

## Gamification and Employee Well-being: A Systematic Literature Review

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### Abstract

*As the field of game and gamification research develops, gamification has been empirically and practically examined as one of the effective approaches to engage users by driving motivations and providing game-like experiences. Therefore, an increasing number of companies and organizations are using gamification to improve organizational management performance such as work productivity and satisfaction, which are largely determined by employee well-being and capacity to cope and adapt to changing and challenging environments. However, there has been a dearth in a holistic and comprehensive understanding of the effect of gamification on well-being in organizational management and within the literature pertaining to employees. Under the guidance of TCCM (Theory, Context, Characteristics, Methodology) framework, this study conducts a systematic literature review of 30 empirical studies related to gamification and employee well-being to address questions including what theories and methods have been adopted, what kinds of gamification forms and elements have been investigated across different industries, companies, and organizations, and what effect gamification can bring to employee well-being. Four different future agendas are further proposed based on the review.*

**Keywords:** Game, Health, Human resource, Engagement, Satisfaction

### 1. Introduction

In recent years, immersive and digital technologies have brought more motivational and hedonic benefits to information systems. Gamification, with its engaging value and gameful experiences, is gradually known and touted by people. A relatively simple view towards the concept of gamification is the use of game elements in non-game contexts, which largely overlaps with the concept of the serious game (Mulcahy et al., 2021). While a more recent view considers gamification as an umbrella term that covers all kinds of immersive and motivational techniques that can bring game-like experiences (Keepers et al., 2022). These gamification

techniques such as advergame, game-based learning, PBL (points, badges and leaderboards), tiered loyalty programs, storytelling, and personalization are observed in various fields, ranging from business, marketing, and education to health, encompassing aspects such as driving individuals' motivations and inducing behavior change. Due to the benefits and advantages brought by gamification, it has been believed to address one of the main challenges in organizational management — how to effectively enhance employees' work satisfaction and productivity. International companies such as Deloitte, Microsoft, Cisco, and IBM have all conducted successfully internal gamification practices (Bizzi, 2023).

One generally accepted view is that using gamification can improve employee well-being and their ability to navigate challenging situations, namely resilience. On one hand, empirical evidence from research on game-based learning indicates learners' knowledge management (Mulcahy et al., 2021; Whittaker et al., 2021), mental and cognitive skills (Zahoor et al., 2022) can be enhanced through interacting with gamified information or systems. On the other hand, in terms of physical skills, users exhibit a higher inclination and receptiveness towards the integration of self-health management within gamification (Bock et al., 2019; Cechetti et al., 2019; Harris, 2019; Mo et al., 2019). Therefore, considering mental, physical, and emotional health, gamification has the potential to positively influence the overall state of health, happiness, and satisfaction of individuals in the workplace (Mitchell et al., 2020), as well as the overall quality of work experience (Stanculescu et al., 2016). What should be noticed is that technological exhaustion may hinder employee well-being which refers to users' fatigue and resistance to the gamification design (Cao & Sun, 2018). However, there has been a dearth of a holistic understanding regarding how gamification would affect well-being within the context of organizational management and the workplace.

Therefore, in order to provide a clear picture of the extant internal gamification research regarding individual well-being, in this paper, we systematically review 30 empirical studies related to gamification and employee well-being to address the research questions

including 1) what theories and research methods have been used, 2) what forms of gamification have been investigated 3) across what kinds of contexts, and 4) effects of gamification in employee well-being. Based on the synthesis of the findings, four different research agendas are proposed which pave the way for future researchers to understand and explore the role and value of gamification in organizational management.

## 2. Background

Gamification can be simply identified as the use of game design elements in non-gaming contexts (Hamari, 2017). Hamari (2019) presented a comprehensive and expansive definition of gamification, which encompasses technological, economic, cultural, and societal advancements that contribute to a more gameful reality. Stemming from player types, gamification elements are classified into three categories — achievement-related, immersion-related, and social-related (Xi & Hamari, 2019). By providing game-like experiences such as accomplishment, challenge, immersion, and social experience, the psychological needs of users can be satisfied which further drives motivation. According to self-determination theory (SDT), individuals can be driven by external compulsion or interest, and they might behave out of a sense of personal resolve to excel or fear of being observed (Ryan & Deci, 2000). Gamification has been empirically examined to be positively associated with intrinsic motivation (Xi & Hamari, 2019; Cechetti et al., 2019). In organizational management, gamification elements such as awards, points, leaderboards, progress levels, coring systems, and group collaboration and competition are often used to improve employee motivation to achieve certain goals and more efficiently complete activities (Algashami et al., 2019; Cardador et al., 2017; Yang & Li, 2021; Silic et al., 2020; Cechetti et al., 2019). However, it is important to note that these elements can also result in a sense of excessive competition (Li et al., 2023), stress and disengagement (Hammedi et al., 2021), and social overload (Yang & Li, 2021). Therefore, it seems unknown whether gamification has a positive or negative impact on well-being as the effects might largely be dependent on the specific elements used and contexts.

Individual well-being is the degree to which an individual evaluates the overall quality of life favorably, and the World Health Organization (WHO) employs three dimensions of health to assess well-being: mental, social, and physical (Grad, 2002). According to Fisher (2014), comprehensive conceptualizations and assessments of work well-being include three core components: subjective well-being (e.g., job satisfaction), social well-being (e.g., social support),

and eudemonic well-being (e.g., engagement and intrinsic motivation). Employees who experience a sense of autonomy, belonging, and competence feel less exhausted and more productive than those who believe their basic psychological needs are being ignored (Van den Broeck et al., 2008). Researchers and practitioners have been making great effort to improve employee well-being including approaches such as enhancing HR management (WBHRM, see Salas-Vallina et al., 2021), seeking for technological solutions such as automation and robotics (Frank et al., 2019; Johnson et al., 2020), improving team climate (Lithoxidou et al., 2020), and providing leadership training (Kaluza et al., 2020; Marikyan et al., 2022). With the development of gamification research, the role of gamification in influencing employee' well-being and resilience has been examined in the context of organizational management and the workplace. As an important topic in IS-enabled organizational management, clarifying the relationship between gamification and employee well-being becomes the main motivation of this literature review study.

## 3. Review method and procedure

This literature review was carried out primarily by following the guidelines of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) literature review process (Page et al., 2021), within the directions of the Theory-Context-Characteristics-Methods (TCCM) review protocol which focused on used methods, theories, and constructs (Rosado-Serrano et al., 2018). TCCM illuminates both theoretical and empirical aspects of a particular research domain (Chen et al., 2020), and provides instructions for this literature study to investigate the subject of gamification and employee well-being, as well as suggested future research directions.

The literature search was conducted in the Scopus database, which contains over 20,000 peer-reviewed journals published by Elsevier, Emerald, Inderscience, Informa, Springer, Taylor and Francis, and Wiley (Bhukya et al., 2021; Gupta et al., 2021). The studies of Acciarini and colleagues (2023), Xi and Hamari (2021), and Morschheuser and colleagues (2017) also used only one database in their systematic literature review. The search was conducted on 2023/03/14, and 868 documents were discovered. The initial results included journal articles, conference papers, and book chapters in English from 1976 to 2023. Scopus' search criteria included title, abstract, and keywords. Figure 1 depicts different phases of this review, mapping out the number of records identified, included, and excluded. The search string is presented as follows:

*TITLE-ABS-KEY (game OR gamif\*) AND TITLE-ABS-KEY (organization OR organisation OR team OR employee OR workplace OR work) AND TITLE-ABS-KEY (wellbeing OR wellness OR well-being OR resilience) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp") OR LIMIT-TO (DOCTYPE, "ch")) AND (LIMIT-TO (LANGUAGE, "English"))*

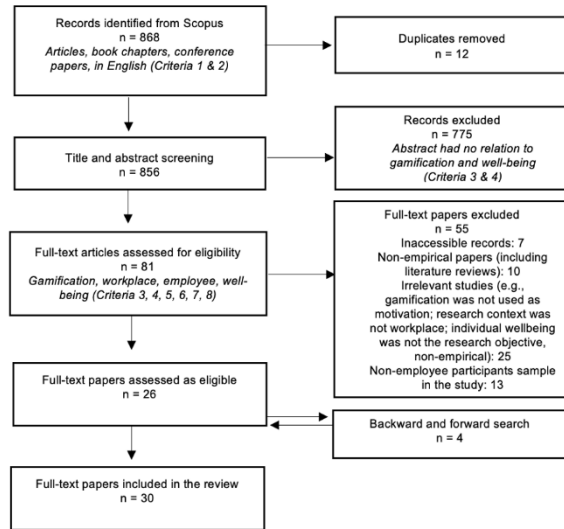


Figure 1. Literature review process

## 4. Findings

This study reviewed 21 journal articles, two book chapters, and seven conference papers. Ranking the number of publications by year, the most papers were published in 2021 (n = 7). In the following sections, the findings from the 30 reviewed papers are synthesized

according to the employed theories and methods, research contexts, characteristics of gamification, and the effects of specific game elements on employee well-being.

### 4.1. Theory

As indicated in Table 1, there are three main categories of theories that were considered in the extant literature, including Personal Behavior Theories (n = 8), Social Related Theories (n = 4), and Organizational Theories (n = 1). Personal Behavioral Theories contained eight different sub-theories adopted in 11 studies. Self-determination theory (SDT) was most frequently used (n = 4). Five studies adopted four different social-related theories. Only one study referred to organizational theory (Theory of Positive Organizational Behavior, see Herzig et al., 2015). From the reviewed literature, 18 studies did not report the theory used.

### 4.2 Research method

This section presents research methods used in reviewed articles (Table 2). Research methods were categorized as experiments (n = 13), case studies (n = 6), surveys (n = 3), field studies (n = 2), interviews (n = 2), mixed methods (n = 3), and longitudinal studies (n = 1). The majority of studies used quantitative methods, such as experiments, as the primary approach, and multiple ways for data collection were used. Mixed method studies included usability studies, experiments, field evaluations (De Visser et al., 2016), interviews, experiments, user bio data triangulations (Li et al., 2020), workshops, interviews, and field tests (Ahtinen et al., 2016).

Table 1. Theories adopted in the reviewed studies

Theories	Reference	Theories	References
<b>Personal behavior theories</b>		<b>Social related theories</b>	
Self-determination theory (SDT) (n = 4)	Herzig et al., 2015; Invernizzi et al., 2022; Lier & Breuer, 2020; Shahrestani et al., 2017	Social Cognitive Theory (n = 1)	Innocenti et al., 2012
Cognitive flexibility theory (n = 1)	Cheng & Chau, 2022	Social Comparison Theory (n = 2)	Lier & Breuer, 2020; Wentz & Stanis, 2023
Person-environment fit theory (n = 1)	Herzig et al., 2015	Social identity theory (n = 1)	Herzig et al., 2015
Self-congruity theory (n = 1)	Li et al., 2020	Socio-cultural constructivist theory of learning (n = 1)	Cheng & Chau, 2022
Self-efficacy theory (n = 1)	Herzig et al., 2015	<b>Organizational theories</b>	
Theory of emotional embodiment (n = 1)	Li et al., 2020	Theory of Positive Organizational Behavior (POB) (n = 1)	Herzig et al., 2015
The broaden-and-build theory (n = 2)	Herzig et al., 2015; Keeman et al., 2017		

**Table 2. Research methods**

Research method	Reference
Experiment (n = 13)	Cambo et al., 2017; Cheng & Chau, 2022; Collins et al., 2019 -study1; Galunder et al., 2018; Invernizzi et al., 2022; Jackson et al., 2020; Lier & Breuer, 2020; Reece et al., 2021; Ren et al., 2019; Shahrestani et al., 2017; Waddell et al., 2021; Wentz & Stanis, 2023; Zhang & Qin, 2021
Case study (n = 6)	Araújo & Pestana, 2017; Innocenti et al., 2012; Invernizzi et al., 2021; Richardson & Mackinnon, 2018; Venturini et al., 2019; Yoon et al., 2021
Mixed methods (n = 3)	Ahtinen et al., 2016; De Visser et al., 2016; Li et al., 2020
Survey (n = 3)	Barna & Fodor, 2018; Casucci et al., 2020; Lowensteyn et al., 2019
Field study (n = 2)	Collins et al., 2019 -study2; Zhang et al., 2021
Interview (n = 2)	Fager et al., 2018; Yu et al., 2022
Longitudinal study (n = 1)	Keeman et al., 2017-study2

**4.3. Context: Sectors and industries**

As all reviewed studies were conducted in the context of organization and workplace, a synthesis of the investigated industrial background and economic sectors may help us deepen our understanding towards the environment that gamification has been used in. Table 3 describes how gamification was used in organizations across four different economic sectors and 16 industries. The majority of the studies (n = 6) were conducted in research institutes, in addition to consulting (n = 3) and health industries (n = 3),

respectively. In the reviewed literature, 8 out of 30 studies did not specify the research context.

**4.4 Characteristics: Types of games, gamified platforms, and services**

Table 4 provides a comprehensive overview of the games and gamified platforms used in the workplace for employee well-being. It can be seen that 7 out of 30 studies adopted complete games, and 23 studies examined gamified services or platforms which contain specific gamification elements.

**Table 3. Research context**

Sectors	Industries	References	Sectors	Industries	References
Quaternary sector (n = 13)	Research institution (n = 6)	Ahtinen et al., 2016; Cambo et al., 2017; Casucci et al., 2020; Richardson & Mackinnon, 2018; Wentz & Stanis, 2023; Zhang et al., 2021	Tertiary sector (n = 13)	Health industry (n = 3)	Jackson et al., 2020; Shahrestani et al., 2017- study 1, study 2; Yoon et al., 2021
	Consulting (n = 3)	Araújo et al., 2017-study 2; Barna & Fodor, 2018; Zhang et al., 2021		Cleaning and security services (n = 2)	Araújo & Pestana, 2017-study 1; Fager et al., 2018
	Human resource or administration department (n = 1)	Cheng & Chau, 2022		Commercial (n = 2)	Barna & Fodor, 2018; Herzig et al., 2015
	Military (n = 1)	De Visser et al., 2016		Food delivery (n = 1)	Yu et al., 2022
	Software (n = 1)	Barna & Fodor, 2018		Pharmaseutical (n = 1)	Lowensteyn et al., 2019
Secondary sector (n = 2)	Aerospace (n = 1)	Galunder et al., 2018	Real-estate maintenance (n = 1)	Fager et al., 2018	
	Industry, pulp and paper, the building sectors (n = 2)	Barna & Fodor, 2018; Innocenti et al., 2012	Community (n = 1)	Barna & Fodor, 2018	
Primary sector (n = 1)	Agriculture and manufacturing (n = 1)	Innocenti et al., 2012	Finance (n = 1)	Keeman et al., 2017	
			Other (n = 1)	Barna & Fodor, 2018	

*Note. Economic sectors, also known as economic activities or industries, classify economic activities based on the type of goods or services they produce. Primary: involves the retrieval and production of raw-material commodities; Secondary: involves the transformation of raw or intermediate materials into goods; Tertiary: involves the supplying of services to consumers and businesses (Kenessey, 1987).*

**Table 4. The description of investigated games and gamified services**

Name	Description	Reference
<b>Games</b>		
Adventure game	The virtual reality tool to improve stress management.	Venturini et al., 2019
ANSIBLE	A virtual reality ecosystem for assessing the psychological elements of long-duration crews.	Galunder et al., 2018
Block! Hexa Puzzle	A digital game to support post-work recovery.	Collins et al., 2019
Cyberball	An online game to investigate team-based performance and social exclusion relations.	Reece et al., 2021
Mentalblock	A collaborative puzzle game that evaluates team dynamics and composition.	Galunder et al., 2018
Resilience Challenge	A scenario-based game with clinical practice challenges.	Jackson et al., 2020
Wellness Game	A gaming intervention to strengthening well-being culture.	Casucci et al., 2020
<b>Gamified services</b>		
Adventure-based LearningTM	E-learning approach for developing people's competencies.	Innocenti et al., 2012
ActionTrack	Mobile application to support walking meetings.	Ahtinen et al., 2016
Active@work	A web-based solution aims to support senior employees.	Araújo & Pestana, 2017
Battlejungle	A gamified online application to improve the enterprise's social environment.	Barna & Fodor, 2018
Breaksense	Mobile application that increases physical activity at work.	Cambo et al., 2017
DMCoach+	A social gamification application for occupational health settings.	Zhang et al., 2021
Fitbit App	An exercise application that gathers step data.	Wentz & Stanis, 2023
GameBus I	Platform that rewards teams for playing together healthy activities.	Shahrestani et al., 2017
Headspace	A mindfulness app that promotes post-work recovery.	Collins et al., 2019
HealthSit	An interactive system with lower-back stretching exercises.	Ren et al., 2019
InterRings	Interactive desktop installation provides play experience at micro-breaks.	Zhang & Qin, 2021
LEGO® SERIOUS PLAY® method	The serious play training intervention that improves workers' skills in staff development.	Cheng & Chau, 2022
LIVE IT	Web-based platform challenges to improve overall well-being.	Lowensteyn et al., 2019
MActive	The application incentivizes users with self-tracking challenges.	Richardson & Mackinnon, 2018
One by One	AI-powered interactive questionnaire that aims to make invisible work visible.	Fager et al., 2018
Provider H	A digital health platform with personalized programs to improve overall health.	Lier & Breuer, 2020
Stress Resilience training system	A software training app that minimizes stress.	De Visser et al., 2016
The cube fitness test	Assesses submaximal exercise.	Invernizzi et al., 2021
UP150 App	An application for easier physical activity.	Invernizzi et al., 2022
Virtual agent	A visual impact gamification aims to elicit user impressions.	Li et al., 2020
Way to Health	A research technology platform syncs daily step counts and total sleep minutes.	Waddell et al., 2021
WeChat	A social networking platform enabling communication among colleagues.	Yu et al., 2022
Wellbeing Game	An online tool to increase participation in wellbeing-related activities.	Keeman et al., 2017

#### 4.5. Results: Effect of gamification on employee well-being

Referring to the categorizations suggested by Xi and Hamari (2019) and Koivisto and Hamari (2019), Table 5 classifies the results of the effect of gamification on employee well-being (including mental, social, and physical well-being) according to gamification categories and specific elements. The effects were further classified as (significantly) positive, (significantly) negative, mixed, or non-significant effect. Mixed findings provoked both negative and positive feelings in participants. Within the studied literature, 23

different types of gamification elements were discovered, and they were typically presented as a whole, rather than separately.

Gamification types were classified into four categories: achievement-related (n = 9), social-related (n = 8), immersion-related (n = 4), and miscellaneous (n = 1). Challenges, goals, tasks, checkpoints, surprises, scenarios, and programs were the most frequently used achievement-related gamification elements (n = 23), along with user leaderboards, bulletin boards, levels, and rankings (n = 15). Social-related gamification was the second biggest category, with the most used characteristics comprising social interaction, support, and communal elements (n = 10), as well as feedback,

recommendations, and motivation (n = 8). Immersion-related elements included avatars (n = 2), player roles (n = 2), virtual reality environment (n = 2), interactive

learning environment (n = 1), and routes (n = 1). Miscellaneous covered newsfeed (n = 2).

**Table 5. Results by gamification elements employed in the studies**

Categories	Gamification elements	Positive	Negative	No effect	Mixed	Number of studies
Achievement-related	Challenges, goals, tasks, checkpoints, surprises, scenarios, programs	16		6	1	23
	User leaderboards, bulletin boards, levels & rankings	9		2	4	15
	Points	8	1	2	1	12
	Rewards, prizes, trophies, awards, recognitions	6		1	3	10
	Badges	6		1	1	8
	Progress	5		1		6
	Time constraints, duration time	4		1	1	6
	Notification, reminders	1		1	1	3
	Competition	1			1	2
Immersion-related	Avatars	2				2
	Player roles	1		1		2
	Virtual reality environment	1		1		2
	Interactive learning environment	1				1
	Routes			1		1
Social-related	Social interaction, support, communal elements	8		2		10
	Feedback, tips, motivation	7			1	8
	Virtual coach	3	1	1	1	6
	Teams, player communities	2		3	1	6
	Chat	4				4
	Cooperation, collaboration	1		3	1	5
	Storytelling	1		1		2
Miscellaneous	Forum				1	1
	Newsfeed	1		1		2

## 5. Conclusion and discussion

The aim of this systematic literature review is to offer a comprehensive overview of different forms of gamification and how it has been employed in organizational management, as well as what effects gamification can bring to employee well-being. The results indicate overall gamification can significantly improve employee well-being. Based on the synthesized findings, this review study makes a considerable research contribution to the current research of gamification and motivational IT and IS-enabled organizational management. In addition, the findings also provide guidance for gamification practitioners, designers, and organizational managers on how to employ game elements and games to enhance individual well-being, satisfaction, and motivation. More importantly, this study also attempts to suggest the following future agendas to encourage and inspire researchers to conduct more high-quality studies on this topic.

**Agenda 1.** *From the theoretical perspective, in addition to traditional psychological theories, future studies can consider organization-related, technology-*

*related, and health-related theories to construct research framework and examine the effect of gameful IS. In organizational management, theories such as expectancy theory, goal-setting theory, reinforcement theory and equity theory can often be used to explain how employees consider themselves and relationships with others and organizations (e.g., effort and contributions) which can provide theoretical foundations for revealing employees' perceptions and assessments of gamified wellbeing services and systems. As the application of gamification in organizational management is still in its infancy (only 30 empirical papers were reviewed in this study), theories such as (extended) technology acceptance model (TAM), unified theory of acceptance and use of technology (UTAUT) and innovation diffusion theory (IDT) can be considered in the future research for understanding the acceptance, adoption and willing to use of gamification for well-being. Additionally, theories regarding health beliefs and behaviors may also provide theoretical explanations for why game-like experiences can contribute to positive psychology.*

**Agenda 2.** *From the contextual perspective, future research is encouraged to pay more attention to*

employees' well-being and health management in traditional industries belonging to primary and secondary economic sectors. According to the synthesized results of research contexts, it can be seen that most investigated organizations and companies were located in tertiary and quaternary economic sectors and mainly across research institutions, healthcare industry, and consulting industry. Generally, most traditional industries require a lot of physical resources and effort, while the workers and employees' physical and mental health are easily neglected which can be more often seen in economically underdeveloped regions and countries. Therefore, future studies may consider exploring the value of gamification in well-being of employees from various traditional industries such as forestry, renewable energy, construction, machinery and equipment manufacturing.

**Agenda 3.** *From the thematic perspective, future research may benefit from conducting a more granular analysis on the effects of different kinds of gamification elements on sub-dimensions of well-being.* According to Table 5, it can be seen that the effects of gamification and specific elements are diverse and differentiated. Even though we can still draw a general conclusion that gamification can improve employees' well-being, it is still unclear whether gamification works when achieving specific well-being goals. Thus, future research can conduct in-depth investigations on how specific gamification elements would influence different dimensions of well-being such as emotional, physical, social, and financial well-being, and how these effects influence each other. In addition, the boundary conditions of employing gamification such as individual factors, industry characteristics, and organizational factors can be examined in future studies.

**Agenda 4.** *From the methodological perspective, future gamification research would benefit from more longitudinal and field studies to enhance the external validity of the results.* Longitudinal methods can help researchers study changes regarding the effect of gamification on employees' well-being over an extended period of time (Keeman et al., 2017; Georgiou & Lievens, 2022; Hu et al., 2022). While field studies such as field experiments and ethnographic research can be considered so that the findings can be generalized to broader populations or situations.

## 6. Limitations and future agendas

Even though this study followed PRISMA guidance for the literature review process and referred to TCCM to synthesize the findings, there are still a few limitations that can be improved in future studies. Because we focused primarily on English-language research and restricted our search to the Scopus

database, data from the literature in languages other than English were removed from this analysis and may be included in future assessments of additional databases. Because the number of literature retrieved was rather small, it is conceivable that research utilizing terms other than those included in our search query was missed.

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