behavior	