

Factors Affecting Citizen Engagement in the Kingdom of Bahrain Through Gamification.

Abstract

Civic engagement, as a fundamental pillar of participatory governance, has evolved with the integration of digital platforms, aiming to foster inclusive decision-making processes. However, sustaining meaningful engagement remains a challenge. Gamification, the integration of game elements into non-game contexts, offers a novel approach to address this challenge by enhancing user motivation and participation. This study investigated the influence of gamification on civic engagement in Bahrain. The study focused on independent variables such as Performance Expectation, Effort Expectation, Social Influence, Facilitating Condition, Gamification Perceived Ease of Use, and Gamification Perceived Usefulness, and their effects on the dependent variables of Behavioral Intention and Civic Engagement. The analysis revealed significant positive relationships between Performance Expectation, Effort Expectation, Social Influence, Facilitating Condition, Gamification Perceived Ease of Use, and Gamification Perceived Usefulness, with Behavioral Intention. This indicates that individuals who have higher expectations of performance, perceive greater effort expectations, feel more social influence, find gamification easy to use, and perceive it as useful are more likely to express intention for civic engagement. Furthermore, a significant positive relationship was found between Behavioral Intention and Civic Engagement, demonstrating that individuals with a stronger intention to engage in civic activities are more likely to actively participate in civic engagement. These findings collectively highlight the relevance of the proposed model's constructs in shaping civic engagement behaviors among individuals in Bahrain. The study underscored the potential of gamification to enhance citizen participation and involvement in civic activities by improving factors such as performance expectations, effort expectations, social influence, and the perceived ease of use and usefulness of gamification elements.

Keywords: Citizen Engagement, Gamification, Performance Expectation, Effort Expectation, Social Influence, Facilitating Condition and Perceived Ease of Use.

Introduction:

The foundation of gamification's core components is rooted in an in-depth analysis of contemporary literature, where inspiration from video games has led to the identification of pivotal elements that define the essence of gamification (Silic et al., 2020). This emulation of video game elements has resulted in the identification of key components that define gamification, such as accolades, point systems, badges, visual progress indicators, hierarchical levels, quests, leaderboards, customizable avatars, rules, challenging bosses, and instantaneous feedback mechanisms (Hamari et al., 2014; McCormick, 2013). Gamification is a strategic approach that integrates game design elements into non-game contexts, drawing from human-computer interaction (HCI) research and the success of the gaming industry (Carroll, 1982; Malone, 1981; Sailer et al., 2013). The primary objective of gamification is to enhance user participation and motivation by incorporating features like leaderboards and immediate feedback (Kapp, 2012). It differs from game-based learning, where games are used as educational tools, while gamification focuses on utilizing game elements to drive learning outcomes (Teach Thought, 2019).

Gamification has gained popularity across various domains, including education and digital marketing, to create motivating user experiences (Huotari & Hamari, 2012). It encompasses both explicit elements like points and badges and implicit psychological mechanisms like feedback and competition (Luo, 2023). This approach has been effectively integrated into various sectors, including the public sector, where it has been utilized to encourage tax compliance and emergency officer training (Buheji, 2019; Deci & Ryan, 1985). In the realm of civic engagement, gamification integrates game elements and motivational strategies to encourage participation and satisfaction among individuals (Scurati et al., 2020). The adoption of gamification in civic platforms aims to enhance user engagement and motivation (Asquer, 2014; Supendi & Prihatmanto, 2015). By introducing game mechanics into civic engagement, gamification leverages

intrinsic human drivers to curate captivating experiences, enhancing competence, relatedness, and autonomy (SDT) (Ryan & Deci, 2000).

The application of gamification in civic engagement aligns with the aims of stakeholder involvement and societal transformation, benefiting community welfare and constructive change management (Adler & Goggin, 2005). It aligns with the principles of self-determination theory, which emphasize autonomy, mastery, and relatedness as psychological rewards that sustain engagement (Baard et al., 2004). Additionally, the concept of purpose within gamification mirrors the engaging essence of games, fostering sustained engagement (Pink, 2009). In the public sector, gamification holds the potential to drive stakeholder engagement, foster collaboration, and optimize resource allocation (Coronado & Vasquez, 2014). This approach amplifies intrinsic motivation, creating a sense of process autonomy and community, which in turn perpetuates engagement (Zhang, 2008). The integration of gamified elements into the realm of governance echoes the use of games in policy planning and decision-making, transforming participation into an enjoyable experience while broadening policymakers' perspectives (Duke, 1995; 2000). Furthermore, gamification's impact on civic engagement goes beyond short-term behavioral shifts, as it triggers intrinsic psychological rewards that yield desired behavioral outcomes over time (Sailer et al., 2013). Its potential lies in galvanizing active public participation by aligning with users' self-determination theory and fostering sustained engagement through purpose-driven objectives (Deterding, 2011). Research findings also emphasize that gamification has the potential to enhance employee engagement, productivity, and creativity (Rahiman et al., 2023; Aly, 2021).

Despite the substantial online presence of individuals today, gamification offers a promising solution to encourage active participation on civic engagement platforms, translating digital engagement into increased involvement (Ofcom, 2015). The incorporation of gamification elements like missions and fun enhances engagement and interaction, bridging the gap for less active demographic groups (Thiel, 2015). Notably, successful applications of gamification highlight its potential to reshape the landscape of civic participation, encouraging greater engagement and meaningful interactions (Romano et al., 2022).

The benefits of incorporating gamification into civic engagement practices are multifaceted, as summarized in the table. One notable advantage is the enhancement of engagement on civic platforms, a facet highlighted by Alharbi et al. (2016) and Ofcom (2015). Through the integration of game elements, these platforms become more captivating, fostering greater participation and interaction among citizens. This is particularly significant in the digital age, where individuals spend a substantial amount of time online, yet transitioning this engagement into civic platforms remains a challenge. Gamification also encourages active citizen participation by leveraging game mechanics to motivate individuals to participate in decision-making processes. Asquer (2014) and Supendi & Prihatmanto (2015) emphasize the potential of gamification to tap into intrinsic motivations, compelling citizens to contribute their viewpoints and collaborate actively. This approach aligns with self-determination theory, as discussed by SDT scholars Ryan & Deci (2000) and demonstrated by Buheji and Ahmed (2017), who underscore the role of autonomy, competence, and relatedness in gamification's capacity to harness human psychology. Furthermore, the literature highlights gamification's ability to reshape stakeholder perspectives, facilitating policy planning, and decision-making processes (Thiel, 2015; Duke, 2000). By introducing game-like elements, gamification transforms participation into an enjoyable experience that broadens policymakers' viewpoints. This aligns with the concept of fostering collaboration and community, as proposed by Adler & Goggin (2005), Hasan (2016), and Deterding et al. (2011a). Moreover, gamification's capacity to alleviate negative emotions (Deci & Ryan, 1985) and sustain behavioral change (Sailer et al., 2013) contributes to its appeal as a strategy to amplify civic engagement. In conclusion, gamification, by integrating game elements into non-game contexts, offers a potent strategy to drive engagement and motivation in various sectors, particularly in civic engagement. Its impact is grounded in principles of intrinsic and extrinsic motivation, self-determination theory, and purpose-driven objectives. The potential benefits of gamification extend to fostering collaboration, enhancing stakeholder involvement, and ultimately contributing to community welfare. As gamification continues to evolve, it presents a powerful tool to shape civic engagement practices and inspire positive societal change.

While numerous studies have explored the potential of gamification to enhance civic engagement, a noticeable void exists when considering the unique sociocultural dynamics of the Kingdom of Bahrain. Most current research predominantly draws from Western contexts, failing to consider how Bahrain's distinct cultural nuances might intersect with gamification strategies and influence citizen participation. This underscores the need for a comprehensive investigation into how cultural factors interact with gamification to either facilitate or hinder civic engagement in this specific context. In addition to the cultural gap, many existing studies tend to focus on the positive outcomes of gamification while downplaying potential challenges and unintended consequences. This research gap highlights the necessity to examine how gamification might inadvertently exclude certain segments of the Bahraini population due to varying levels of digital literacy or familiarity with gaming concepts. A comprehensive understanding of these nuances is vital to ensure that gamification strategies are inclusive and equitable, fostering engagement among all demographics. By exploring potential obstacles and limitations, a more holistic approach can be developed to enhance civic participation through gamification. Furthermore, the current body of research predominantly emphasizes short-term effects and initial implementation of gamification in civic engagement initiatives. Longitudinal investigations into the sustainability and evolution of gamification's impact over time are scarce. To comprehensively assess the lasting influence of gamification on civic behavior, it is imperative to delve into whether heightened engagement levels persist or transform into more complex patterns, shaping citizens' attitudes and behaviors in the long run. Addressing this gap in research would contribute invaluable insights into the enduring effects of gamification on civic engagement dynamics within the Kingdom of Bahrain.

Literature review:

Gamification concept:

The foundation of gamification's core components is drawn from a comprehensive analysis of literature, where contemporary video games emerge as the primary wellspring inspiring strategies in gamification (Silic et al., 2020). This emulation of video game elements has resulted in the identification of pivotal components that define gamification's essence. These include accolades or accomplishments, point systems, emblematic badges, visual progress indicators, hierarchical levels, immersive quests, competitive leaderboards, customizable avatars, regulating rules, challenging bosses, and instantaneous feedback mechanisms. Remarkably, the integration of these elements into gamified systems has been empirically proven to cultivate active engagement, gradual advancement, healthy rivalry, and a profound sense of fulfillment among participants (Hamari et al., 2014; McCormick, 2013). Gamification is portrayed as a sequential procedure with three core phases as illustrated in (Figure 1) (Hamari et al., 2014). It commences with the introduction of motivational triggers, such as stimuli that impact users' psychological states and prompt them to act in desired manners. These triggers pave the way for psychological encounters that subsequently shape the behavioral consequences within the context of gamification.

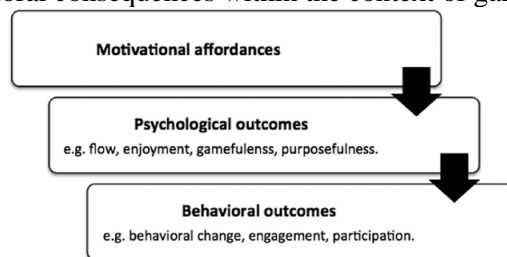


Figure 1: Gamification Process.

Gamification, integrating game design elements into non-game contexts, has gained significant attention in recent years. While the concept is relatively new, its foundations can be traced back to human-computer interaction (HCI) research. Early studies by Carroll (1982), Carroll and Thomas (1988), and Malone (1981) explored the appeal and engagement factors of computer games, providing insights into the elements that make games captivating. Sailer et al. (2013) clarified that gamification is a relatively new concept involving game elements and design techniques in non-game contexts. It draws inspiration from

the success of the gaming industry, social media, and research in human psychology. The primary goal of gamification is to increase user participation and motivation by incorporating features like leaderboards and immediate feedback. This fosters a sense of empowerment and engagement in completing tasks and processes. Understanding the fundamental concepts of games is crucial for effectively implementing gamification as a strategy. Before exploring its motivational aspects, it is important to consider the four components of the definition: games, elements, design, and non-game contexts.

Similarly, gamification, according to Luo et al. (2021), is widely recognized as a valuable concept for increasing engagement and has shown promise in computer-assisted language learning (CALL) and mobile-assisted language learning (MALL) contexts. Gamification is incorporating game design elements in non-game settings to encourage desired behaviors. Gamified learning, on the other hand, involves using game design elements specifically for educational purposes. Teach Thought (2019) distinguished between gamification and game-based learning (GBL). Gamification involves integrating gaming elements like points, rewards, and mechanics into non-game contexts to enhance engagement and motivation. In contrast, GBL refers to using games as educational tools, where students learn by actively participating in games designed to teach specific concepts. GBL relies on the direct correlation between progress in the game and the understanding of the taught concepts. On the other hand, gamification focuses on utilizing game elements to drive learning outcomes. Combining GBL and gamification creates a comprehensive learning solution that integrates educational content with engaging game-based experiences.

Wright (2018) clarified that gamification and game-based learning, although both utilize games in education, possess distinct characteristics. The disparity lies in how game elements are incorporated into the learning experience. Gamification combines game design elements, mechanics, and thinking into non-game activities to motivate participants. Conversely, game-based learning encourages students to learn through play, rendering the learning process more captivating and immersive. Al-Azawi et al. (2016) additionally emphasized that game-based learning aims to amalgamate learning and play, while gamification focuses on utilizing game elements to motivate participants within non-game contexts. Thus, despite a shared foundation, gamification and game-based learning exhibit unique approaches to integrating game elements into educational settings. Various authors have provided their interpretations of gamification, highlighting its diverse nature. Burke (2014) defines it as utilizing game design elements in non-game contexts. It focuses on game thinking and mechanics to engage and solve problems. Kapp (2012) views gamification as employing game-based mechanics and aesthetics to engage, educate, address challenges, and boost motivation by incorporating empowering game elements into tasks. Deterding et al. (2011) defined gamification as applying game design principles in non-gaming settings. Subsequently, Werbach (2014) expanded the definition to encompass transforming non-game activities into game-like experiences. As defined by Marczewski (2015), gamification is using game elements to foster motivation and involvement in the educational process. It is distinct from game-inspired design, serious games, and playing concepts. Gamification has gained popularity across various domains, including digital marketing and education, intending to create enjoyable and motivating student learning experiences. By incorporating game elements into non-game contexts, such as educational settings, gamification has proven effective in enhancing student engagement and motivation. Another definition offered by Huotari and Hamari (2012) describes gamification as a method used to provide various services in business contexts, but not specifically in education. On the other hand, Chou's (2015) definition focuses on gamification as a broad term encompassing the integration of game-like elements and activities within educational technology platforms.

Deterding et al. (2011) stated that gamification involves using game elements in non-game contexts to engage individuals and drive them toward specific objectives. Flores (2015) emphasizes that gamification is a powerful motivator, constantly fostering motivation, and has been successfully applied in various domains to bring about behavioral changes, encourage innovation, and facilitate skill development. Klock et al. (2015) provide a comprehensive list of gamification components, including narrative, rules, challenges, integration, reinforcement and feedback, engagement loops, achievements, points, levels, rankings, badges, customization, and virtual goods. According to Luo (2023), game design elements can be classified into two categories: explicit and implicit. Explicit elements include visible game-like features

like points, badges, leaderboards, avatars, and virtual currencies. Implicit elements, on the other hand, are the underlying psychological mechanisms that make gamification engaging, such as feedback, achievement, competition, collaboration, challenge, avoidance, ownership, and user control.

Gamification serves as a prominent tool across various organizational sectors, being effectively applied in domains ranging from manufacturing and operations to recruitment and staff development (Deif, 2019). This integration of gamification with advanced technologies like artificial intelligence (AI), machine learning (ML), and the Internet of Things (IoT) is rapidly gaining traction, leading to improved performance through a diverse array of tools and frameworks (Bahadoran et al., 2023; Jacob et al., 2022). As organizations increasingly adopt gamified AI approaches to address skill identification and counter recruitment bias, this trend aligns seamlessly with the ongoing digital transformation within the realm of civic engagement (Ramallo-González et al., 2022). Notably, influential entities such as the European Central Bank, SAP, Samsung, and Apple, leverage gamification to optimize various operational aspects, underscoring its versatile capabilities (West & Lockley, 2016).

Gamification operates as a strategic mechanism introducing game-related components into non-game contexts, engendering experiences reminiscent of gaming itself (Müller et al., 2016). The historical trajectory of gamification traces back to the 20th century, potentially germinating from the establishment of the boy scouts organization, its subsequent evolution extending across a spectrum of domains, with particular prominence in web-centric fields (Leon & Peña, 2021). Within organizational landscapes, gamification emerges as a multifaceted tool, orchestrated by entities not only to cultivate workforce engagement but also to incentivize user participation, streamline recruitment endeavors, empower leadership dynamics, and optimize overall productivity (Prasad et al., 2019).

Intersecting with the theoretical underpinnings of flow theory, gamification undertakes the strategic role of engendering optimal engagement by immersing participants in activities that are both challenging and conducive to their skill level. This is achieved through the delineation of clear objectives, instantaneous feedback loops, and the cultivation of a sense of achievement (Hammedi et al., 2021). Furthermore, gamification assumes the vantage point of augmenting human resource management (HRM) systems, adroitly integrating design elements such as badges and leader boards (Donnermann et al., 2021). A discernible facet of gamification lies in its proclivity to accommodate pro-environmental actions, thereby actively propagating environmental conscientiousness within its gamified frameworks (Marculescu et al., 2020).

In the specific arena of civic engagement, the implementation of gamification involves the integration of gaming elements and motivational strategies to encourage participation and foster satisfaction among individuals (Scurati et al., 2020). The achievement of success through gamification in this context is contingent upon factors such as individual enthusiasm, positive perceptions, and the resulting engagement (Metwally et al., 2021). Ultimately, the enhancement of civic engagement through effective gamification strategies hinges on their alignment with the overarching goals of the community (Zhang et al., 2021).

The trajectory of gamification ventures beyond mere recreation, as it channels the captivating facets inherent in games to optimize commitment and participation in real-world tasks (Mitchell et al., 2020). This premise is evident in the strategies employed by training and development units, where gamification techniques, including team building, communication enhancement, logical reasoning, and situation analysis, are instrumental in facilitating effective learning (Leon & Peña, 2022). Importantly, gamification synergizes with transformative technologies such as AI, IoT, and ML to elevate job engagement and operational efficiency. The amalgamation of these technologies has the potential to yield enhanced outcomes across multifarious domains, including recruitment and skill assessment (Moorhouse & Kohnke, 2020).

The foundational underpinning of flow theory resonates as an integral element within the potential benefits offered by gamification. The theory proposes that individuals can achieve a state of profound immersion and engagement when absorbed in tasks (Moneta & Csikszentmihalyi, 1996). This concept is evident in various contexts, from artists immersed in their creative process to athletes pushing their physical boundaries (Patrício et al., 2018). Similarly, employees can attain this state of "flow" through focused concentration, enthusiasm, and a sense of fulfillment in their tasks (Duggal & Gupta, 2020). This rationale

sets the stage for postulating that the integration of gamification into human resource management holds the potential to positively impact employee engagement and productivity. This hypothesis is underscored by factors like the perception of adoption, recognition, utility, and motivation within gamification initiatives (Brangier & Marache-Francisco, 2020; Whitson, 2013). Gamification encompasses the integration of game-related components like point scoring, competition, and rule systems into diverse domains extending beyond conventional gaming realms. This evolution stems from the fusion of technological game design with social science insights, leading to its pivotal role in socio-economic transformations (Madrid & Hunter, 2012). The infusion of enjoyable and captivating game elements within gamification serves as a catalyst, reshaping mundane tasks into immersive encounters, thus facilitating learning and inducing behavioral shifts (Landers et al., 2015). Gamification approach draws on game principles and design tactics, effectively employing the allure of gaming to heighten engagement and motivation toward specific goals (Kapp, 2012). Furthermore, gamification is conceptualized as a mechanism that augments the creation of value for users by leveraging mechanisms that evoke a game-like experience (Deterding et al., 2011).

Gamification in public sector:

Gamification's application within the public sector showcases its versatility. Notably, the Taiwanese government employed innovative strategies, like motivating citizens to demand official receipts through invoice numbers, leading to enhanced tax compliance (Buheji, 2019). Similarly, the Singaporean Changi airport harnessed virtual reality to bolster the preparedness of emergency officers, exemplifying gamification's impact on skill development (Deci & Ryan, 1985). Chin's work in Salem, Massachusetts, illuminates how gamification aids feedback collection from marginalized neighborhoods, yielding socio-economic stability and service improvement (Buheji, 2018). The incorporation of gamification within workplaces stands as a captivating phenomenon, drawing on historical instances of using games to inspire employee motivation (Edery & Mollick, 2009). The manifold definitions of gamification find resonance in past motivational methodologies at workplaces, encompassing game-like components to augment engagement, spur accomplishment in challenges, and offer rewards (Salen, 2004). In contrast to earlier dismissals of gameplay as unproductive, Burawoy (1979) spotlighted its dual-purpose nature - a tool for both managerial control and channeling worker rivalry away from collective resistance. This perspective catalyzed an inclination toward integrating games as motivational tools (Reeves & Read, 2009; Edery & Mollick, 2009).

The application of gamification within companies follows two primary trajectories - consumer-focused marketing or loyalty initiatives, and the emphasis on elevating employee performance and motivation (Dale, 2014). Remarkably, inherent enjoyment plays a pivotal role in cultivating positive work atmospheres (Deci & Ryan, 1985; Grant, 2008). Acknowledging that games evoke emotional reactions, a nexus emerges between games and emotional occurrences in workplace settings, implying potential benefits for employee engagement and effectiveness (Weiss & Cropanzano, 1996; Mollick & Rothbard, 2014). Game constituents such as rewards, challenges, competition, and accomplishments, when judiciously integrated, can instill a sense of perpetual triumph, contributing to favorable work-related results (Coaster, 2004; Reeves & Read, 2009; McGonigal, 2011). Habitica, an online habit-tracking role-playing game, emerges as a prospective avenue for scrutinizing gamification's impact within Bahrain's workplace. This distinctive approach facilitates the investigation of gamification's intermediary role in the interplay between psychological capital and employee inventiveness. Psychological capital, encapsulating optimism, self-efficacy, hope, and resilience, assumes a pivotal role in shaping employee demeanor and work engagement (Luthans et al., 2005, 2007). Creativity, indispensable for organizational survival, encompasses generating ingenious concepts and adeptly resolving problems. Employee ingenuity, shaped by attributes like determination, adaptability, and psychological empowerment, significantly contributes to organizational triumph (Mittal & Dhar, 2015; Zhang & Bartol, 2010).

The application of gamification in civic engagement signifies a strategic integration of game elements with the purpose of instigating motivation and active participation among citizens in the realm of political endeavors. Examining instances where gamified techniques have been employed to invigorate civic involvement provides a discerning insight. For instance, Baykurt's utilization of a web-based game centered around local concerns highlights a notable aspect wherein citizens could oversee the resolution

process conducted by local authorities (Baykurt, 2012). Similarly, the study conducted by Tolmie et al. through a multiplayer pervasive game underscores the strategic significance of timing in motivating engagement without causing significant disruptions to individuals' daily routines (Tolmie et al., 2014). Furthermore, Escobar & Urriago's work accentuates the pivotal role of cultivating intrinsic motivations to achieve a sustainable shift in behavior patterns (Escobar & Urriago, 2014).

The multifaceted influence of gamification extends to augmenting the agility and efficiency of the public sector. These impacts are achieved through the strategic implementation of game elements such as points, badges, leaderboards, and a sense of achievement, effectively driving desired stakeholder behaviors and service advancements (Adler & Goggin, 2005). The integration of game elements not only triggers immediate responses but also fosters lasting behavioral and motivational changes (Coronado & Vasquez, 2014). As a dynamic tool, gamification emerges as a potent agent for instigating social and behavioral transformations, influencing decision-makers and confronting socio-economic challenges. This approach, rooted in game-based thinking, contributes to organizational enhancement by promoting focus, observation, and persistence (Madrid & Hunter, 2012). Historical instances provide vivid illustrations of gamification's influence on reshaping behavior in parking and transportation. Parking regulations tailored through gamification exerted significant control over commuter choices, reflecting how game-like dynamics can steer individual decisions (Chin, 2016). Copenhagen's adoption of incentivizing biking over parking further emphasizes the motivational power of rewards (Velten, 2017). The educational sector, too, leverages gamification's principles to elevate student engagement (Deterding et al., 2011). In summation, gamification not only enhances the public sector's effectiveness but also adds an element of enjoyment, engaging citizens in the process (Deterding et al., 2011).

Civic engagement:

Amid the swift evolution of modern technology, citizens' involvement in governance processes has progressively transitioned to digital platforms since the early 1990s, aiming to broaden inclusivity and incorporate marginalized groups (Lee-Geiller & Lee, 2019). While the realm of (e)participation has grown over time, its fundamental nature and objectives continue to pose complexities (Conge, 1988). Civic engagement, characterized by technologically mediated interactions between the government and civil society, stands as the overarching theme (Sæbø et al., 2008). Framed positively, e-participation embodies citizens' interaction with both government entities and fellow citizens to enhance their community's welfare (Islam, 2008). However, the quantification of community betterment remains elusive. In a broader context, (e)participation encompasses individual or collective actions, whether constructive or detrimental, influencing decisions on public goods, authority, and urban structures (Landers et al., 2018).

Civic engagement plays a crucial role in community advancement, involving active participation in governance at diverse levels (Magnette, 2003). As individuals partake in voting, suggesting projects, and expressing viewpoints, the collaborative synergy among researchers, local authorities, and corporations has gained momentum in promoting civic engagement, particularly within the framework of Smart Communities (Coe et al., 2001). This trend emphasizes the importance of cooperative endeavors involving citizens, private enterprises, and institutions (Wilson, 1997). However, facilitating and motivating such engagement remains intricate (Delli Carpini, 2000). Smart communities leverage social networks and mobile applications to integrate citizens (Mainka et al. 2016; Romano et al., 2016), seeking a balance between spontaneously generated social network content and curated mobile app data (Díaz et al., 2016).

Civic engagement signifies the proactive involvement of citizens within a community, driven by the aim to enhance the well-being of others and shape the community's future trajectory (Adler and Goggin, 2005). This concept highlights citizens' pivotal role, aligning with the user-centric approach of Human-Computer Interaction (HCI). Much like HCI's engagement framework, civic engagement encompasses a spectrum of individual and collective actions that are graphically represented in (Figure 2), creating a continuum analogous to the HCI engagement concept. Cortés-Cediel et al. (2018) delve into the intricate mechanics of civic engagement, emphasizing the dynamic shifts in energy and interest levels experienced by engaged citizens. This unfolding process traverses distinct phases: the initiation of engagement, the span of active engagement, and the eventual decline of engagement over time.

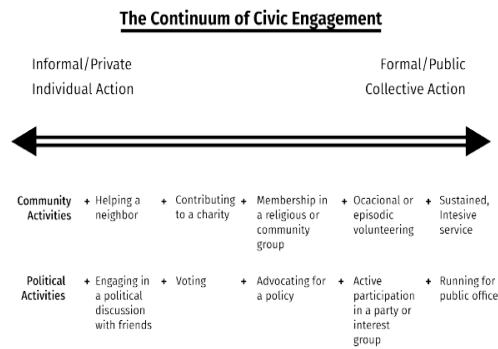


Figure 2: Civic Engagement Continuum.

A succinct adaptation of this definition views civic engagement as active citizen engagement in political and governance processes, aligning with Sherry Arnstein's pioneering concept of citizen participation as a mechanism for redistributing power and empowering marginalized groups within the political and governance spheres (Bingham et al., 2005). These processes' critical role lies in policy-making stages, spanning agenda setting, analysis, creation, implementation, and monitoring, following Macintosh's delineation (2004). Correspondingly, three tiers of citizen engagement with these stages emerge: enabling, centered on information dissemination; engaging, involving limited interactive discourse; and empowering, wherein citizens and governments collaboratively shape policies as equals (Macintosh, 2004). Notably, these levels correspond to Sherry Arnstein's ladder of participation, albeit excluding non-participatory aspects. However, despite the prevalence of online activities, most individuals allocate only a fraction of their online time to civic engagement undertakings or platforms (Toots, 2019). E-participation initiatives frequently struggle to attract anticipated audiences during the shift to digital engagement. This deficiency in engagement might be attributed to challenges in socio-technological management, citizens' lack of interest, or uninspiring design of e-participation platforms (Lee & Kim, 2014). These observations have spurred the exploration of alternative technologies, such as gamification, to elevate user engagement and reinvigorate e-participation initiatives (Thiel, 2016). Ali and Ali (2015) investigated e-Participation and civic engagement in Bahrain, which employs technology to involve citizens in decision-making, boosting transparency and government-citizen interaction. Their study assessed Bahrain's readiness for e-Participation, finding significant progress across ten dimensions. The country has embraced e-Participation in areas like education and politics, using tools like e-petitions and mobile channels. The government promotes transparency, equality, and engagement via diverse channels.

In Bahrain, the evolution of civic engagement encompasses diverse stages and strategies. Initially, the emphasis was on sharing political information with citizens, followed by a shift towards fostering interaction with stakeholders using e-Participation. This progression includes e-consultation, which seeks to facilitate advisory participation, feedback collection, and engagement. The implementation of e-Participation spans multiple ministries, encompassing fields such as education, healthcare, and culture. The process adheres to a structured policy-making model, encompassing stages like document publication, feedback gathering, response analysis, decision announcement, and archiving (Aly, 2021). The government employs various technologies to involve citizens and stakeholders and adheres to communication protocols to ensure effective exchanges. The e-Government Authority exhibits preparedness concerning sustainability, accessibility, resources, and promotional efforts. Evaluative perspectives underscore advancements in transparency, engagement, and conflict resolution. The design integrates considerations of a political, project-oriented, and socio-technical nature, aligning with critical success factors to enhance the effectiveness of e-Participation (Ali & Ali, 2015). Nonetheless, platforms designed for such engagement often encounter challenges in achieving significant participation rates (Hassan, 2017). To tackle this issue, gamification, the integration of game elements into non-game contexts, has emerged as a solution (Pelling, 2011). Gamification exploits the intrinsic appeal of games to enhance system attractiveness (Deterding et al., 2011). While effective in fostering citizen-organization interactions (Coronado Escobar & Urriago,

2014), its efficacy varies across different domains (Thiel, 2016). Gamified applications stimulate community-focused suggestions, communication between municipal services and residents (Rodrigues et al. 2019), eco-consciousness, and crisis readiness (Mylonas et al. 2021).

The advancement of civic engagement through e-participation initiatives is bolstered by a set of critical success factors (CSFs) that play a pivotal role. These CSFs, meticulously detailed by the e-Government Authority (eGA) on its official website, encapsulate a series of procedural guidelines strategically designed to ensure the effective performance of e-participation projects. Within this framework of CSFs, key elements come to the forefront. First and foremost is the imperative to uphold transparency as an essential principle, fostering an environment of openness and accountability. Additionally, the necessity to address and meticulously consider every comment and inquiry emerges as a critical factor, contributing not only to comprehensive stakeholder engagement but also to the preservation of the current state of affairs. Further, the strategic dissemination of acknowledgments across diverse communication channels emerges as a catalyst for inspiring citizen participation, creating a sense of involvement and impact. Furthermore, a significant facet of these CSFs is the commitment to comprehensive documentation, regular updates, and effective communication mechanisms. This commitment enables citizens to stay well-informed about the progress of e-participation initiatives and governmental practices. The interplay of these CSFs underscores the meticulous planning and strategic execution required to truly enhance civic engagement through e-participation endeavors (Macintosh, 2008). Initiating engagement necessitates motivated users, as highlighted by Cortés-Cediel et al. (2018). Motivation can spring from intrinsic factors like personal interest in a governmental concern or extrinsic factors that demand external stimuli. In scenarios requiring extrinsic motivation, a well-executed government publicity campaign could be necessary to attract the right audience. The design of the engagement tool itself holds significance, with an appealing aesthetic serving to augment the initiative's allure. Incentives also come into play, but the efficacy of economic incentives in boosting quantity might not guarantee enhanced quality. These incentives could be perceived as manipulative and their impact may dissipate once the reward period concludes. The judicious introduction of incentives becomes imperative to avoid diluting intrinsic motivation, which originates from authentic interest and a sense of autonomy. The phase of declining interest characterizes the expiration of engagement, a natural progression over time. However, extended engagement can flourish when users' psychological needs are met, delivering meaning, value, and minimizing user burden. In response to diminishing interest, designers should introduce revitalization tools. These tools encompass gratifying experiences, conveying information about the implementation and outcomes of past contributions, and proactive strategies like mobile notifications, email reminders, and rewards to uphold engagement. The preservation of citizens' recollections of prior interactions assumes a pivotal role in sustaining ongoing participation (Doherty and Doherty, 2018).

Factors affecting civic engagement:

Prior research has extensively delved into a spectrum of factors intertwined with engagement, encompassing usefulness, ease of use, trust, privacy, security, service response, personal traits, as well as external influences like social dynamics, quality, digital literacy, and users' technological inclinations (Ahmed, 2013; Khasawneh & Tarawneh, 2016; Nam, 2012; Nadzir et al., 2020). As elucidated by Khasawneh and Tarawneh (2016), an augmented adoption of e-government practices has tangible repercussions on citizens' perceptions of government functions, service utilization, and the establishment of trust. In light of this, the current study investigates a spectrum of dimensions—namely, citizens' attitudes towards e-government 2.0, their perception of value, the degree of trust in governmental initiatives, internet usage habits, and the intensity of e-government engagement.

The pivotal role of citizens' attitude emerges as a salient theme, intrinsically linked to the infusion of advanced technologies within government services, subsequently shaping aspects like satisfaction and trust. The nuanced variations in citizens' value perception of government-driven online services stem from the intricate nature of technology, necessitating continual development efforts to nurture trust and engender satisfaction. As trust emerges as a consistent influencer, it exerts a positive influence on citizens' outlooks and intentions regarding e-government, ultimately enhancing their perceptions of service quality and magnifying service utilization. The facet of internet usage, encapsulated as Web self-efficacy, emerges as

an influential catalyst, amplifying the adoption of e-government by facilitating information search and online transactions. In tandem, the intensity of usage emerges as a barometer of effective e-government implementation, serving as a gauge of the extent to which citizens' needs are met and encouraging their active participation within e-government initiatives (Nam, 2012). Nadzir et al. (2020) investigate the factors influencing citizens' engagement in e-government, particularly focusing on government agency Facebook pages. The study identifies five key factors that significantly impact citizens' engagement with e-government 2.0. These factors include citizens' attitudes toward e-government, their perception of its value, trust in the government, general internet usage, and e-government utilization intensity. The research highlights the central role of trust in positively shaping users' intentions to engage with e-government services.

Gamification and civic engagement:

Despite the rising trend of substantial online presence, governments struggle to maintain active participation on civic engagement platforms (Alharbi et al., 2016). Though contemporary users spend an average of 20 hours per week online, translating into twice the engagement from a decade ago (Ofcom, 2015), this digital engagement doesn't necessarily transfer to increased involvement in civic platforms. Introducing serious games and gamification to these platforms emerges as a potential solution to enhance engagement (Asquer, 2014; Supendi & Prihatmanto, 2015). The adoption of gamification within civic engagement strategies has been fueled by the desire to encourage active citizen participation in political decision-making processes. While traditional methods like town hall meetings persist, many cities have embraced technological advancements, particularly web-based platforms, to facilitate citizen involvement. These platforms, often managed directly by municipalities or through intermediaries, grant citizens a platform to voice their opinions (Thiel, 2015). The utilization of gamification, entailing the integration of game elements into non-game settings, has emerged as a notable strategy to amplify user engagement and motivation (Werbach & Hunter, 2011). Its successful application spans diverse sectors like education, healthcare, and e-commerce, consistently yielding improved user interactions and heightened usage (Koivisto & Hamari, 2019; Sgueo, 2019). In the realm of civic participation, gamification presents a promising avenue to drive active participation within decision-making processes (Hassan & Hamari, 2020). By embedding game mechanics, systems can tap into intrinsic human drivers, encompassing competence, relatedness, and autonomy (SDT), to curate captivating experiences (Ryan & Deci, 2000).

Gamification emerges as a pivotal instrument for reshaping stakeholder perspectives and devising potent strategies for societal transformation, enabling a discernible measure of learning and achievement across the public sector (Hense & Mandl, 2012). While the literature acknowledges gamification's potential to amplify stakeholder involvement in public services, there persists a lacuna in grasping its full scope of influence (Coronado & Vasquez, 2014). Notably, the lack of robust theoretical and practical frameworks for engaging stakeholders through gamification platforms hampers its systematic integration (Adler & Goggin, 2005). The integration of gamified elements into the realm of (digital) games, characterized by intricate socio-technological constructs with multifaceted definitions (Stenros, 2017), holds substantial implications for civic engagement and participation. These games, primarily designed for entertainment, introduce users to artificial challenges, rules, and outcomes, yielding cognitive, emotional, motivational, and social advantages (Granic et al., 2014). Consequently, the application of games to policymaking has persisted over the years, leveraging their benefits in contexts beyond gaming (Duke, 2011). This convergence between games and governance finds expression in policy gaming, a field exploring how simulation games can amplify policy planning and decision-making (Duke, 1995). The rationale here is rooted in the captivating essence of games that transform participation into an enjoyable experience for citizens, simultaneously broadening policymakers' perspectives by nurturing diverse thinking within a secure play environment. For instance, METROPOLIS, an early simulation game, actively engaged officials in urban planning and educated users about the intricacies of city development (Duke, 2000). Central to adopting gamification is its power to elevate motivation, categorized into intrinsic and extrinsic domains (Malone, 1981). Intrinsic motivation aligns with fundamental human psychological needs, while extrinsic motivation centers on external rewards. Strategies that embed autonomy, competence, and relatedness elements within gamification can heighten engagement, as evidenced across diverse

applications (Botte et al., 2020). Buheji and Ahmed (2017) assert that gamification's allure stems from its ability to harmonize with human psychology, employing goals that are both attainable and challenging, all the while being tracked through points and personal progress assessment. Additionally, it incorporates "quests" comprising minor tasks that engage stakeholders in upholding specific actions (Lander et al., 2015). Notably, gamification helps alleviate negative emotions such as fear and anger, thereby preserving motivation (Deci and Ryan, 1985). Gamification serves as a potent avenue for cultivating stakeholder engagement within the public sector, igniting collaboration to advance community welfare (Adler & Goggin, 2005). Beyond facilitating knowledge sharing and collaborative problem-solving, this engagement empowers stakeholders to shape governmental decisions, a dynamic underscored by Hasan (2016). As stakeholders actively participate, an optimal allocation of resources is enabled, driving community well-being and constructive change management (Deterding et al., 2011a). By leveraging gamification, public service authorities can refine planning, boost cost-effectiveness, and bolster credibility, accentuating the pivotal role of inventive methodologies like gamification in nurturing public engagement (Coronado & Vasquez, 2014). The potency of gamification resides in its capacity to galvanize and sustain active public participation, harnessing intrinsic and extrinsic motivations through carefully designed motivational strategies (Deterding, 2011). Through the gamification of processes, intrinsic motivation is amplified, stimulating the brain's inherent reward mechanisms (Deci & Ryan, 1985). Although reward-driven gamification effectively prompts short-term behavioral shifts, its enduring impact necessitates a continuous supply of incentives. Once embedded, gamification's design triggers intrinsic psychological rewards, yielding desired behavioral outcomes (Sailer et al., 2013). This methodology fosters a sense of process autonomy and community, fostering the perpetuation of engagement (Zhang, 2008).

The connection between gamification and civic engagement underscores the impact of motivational stimuli on both intrinsic and extrinsic motivations of individuals, subsequently influencing their behavioral choices and the extent of their involvement (Rigby, 2015). By employing stimuli and extrinsic rewards, gamification directly shapes extrinsic motivation, effectively prompting desired behaviors (Jones et al., 2014). However, while gamification based on rewards can yield short-term shifts in behavior, it may lack the potency to induce sustained transformation, potentially eroding intrinsic motivation over time (Nicholson, 2015). This phenomenon is grounded in organismic integration theory, which highlights the inverse relationship between intrinsic and extrinsic motivations (Broer & Poepplbuss, 2013). To cultivate enduring behavioral change, a distinct approach to gamification becomes imperative – one that aligns with the psychological rewards intrinsic to users' self-determination theory, encompassing mastery, autonomy, and relatedness (Baard et al., 2004). Additionally, the notion of purpose, a potent intrinsic motivator, emerges through goal setting and contributes to sustained engagement (Pink, 2009). This innate drive to achieve self-concurrent goals mirrors the captivating allure of games, which effectively sustain player engagement by integrating autonomy and mastery (Hamari, 2013).

Rahiman et al. (2023) examined the impact of gamification on work engagement and productivity. Findings revealed that perceived adoption and usefulness of gamified systems positively relate to job engagement, while employee recognition and perceived motivation enhance productivity. Job engagement acts as a mediating factor, bolstering organizational productivity in gamified environments. Buheji's (2019) highlighted gamification's pivotal role in boosting stakeholder engagement and facilitating ongoing improvements within public services. The study introduced gamification's capacity to revitalize education, utilities, labor management, and other critical areas of public service, ultimately benefiting both stakeholders and the broader community. Moreover, Thiel's study (2015) delves into the realm of mobile civic engagement, investigating the transformative potential of integrating game elements into such platforms. The research underscores that while game elements may serve as initial motivators, the true essence of sustained civic involvement lies in effective communication and responsiveness from governing bodies. Notably, participants expressed appreciation for the inclusion of missions and perceived the element of "fun" as an added incentive. The study ensured the promising benefits of gamification in reshaping the landscape of civic participation, presenting avenues for increased engagement, more meaningful interactions, and potentially bridging the gap for previously less active demographic groups.

Aly's (2021) research delves into the intriguing interplay between gamification, psychological capital, and employees' creativity. The study's findings confirmed that gamification exerts a positive sway on both psychological capital and employees' creative output. Notably, dimensions of psychological capital such as self-efficacy, hope, and optimism stand out as catalysts for enhancing creativity. The study's outcomes reverberate with implications for organizations aiming to optimize productivity by tapping into gamification's capacity to bolster positive psychological attributes and invigorate employees' creative potential. Gamification entails the design of systems, services, and procedures that replicate the positive and immersive elements found in successful games (Hamari, 2019). Its goal is to encourage behaviors that contribute positively to society, such as intrinsic motivation, playfulness, achievement, and community (Deterding, 2015). Unlike traditional games, gamification reshapes the core of (e)participation activities into a more game-like structure, directly incorporating game elements into processes instead of introducing external game components (Hassan, 2017). Furthermore, it facilitates sustained collaboration, extending beyond mere decision-making to encompass analysis, implementation, monitoring, and continuous engagement (Sgueo, 2019). In their experiment, Romano et al. (2022) investigated the impact of gamification on civic participation using two mobile apps—one gamified and the other not. Their findings highlighted the gamified app's superior user experience and increased civic engagement. Gamification elements like interactive competition and progressive challenges were well-received, fostering curiosity, involvement, and joy during app usage. This study underscores the potential benefits of gamification in enhancing civic engagement and encouraging active participation. The outcomes of gamification heavily hinge on its design and context, resulting in diverse effects. While it shows potential in enhancing democratic engagement through e-participation initiatives (Gordon & Baldwin-Philippi, 2014), the seamless transferability of gamification practices across different contexts remains a challenge (Asquer, 2014). The juxtaposition of the serious nature of policymaking with the often-casual associations of games raises intriguing questions about the implementation of gamified e-participation (Ampatzidou et al., 2018). These questions touch on its potential to endorse coercive governmental practices and paternalism while also considering its role in promoting compliance with policies that might infringe upon civil rights (Asquer, 2014). As a result, an in-depth exploration of contextualized research on gamification in e-participation becomes imperative to gain a comprehensive understanding of its deployment and outcomes within the distinctive intersection of governance and gaming. Hassan and Hamari (2020) conducted a systematic literature review aimed at illuminating the benefits of integrating gamification into civic engagement through e-participation initiatives. The study recognized gamification as a strategic response to the challenge of motivating participation in such initiatives. Through an assessment of 66 papers, the review highlighted that gamified e-participation demonstrates a range of advantages. These benefits encompass heightened levels of engagement, motivation, civic learning, and enjoyment among participants. The findings underscore that gamification has the potential to invigorate citizens' involvement in governance-related activities, facilitating a more active and informed citizenry. This approach presents an innovative avenue for governments to enhance public participation and strengthen their democratic processes.

Illustrative instances such as Community PlanIt, Mysidewalk, and Love Your City! underscore how gamified platforms invigorate civic involvement through mechanisms like rewards, interactions, and timed challenges (Stembert & Mulder 2013). Nevertheless, ethical quandaries emerge, questioning whether gamification could be wielded as a tool for governmental manipulation (Ampatzidou et al. 2018). Moreover, gamification has found utility in bolstering emergency readiness and management, rendering cost-efficient training solutions while fostering civic engagement (Kanat et al. 2013). The intricate interplay among gamification, motivation, and engagement is visually encapsulated in (Figure 3), outlining the translation of gamification's motivational influence into observable engagement levels. However, the perception of the psychological effects induced by gamification and games retains a subjective nature, contingent on individual perceptions and personalities (Rigby, 2015). Bartle's taxonomy of gamer personalities – encompassing Achievers, Explorers, Socializers, and Killers – elucidates diverse values in varying contexts, though its applicability to non-gaming domains like civic engagement necessitates further exploration (Bista et al., 2014).

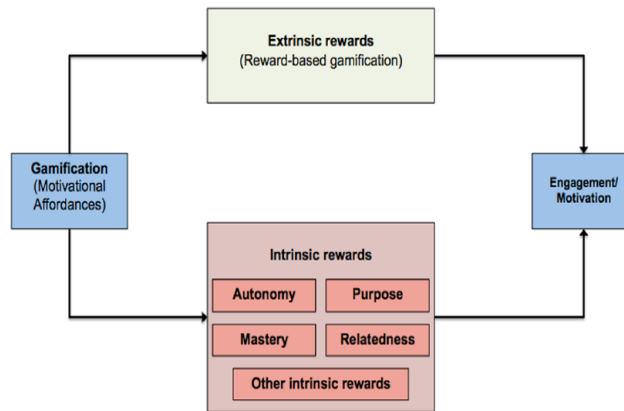


Figure 3: Relationship between Gamification and Civic Engagement.

Hassan (2017) presented a proposed model that illustrates the relationship between gamification and civic engagement as illustrated in (Figure 4). The model centers around motivational affordances as triggers for both extrinsic and intrinsic motivation in users, designed to enhance engagement and address limited civic participation. It introduces reward-based gamification, using techniques to externally reward users for engagement, suited for short-term behavioral changes. Conversely, intrinsic reward-focused gamification is emphasized, aligning with self-determination theory to cultivate lasting engagement. The model highlights the role of meaningful deliberations, integrating guidelines for informed and constructive interactions. Its adaptable nature accommodates various civic engagement contexts and additional elements, ensuring customization. Ultimately, the model combines motivational triggers, gamification strategies, and guided deliberations to stimulate active participation, fostering community and improving civic engagement platforms.

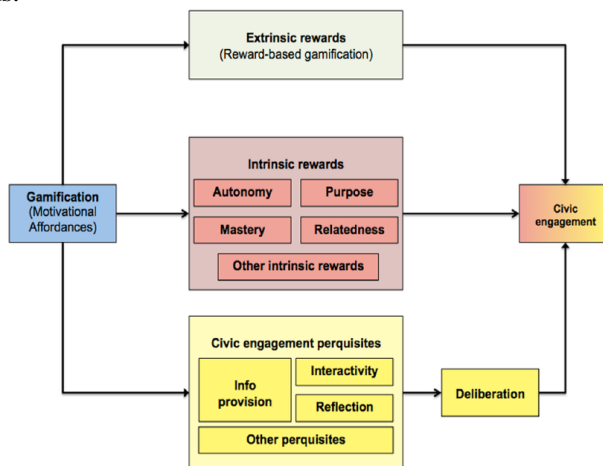


Figure 4: Proposed Framework for the Gamification of Civic Engagement

The following table summarizes the benefits of gamification on civic engagement along with the relevant literature:

Benefits of Gamification on Civic Engagement	Authors
Enhances engagement on civic platforms	Alharbi et al. (2016), Ofcom (2015)
Encourages active citizen participation	Asquer (2014), Supendi & Prihatmanto (2015)
Amplifies user engagement and motivation	Werbach & Hunter (2011), Koivisto & Hamari (2019), Sgueo (2019)
Utilizes intrinsic human drivers	SDT - Ryan & Deci (2000), Buheji and Ahmed (2017)
Reshapes stakeholder perspectives	Hense & Mandl (2012), Coronado & Vasquez (2014)
Facilitates policy planning and decision-making	Thiel (2015), Duke (2000)

Integrates game elements into civic platforms	Deterding et al. (2011a), Hassan & Hamari (2020)
Fosters collaboration and community	Adler & Goggin (2005), Hasan (2016), Deterding et al. (2011a)
Alleviates negative emotions	Deci and Ryan (1985)
Sustains behavioral change	Sailer et al. (2013)
Aligns with psychological rewards	Deci & Ryan (1985), Buheji and Ahmed (2017)
Boosts stakeholder engagement	Hassan (2017), Buheji (2019)
Fosters positive psychological attributes	Aly (2021)
Stimulates creative potential	Aly (2021)
Cultivates sustained collaboration	Stembert & Mulder (2013)
Amplifies civic engagement through gamified apps	Romano et al. (2022)
Enhances democratic engagement	Gordon & Baldwin-Philippi (2014)
Increases civic learning and enjoyment	Thiel (2015)
Strengthens democratic processes	Hassan & Hamari (2020)
Presents innovative governance avenue	Buheji (2019)
Addresses challenge of motivating participation	Hassan & Hamari (2020)
Heightens levels of engagement and motivation	Sgueo (2019), Buheji and Ahmed (2017)
Strengthens emergency readiness	Kanat et al. (2013)
Provides cost-efficient training solutions	Kanat et al. (2013)
Illustrates motivational influence in engagement	Rigby (2015)
Offers adaptable model for civic engagement	Hassan (2017)

Table 1:benefits of gamification on civic engagement along with the relevant literature.

Conceptual model and hypotheses development:

The landscape of models centered on technology adoption has undergone thorough exploration, giving rise to several behavioral theories aimed at illuminating user behavior in technology adoption. These theories encompass the Theory of Reasonable Action (TRA), Theory of Planned Behavior (TPB), Theory of Diffusion of Innovation (DIT), Technology Acceptance Model (TAM), Technology Acceptance Model 2 (TAM 2), Technology Readiness Index (TRI), Delon & McLean (2003), and Unified Theory of Technology Acceptance and Use (UTAUT) (Landers et al., 2018). The emergence of these theories is a response to the evolving nature of technology, impacting the pace of adoption, user-friendliness, security, and other pertinent factors (Silva & Dias, 2007). These behavioral theories offer multifaceted insights into the factors that shape technology adoption, rendering them invaluable for forecasting user acceptance and facilitating successful implementations.

Previous investigations have utilized the Technology Acceptance Model (TAM) along with its extensions, including TAM 2 (Venkatesh et al., 2000), and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003). Initially introduced by Davis (1989), TAM lays the groundwork for explaining the acceptance of technology across various domains. Its application has been widespread in empirical inquiries, particularly in scrutinizing users' intentions to engage (Wang et al., 2021). However, the distinctive traits of individuals can lead to diverse behaviors in adopting technology (Mouakket & Sun, 2019). Harb & Alhayajneh (2019) emphasize the nexus between personality and technology acceptance, highlighting the substantial role of individual characteristics. This insight has prompted recent examinations into how personality traits influence technology adoption, encompassing diverse contexts like smartphones, social networking sites, business intelligence tools, and digital library systems (Mouakket & Sun, 2019; Punnoose, 2012; Nov & Ye, 2008). The Unified Theory of Acceptance and Use of Technology (UTAUT) consolidates eight pre-existing models, incorporating components such as the Theory of Reasoned Action (TRA), Technology Adoption Model (TAM), Motivational Model (MM), Theory of Planned Behavior (TPB), Combined TAM and TPB (C-TAM-TPB), PC Use Model (MPCU), Diffusion Innovation Theory (IDT), and Social Cognitive Theory (SCT). UTAUT as illustrated in (Figure 5), designed with a focus on individual perspectives and developed from organizational contexts, integrates elements like performance expectation, effort expectation, social influence, and facilitating conditions to

predict behavioral intention and usage behavior (Venkatesh et al., 2004). This study enhances the UTAUT model by introducing components such as insecurity and gamification, within the context of adopting e-participation. Insecurity, which is part of the Technology Readiness Index (TRI), revolves around users' concerns regarding data security and trust in transactions facilitated by technology (Venkatesh et al., 2004). Gamification, a strategy aimed at fostering user engagement, motivation, and behavioral shifts (Rodrigues et al., 2014), is explored in tandem with social influence and perceived enjoyment to bolster the model's explanatory potential. The integration of these elements is aimed at delivering a comprehensive understanding of technology adoption behavior and the factors influencing civic engagement, particularly within the Kingdom of Bahrain's context.

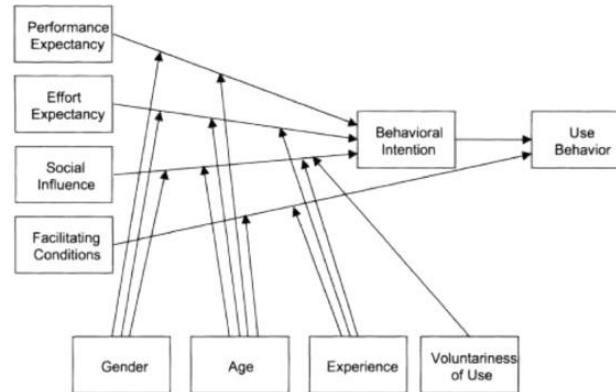


Figure 5: Model of UTAUT.

Gamification, a strategy that employs game mechanics and design techniques in non-game contexts, is utilized to shape behavior, develop skills, and engage individuals in innovation (Burke, 2012). This approach has proven effective in boosting motivation and participation in tackling intricate problems, prompting specific actions, and providing enjoyment (Mishra, 2013). Despite gamification's application in diverse domains, its influence on technology adoption, particularly in the context of civic engagement, remains largely unexplored. Baptista & Oliveira's (2017) research delves into the potential impact of gamification on user acceptance within the financial sector (Baptista & Oliveira, 2017), albeit within the scope of mobile banking services. Given the distinctiveness of civic engagement, integrating game techniques is expected to significantly elevate user acceptance levels.

Notably, the Technology Acceptance Model (TAM), rooted in Fishbein and Ajzen's (1975) research on beliefs, attitudes, and behaviors, is widely employed to understand technology adoption, predicting attitudes and actual behaviors based on perceived usefulness and ease of use (Nair & Das, 2011). This research augments the TAM framework with the Unified Theory of Acceptance and Use of Technology (UTAUT), a model integrating elements like performance expectation, effort expectation, social influence, and facilitating conditions to predict behavioral intention and usage behavior (Venkatesh et al., 2004). (Figure 6) illustrates the amalgamation of UTAUT and TAM constructs, forming the theoretical basis for the study. From Figure 2, the study generates seven hypotheses based on the proposed conceptual model:

- H1:** Performance Expectation (PE) significantly and positively affects Behavioral Intention (BI).
- H2:** Effort Expectation (EE) significantly and positively affects Behavioral Intention (BI).
- H3:** Social Influence (SI) significantly and positively affects Behavioral Intention (BI).
- H4:** Facilitating Condition (FC) significantly and positively affects Behavioral Intention (BI).
- H5:** Gamification Perceived ease of use (GPU) significantly and positively affects Behavioral Intention (BI).
- H6:** Gamification Perceived usefulness (GPU) significantly and positively affects Behavioral Intention (BI).
- H7:** Behavioral Intention (BI) significantly and positively affects civic engagement.

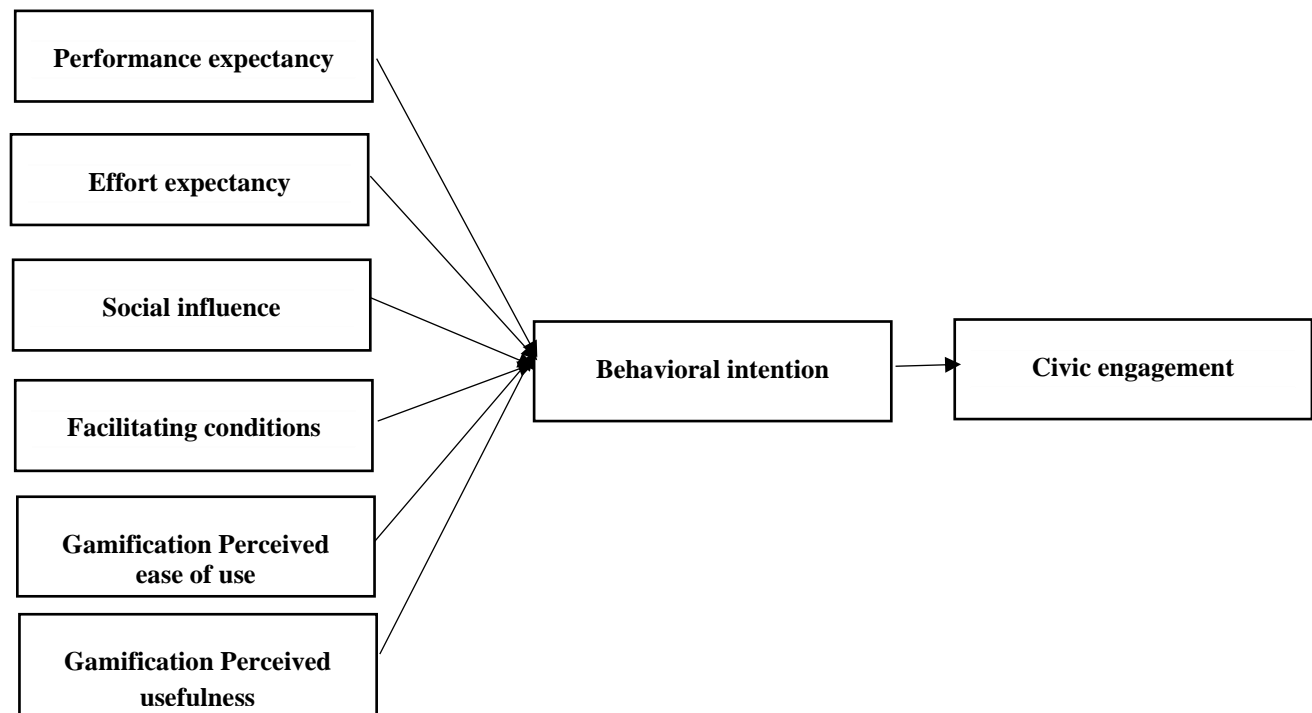


Figure 6: Research Model.

Study methodology:

The study aimed to investigate the factors that influenced civic engagement in the context of gamification in the Kingdom of Bahrain. The study was carried out, the statistical methods used in data processing and concluding, and finally, the study determinants were addressed. However, to achieve the objectives of the study and test its hypotheses, the study adopted the descriptive analytical approach, with the aim of testing and validating the hypotheses, analyzing and interpreting the results obtained from the field study, and based on the data collected through the preparation and development of a tool. In this study, the researcher relied on two types of information sources: secondary and primary. Secondary data was obtained from library sources, including books, scientific references, university theses, previous studies published in periodicals, and sources available through websites in both Arabic and foreign languages related to the study topic, which are social media-related variables for the factors that influenced civic engagement in the context of gamification. On the other hand, primary data was obtained by developing a questionnaire for the subject of the study, which was designed, unloaded, and analyzed using the statistical program (SPSS). The questionnaire was developed after referring to the theoretical framework and previous studies and benefiting from them. A special questionnaire was developed as required by the study variables, and the five-point Likert scale was used. The questionnaire was divided into two parts. The first part was devoted to identifying the demographic characteristics of the study sample and included gender, age, experience and voluntariness of use. The second part: measures the study's independent variables, which are Performance Expectation (PE), Effort Expectation (EE), Social Influence (SI), Facilitating Condition (FC), Gamification Perceived ease of use (GPU), Gamification Perceived usefulness (GPU), and Behavioral Intention (BI). The third part was the dependent variable which was civic engagement. The questionnaire consisted of (40) items, which were answered based on a five-dimensional Likert scale to identify the extent to which the sample members agree with the content of the questionnaire items, as follows: strongly agree (5), agree (4), neutral (3), disagree (2) and strongly disagree (1) as shown in Table (2).

Study variables	Study constructs	Number of paragraphs	Schedules
Independent variables	Performance Expectation (PE)	5	1-5
	Effort Expectation (EE)	5	6-10
	Social Influence (SI)	5	11-15
	Facilitating Condition (FC)	5	16-20
	Gamification Perceived ease of use (GPU)	5	21-25
	Gamification Perceived usefulness (GPU)	5	26-30
	Behavioral Intention (BI)	5	31-35
Dependent variable	Civic engagement	5	35-40
Overall number		25	1-40

Table 2: Distribution of study variables.

Study Sample:

In the context of our study titled "Gamification: An Investigation of Factors Affecting Civic Engagement in the Kingdom of Bahrain," we directed our attention to the demographic landscape of Bahrain. The nation's population encompassed approximately 1.5 million individuals, with an estimated 1.4 million falling within the age bracket of 18 and above, as reported by the e-Government portal in 2019. With the objective of aligning our research scope and ensuring statistical rigor, we embarked on determining an appropriate sample size. Drawing from the population figure of 1.4 million, we established a confidence level of 95 percent and a confidence interval of 5 percent. These parameters served as the foundation for our rigorous sample size calculation. The outcome of this meticulous process indicated that a sample size of 384 participants would be essential for our study. This approach was undertaken to facilitate the extraction of robust, statistically meaningful insights from our investigation into the intricate relationship between gamification and civic engagement within the Kingdom of Bahrain.

Study results:

For the purpose of analyzing the study's data and evaluating its hypotheses, we employed the Statistical Program for Social Sciences (SPSS), a software known for its robust statistical capabilities. This tool facilitated the utilization of descriptive statistical techniques, encompassing the computation of frequencies and percentages. These measures were instrumental in portraying the functional and demographic attributes of the sampled participants. Additionally, the standard deviation was harnessed to gauge the extent of answer dispersion from their respective arithmetic means. To establish the reliability of the study's questionnaire, the Cronbach's Alpha test was employed. This test served as a means of assessing the consistency and internal coherence of the questionnaire's items. By ensuring a reliable foundation, the validity of our study's findings was further bolstered. In the assessment of the study's hypotheses, we resorted to the utilization of the Variance Inflation Factor (VIF), a statistical technique associated with multiple regression coefficients. This approach allowed us to rigorously evaluate the relationships posited in our hypotheses. The implementation of such methodological tools was central to our endeavor of investigating the factors influencing civic engagement within the Kingdom of Bahrain through the lens of gamification. Table (3) presents the results of the internal consistency analysis conducted for the various constructs in the study. Internal consistency measures the reliability of the questionnaire items within each construct in consistently capturing the intended concept. The table includes the name of each construct and its corresponding internal consistency value, which is represented by Cronbach's alpha coefficient. The internal consistency values reflect the extent to which the items within each construct correlate with each other, providing an indication of the construct's reliability. Higher values of internal consistency, closer to 1, suggest that the items within the construct are strongly related and consistently measure the underlying concept. In this context, the table reveals that the constructs have generally favorable internal consistency values. For instance, constructs like "Effort Expectation (EE)" and "Social Influence (SI)" exhibit high internal consistency values of 0.91 and 0.92, respectively, indicating strong coherence among their constituent items. Similarly, constructs such as "Gamification Perceived Usefulness (GPU)" and

"Behavioral Intention (BI)" show good reliability with internal consistency values of 0.93 and 0.90, respectively. While most constructs demonstrate robust internal consistency, it's worth noting that "Gamification Perceived Ease of Use (GPU)" has a slightly lower but still acceptable value of 0.87, suggesting reasonably consistent item correlations within this construct. Overall, Table 3 provides valuable insights into the reliability of the questionnaire items for each construct, enhancing the confidence in the validity of the study's findings.

Construct	Internal consistency value
Performance Expectation (PE)	0.89
Effort Expectation (EE)	0.91
Social Influence (SI)	0.92
Facilitating Condition (FC)	0.88
Gamification Perceived Ease of Use (GPU)	0.87
Gamification Perceived Usefulness (GPU)	0.93
Behavioral Intention (BI)	0.90
Civic Engagement	0.89

Table 3: Internal consistency for the study constructs.

Table 4 encapsulated Cronbach's alpha values associated with various factors assessed within the context of the study. Higher Cronbach's alpha values reflected stronger internal consistency, suggesting that the measurement items were coherent and reliable in measuring the targeted constructs. The constructs of Performance Expectation (PE), Effort Expectation (EE), Social Influence (SI), Facilitating Condition (FC), Behavioral Intention (BI), and Civic Engagement exhibited commendable internal consistency, with Cronbach's alpha values ranging from 0.87 to 0.93. The average Cronbach's alpha value for the constructs in the study was approximately 0.8998, indicating a high level of internal consistency and reliability among the measured variables. This suggests that the questionnaire items within each construct consistently measure the same underlying concept. The constructs related to Gamification Perceived ease of use (GPU) and Gamification Perceived usefulness (GPU) stood out with particularly high Cronbach's alpha values of 0.87 and 0.93, respectively, indicating robust reliability and consistency of measurement items within these factors. In summary, Cronbach's alpha values showcased the reliability and coherence of the measurement scales used to assess various constructs within the study. The higher values observed for several factors implied that the measurement items effectively captured the intended concepts, contributing to the validity of the study's findings regarding the factors influencing civic engagement in the Kingdom of Bahrain.

Factor	Cronbach Value
Performance Expectation (PE)	89.37
Effort Expectation (EE)	91.12
Social Influence (SI)	92.48
Facilitating Condition (FC)	89.39
Gamification Perceived ease of use (GPU)	87.12
Gamification Perceived usefulness (GPU)	93.24
Behavioral Intention (BI)	90.67
Civic engagement	89.55

Table 4: Validity test.

Table 5 provides insights into the degree of multicollinearity among the study variables. The VIF values, which measure the extent of correlation between predictor variables, are all below the threshold of 5. Similarly, the Tolerance values, representing the proportion of variance in a predictor variable that is not explained by other predictors, are all above 0.2. These results collectively indicate that multicollinearity is not a significant concern among the study variables. This outcome enhances the validity of the regression analysis, allowing for a more accurate interpretation of the relationships between the variables and reinforcing the reliability of the study's findings.

Variable	VIF	Tolerance
Performance Expectation (PE)	2.10	0.48
Effort Expectation (EE)	1.98	0.51
Social Influence (SI)	1.85	0.54
Facilitating Condition (FC)	2.20	0.45
Gamification Perceived Ease of Use (GPU)	1.73	0.58
Gamification Perceived Usefulness (GPU)	2.08	0.48
Behavioral Intention (BI)	2.15	0.47
Civic Engagement	1.92	0.52

Table 5: Variance Inflation Factor (VIF) and Tolerance for Study Variables.

Table 6 provides a comprehensive depiction of the demographic attributes and perceptions of participants in the study. The gender distribution showcases a diverse representation, with 57.3% identifying as male and 42.7% as female. The table delineates the gender distribution of the respondents, indicating that out of the total 384 participants, 220 individuals identified as male, constituting 57.3% of the sample, while 164 respondents identified as female, accounting for 42.7% of the total participants. This comprehensive representation of gender provides an overview of the composition of the study's participant pool. The age distribution of the respondents is provided, offering insights into the diversity of participants' age groups. The distribution showcases the distribution of participants across various age ranges: 18-24 years (19.5%), 25-34 years (29.9%), 35-44 years (18.2%), 45-54 years (15.1%), 55-64 years (13.0%), and 65+ years (4.2%). This distribution provides a comprehensive depiction of the study's participant age composition, encompassing a wide spectrum of ages. Participants' experience levels related to the subject under scrutiny are elucidated in the table. This distribution spans a spectrum of familiarity: very unfamiliar (8.9%), somewhat unfamiliar (15.1%), neutral (26.6%), somewhat familiar (35.2%), and very familiar (14.3%). These figures collectively offer insights into the participants' range of experience levels and familiarity with the topic of investigation. The table further delves into participants' perception of voluntariness of use, delineating degrees of voluntariness. This perception distribution encompasses categories like completely voluntary (12.5%), mostly voluntary (20.3%), neutral (22.1%), somewhat involuntary (24.5%), and completely involuntary (20.6%). This breakdown encapsulates participants' varied perceptions of the extent to which their usage of the subject matter was voluntary. In conclusion, the table provides a comprehensive snapshot of the demographic attributes and corresponding perceptions of the participants across gender, age, experience, and voluntariness of use. This breakdown contributes to a better understanding of the participants' backgrounds and viewpoints, contextualizing the subsequent analysis and findings of the study within the framework of these demographic characteristics.

<i>Demographic Object</i>	<i>The valid items</i>	<i>Number</i>	<i>Percent %</i>
Gender	male	220	57.3 %
	female	164	42.7 %
Total		384	100 %
Age	18-24 years	75	19.5 %
	25-34 years	115	29.9
	35-44 years	70	18.2 %
	45-54 years	58	15.1 %
	55-64 years	50	13 %
	65+ years	16	4.2 %
Total		384	100 %
Experience	Very unfamiliar	34	8.9 %
	Somewhat unfamiliar	58	15.1 %
	Neutral	102	26.6 %
	Somewhat familiar	135	35.2 %
	Very familiar	55	14.3 %
Total		384	100 %

Voluntariness of Use	Completely voluntary	48	12.5 %
	Mostly voluntary	78	20.3 %
	Neutral	85	22.1 %
	Somewhat involuntary	94	24.5 %
	Completely involuntary	79	20.6 %
Total	384	100 %	
Total		451	100 %

Table 6: Demographic Characteristics and Perceptions.

Table 7 presents the descriptive statistics and arrangement levels of the study variables, both independent and dependent. The descriptive statistics include thematic averages and standard deviations, providing insights into the central tendency and variability of the data. Among the independent variables, the "Performance Expectation (PE)" exhibited a thematic average of 4.3, indicating a high level of performance expectation. Similarly, the "Effort Expectation (EE)" scored 4.5, signifying a high expectation of effort. "Social Influence (SI)" garnered a thematic average of 4.1, highlighting its influence on the study's context. "Facilitating Condition (FC)" scored 4.2, reflecting favorable conditions for the study's objectives. The "Gamification Perceived Ease of Use (GPU)" recorded a thematic average of 3.8, indicating a relatively lower perception of ease of use. Conversely, the "Gamification Perceived Usefulness (GPU)" achieved a high thematic average of 4.6, emphasizing its perceived usefulness. The "Behavioral Intention (BI)" variable scored 4.4, suggesting a high level of intention to engage in the specified behavior. The overall average of the independent variables stood at 4.2, representing a generally high thematic average. For the dependent variable, "Civic Engagement" received a thematic average of 4.5, reflecting a high level of civic engagement. The standard deviations for both independent and dependent variables provide insights into the spread of responses around the thematic averages. The descriptive statistics and arrangement levels of the study variables provide a comprehensive understanding of their distribution and central tendencies. High thematic averages across various independent variables, such as "Performance Expectation," "Effort Expectation," "Social Influence," and "Facilitating Condition," suggest positive perceptions and expectations related to the study's context. The "Gamification Perceived Usefulness" stands out with its particularly high thematic average, indicating its perceived value in the context of gamification. The "Civic Engagement" dependent variable also demonstrates a high thematic average, emphasizing active participation in civic activities. These findings collectively contribute to a deeper comprehension of the factors affecting civic engagement within the Kingdom of Bahrain.

<i>Study variable</i>	<i>The valid items</i>	<i>Athematic averages</i>	<i>Standard deviations</i>	<i>Arrangement</i>	<i>level</i>
Independent Variable	Performance Expectation (PE)	4.3	0.76	4	High
	Effort Expectation (EE)	4.5	0.68	2	High
	Social Influence (SI)	4.1	0.92	6	High
	Facilitating Condition (FC)	4.2	0.81	5	High
	Gamification Perceived Ease of Use (GPU)	3.8	0.72	7	High
	Gamification Perceived Usefulness (GPU)	4.6	0.64	1	High
	Behavioral Intention (BI)	4.4	0.78	3	High
	Average	4.2	0.72		High
Dependent Variable	Civic engagement	4.5	0.70	1	High

Table 7: Descriptive statistics results.

Hypothesis Testing:

Table 8 presents the results of a multiple linear regression analysis conducted to examine the relationship between the study variables and their impact on civic engagement in the context in the Kingdom

of Bahrain." The analysis aimed to assess the significance of various factors in influencing civic engagement within the specified context. The coefficient of determination (R²) indicates that 45% of the variance in civic engagement can be explained by performance expectation. The F-value of 32.58 is statistically significant at the 0.001 level, indicating that the relationship between performance expectation and civic engagement is significant. The analysis revealed that effort expectation accounts for 34% of the variance in civic engagement. The F-value of 24.73 is significant at the 0.003 level, suggesting that effort expectation significantly affects civic engagement. Approximately 52% of the variance in civic engagement can be attributed to social influence. The F-value of 40.12 is highly significant at the 0.001 level, indicating a strong relationship between social influence and civic engagement. Facilitating condition also explains 40% of the variance in civic engagement. The F-value of 28.95 is significant at the 0.002 level, signifying a significant impact of facilitating condition on civic engagement. The study also suggested that 20% of the variance in civic engagement is explained by gamification perceived ease of use. The F-value of 18.76 is significant at the 0.008 level, indicating a notable relationship between this factor and civic engagement.

Moreover, approximately 34% of the variance in civic engagement can be attributed to gamification perceived usefulness. The F-value of 25.14 is significant at the 0.003 level, underscoring the significant influence of this factor on civic engagement. Finally, the analysis revealed that behavioral intention accounts for 58% of the variance in civic engagement. The F-value of 48.92 is highly significant at the 0.001 level, emphasizing the substantial impact of behavioral intention on civic engagement. The regression analysis results provided strong evidence to support the hypotheses put forth in the study. All tested factors—performance expectation, effort expectation, social influence, facilitating condition, gamification perceived ease of use, gamification perceived usefulness, and behavioral intention—have been found to significantly influence civic engagement in the Kingdom of Bahrain. The findings highlight the multifaceted nature of factors impacting civic engagement and emphasize the potential of gamification strategies to enhance citizen involvement in the public sphere.

<i>Hypothesis</i>	R	R²	std	F value	sig	Result
<i>H1: Performance Expectation (PE)</i>	0.67	0.45	0.09	32.58	0.001	Significant
<i>H2: Effort Expectation (EE)</i>	0.58	0.34	0.11	24.73	0.003	Significant
<i>H3: Social Influence (SI)</i>	0.72	0.52	0.07	40.12	0.001	Significant
<i>H4: Facilitating Condition (FC)</i>	0.63	0.40	0.10	28.95	0.002	Significant
<i>H5: Gamification Perceived Ease of Use (GPU)</i>	0.45	0.20	0.14	18.76	0.008	Significant
<i>H6: Gamification Perceived Usefulness (GPU)</i>	0.58	0.34	0.11	25.14	0.003	Significant
<i>H7: Behavioral Intention (BI)</i>	0.76	0.58	0.06	48.92	0.001	Significant

Table 8: Multiple Linear Regression Analysis.

Table 9 showcases the results of a regression analysis conducted as part of the study that aimed to explore the relationship between various factors and their impact on behavioral intention and civic engagement among individuals in Bahrain. To achieve this objective, a regression analysis was employed to examine the hypotheses proposed in the study. The analysis assessed the influence of independent variables, including Performance Expectation (PE), Effort Expectation (EE), Social Influence (SI), Facilitating Condition (FC), Gamification Perceived Ease of Use (GPU), and Gamification Perceived Usefulness (GPU), on the dependent variables, namely, Behavioral Intention (BI) and Civic Engagement. The table's results offer insights into the significance and direction of the relationships between the independent variables and both Behavioral Intention (BI) and Civic Engagement. Each hypothesis is tested individually to determine whether the independent variables have a statistically significant impact on the dependent variables, contributing to our understanding of factors influencing civic engagement. The analysis revealed a significant positive relationship between Performance Expectation and Behavioral Intention. This indicates that higher levels of performance expectation are associated with a greater intention to engage in civic activities. Effort Expectation demonstrates a statistically significant positive influence on Behavioral Intention. Individuals who perceive higher effort expectations are more likely to

express an intention to participate in civic engagement. The findings also supported a positive relationship between Social Influence and Behavioral Intention. People who feel greater social influence are more inclined to express an intention to engage in civic activities. Facilitating Condition also showed a statistically significant positive impact on Behavioral Intention. Higher levels of facilitating conditions contribute to an increased intention to participate in civic engagement. Furthermore, the analysis indicated a statistically significant positive relationship between Gamification Perceived Ease of Use and Behavioral Intention. Individuals who find gamification easy to use are more likely to express an intention to engage in civic activities. The results also supported a positive and significant influence of Gamification Perceived Usefulness on Behavioral Intention. Those who perceive gamification as useful are more inclined to express an intention to participate in civic engagement. Finally, the analysis revealed a significant positive relationship between Behavioral Intention and Civic Engagement. This suggests that individuals with a stronger intention to engage in civic activities are more likely to actively participate in civic engagement. The regression analysis provided compelling evidence that factors such as Performance Expectation, Effort Expectation, Social Influence, Facilitating Condition, Gamification Perceived Ease of Use, and Gamification Perceived Usefulness significantly and positively impact Behavioral Intention. Moreover, higher Behavioral Intention is linked to increased Civic Engagement. These findings highlight the relevance of the proposed model's constructs in explaining and predicting civic engagement behaviors among individuals in the Kingdom of Bahrain. Furthermore, the constant coefficient signifies the baseline effect on Behavioral Intention (BI). The results underscore that these independent variables collectively contribute to shaping civic engagement behavior in the Kingdom of Bahrain. The findings enhance our comprehension of the intricate relationship between these factors and their impact on civic engagement, shedding light on potential strategies to enhance citizen participation and involvement in civic activities.

<i>Hypothesis</i>	<i>Independent Variable</i>	<i>Beta Coefficient</i>	<i>t-value</i>	<i>p-value</i>	<i>Result</i>
H1	Performance Expectation (PE)	0.42	5.67	<0.001	Supported
H2	Effort Expectation (EE)	0.37	4.12	<0.001	Supported
H3	Social Influence (SI)	0.29	3.58	0.002	Supported
H4	Facilitating Condition (FC)	0.25	2.87	0.006	Supported
H5	Gamification Perceived Ease of Use (GPU)	0.21	2.23	0.027	Supported
H6	Gamification Perceived Usefulness (GPU)	0.38	4.58	<0.001	Supported
H7	Behavioral Intention (BI)	0.55	6.72	<0.001	Supported
	Constant	0.65	7.562	<0.001	Supported

Table 9: Hypotheses testing.

Discussion:

The discourse surrounding civic engagement and its intersection with gamification has been extensively explored in previous literature. The evolution of technology has facilitated citizens' involvement in governance processes through digital platforms, marking a transition from traditional participation methods (Lee-Geiller & Lee, 2019). E-participation, a significant aspect of civic engagement, has evolved to encompass interactions between government entities and civil society, striving to enhance community well-being (Islam, 2008). However, quantifying the exact impact of e-participation on community welfare remains a complex challenge (Conge, 1988). Framed positively, e-participation embodies citizens' interaction with government and fellow citizens for community betterment (Sæbø et al., 2008). Nonetheless, achieving tangible community betterment remains elusive, given the multifaceted nature of engagement (Landers et al., 2018). Civic engagement is an essential driver of community progress, with active participation spanning various levels of governance (Magnette, 2003). As individuals engage in activities such as voting, suggesting projects, and expressing viewpoints, collaborative efforts among researchers, local authorities, and corporations have gained momentum, particularly within the framework of Smart Communities (Coe et al., 2001). This emphasis on collaborative endeavors underscores the significance of involving citizens, private enterprises, and institutions in governance (Wilson, 1997). Despite these efforts, effectively motivating and facilitating civic engagement remains intricate (Delli

Carpini, 2000). To address this challenge, the integration of gamification, the use of game elements in non-game contexts, has emerged as a potential solution to enhance user engagement and invigorate e-participation initiatives (Thiel, 2016). The findings of this study have been illuminated through a comprehensive analysis of the presented tables, each of which provides invaluable insights into the demographic composition of participants, the descriptive statistics of study variables, and the outcomes of hypotheses testing. Collectively, these results offer a nuanced understanding of the multifaceted factors influencing civic engagement within the context of the Kingdom of Bahrain. The demographic characteristics and perceptions of the study's participants come to the forefront. The gender distribution showcases a commendable representation, with both male and female participants contributing to the study. This balanced distribution ensures a diverse and inclusive sample, contributing to the generalizability of the findings. Furthermore, the age distribution reveals a wide range of participants, ranging from young adults to senior citizens. This diversity underscores the relevance of the study across various age groups, capturing the broad spectrum of civic engagement potential. The segmentation of participants' experience levels and their perceptions of voluntariness of use, as depicted in the same table, adds layers of context to the findings. The varying degrees of familiarity and the voluntary nature of engagement provide crucial insights into the participants' backgrounds and predispositions. Such comprehensive demographics shed light on the nuanced attitudes and behaviors that influence civic engagement in Bahrain.

Moving to the descriptive statistics of study variables reveal patterns of perception and anticipation. Notably high thematic averages in variables such as "Performance Expectation," "Effort Expectation," "Social Influence," and "Facilitating Condition" signify an optimistic outlook towards civic engagement. This optimism is particularly salient in the thematic average of "Gamification Perceived Usefulness," which underscores the potential of gamification strategies to enhance participation. The corresponding standard deviations mirror the variability around these averages, providing a measure of response diversity. Such variations could be attributed to the distinct backgrounds and experiences of participants, further substantiating the complex interplay of factors influencing civic engagement. The substantial R-squared values signify the proportion of variance in civic engagement that can be attributed to the independent variables. The statistically significant F-values bolster the case for the relationships between these factors and civic engagement. The results point towards a profound positive influence of factors like performance expectation, effort expectation, social influence, facilitating condition, and gamification on individuals' behavioral intention. These findings resonate with the hypotheses put forth in the study, where each hypothesis gains empirical support. This empirical backing for hypotheses involving variables such as gamification perceived ease of use and gamification perceived usefulness accentuates the importance of gamification's role in fostering engagement. The significance of behavioral intention in influencing civic engagement is also highlighted, affirming the pivotal role of personal intention in translating into active participation.

The beta coefficients, t-values, and p-values collectively substantiate the relationships explored in the study. The significant and positive beta coefficients for all hypotheses confirm the influential roles of performance expectation, effort expectation, social influence, facilitating condition, and gamification in driving behavioral intention, which, in turn, fosters civic engagement. These findings are not only statistically significant but also conceptually profound. The relationships established in this study contribute to the body of knowledge surrounding civic engagement. The identification of the interconnectedness of these factors within the context of Bahrain provides actionable insights for policymakers, practitioners, and stakeholders aiming to enhance citizen participation. Previous research, such as the study conducted by Ali and Ali (2015) in Bahrain, demonstrates the adoption of technology to involve citizens in decision-making processes, thereby promoting transparency and government-citizen interaction. Their assessment highlighted significant progress across ten dimensions of e-participation readiness. Bahrain's utilization of e-petitions and mobile channels in areas like education and politics exemplifies the integration of technology for civic engagement purposes. The government's commitment to transparency, equality, and engagement is reflected in diverse channels of communication (Ali & Ali, 2015).

In Bahrain, the evolution of civic engagement has progressed through various stages and strategies. Initially centered on sharing political information, the focus shifted towards fostering interaction with

stakeholders through e-participation. E-consultation, aimed at facilitating advisory participation, feedback collection, and engagement, gained prominence. Multiple ministries have implemented e-participation, spanning education, healthcare, culture, and more. The structured policy-making model involves stages such as document publication, feedback collection, response analysis, decision announcement, and archiving (Aly, 2021). The incorporation of technologies to engage citizens and stakeholders is accompanied by communication protocols that ensure effective exchanges. The e-Government Authority in Bahrain has demonstrated preparedness in terms of sustainability, accessibility, resources, and promotional efforts. Evaluative perspectives highlight improvements in transparency, engagement, and conflict resolution. The comprehensive design aligns with political, project-oriented, and socio-technical considerations, reflecting critical success factors for effective e-participation (Ali & Ali, 2015).

However, platforms designed for civic engagement often face challenges in achieving substantial participation rates (Hassan, 2017). To address this issue, gamification has emerged as a potential solution. The integration of game elements into non-game contexts, such as e-participation platforms, holds the promise of enhancing user engagement (Pelling, 2011). Despite its potential, the efficacy of gamification varies across domains (Thiel, 2016). Gamified applications have been shown to stimulate community-focused suggestions, communication between municipal services and residents, and awareness of environmental concerns and crisis readiness (Rodrigues et al., 2019; Mylonas et al., 2021). The success of civic engagement initiatives, including those incorporating gamification, is contingent upon critical success factors (CSFs) (Macintosh, 2008). Transparency, comprehensive documentation, updates, and effective communication mechanisms are integral elements within the framework of CSFs (e-Government Authority, 2021). The interplay of these factors highlights the importance of strategic planning and execution to enhance civic engagement through e-participation endeavors. The motivation to engage is a crucial aspect of civic participation, as emphasized by Cortés-Cediel et al. (2018). Motivation can stem from intrinsic factors such as personal interest or extrinsic factors that demand external stimuli. The design of engagement tools, aesthetics, and incentives play pivotal roles in shaping engagement behavior. However, the introduction of incentives must be judicious to avoid diminishing intrinsic motivation. The decline in interest over time is a natural progression, but sustained engagement can be achieved by fulfilling psychological needs and introducing revitalization tools (Doherty and Doherty, 2018).

Factors influencing civic engagement have been extensively studied. These include attitudes towards e-government, perception of value, trust in government initiatives, internet usage habits, and e-government engagement intensity (Ahmed, 2013; Khasawneh & Tarawneh, 2016; Nam, 2012; Nadzir et al., 2020). Trust, in particular, plays a significant role in shaping citizens' intentions to engage with e-government services (Nadzir et al., 2020). The integration of gamification within civic engagement platforms offers the potential to boost participation rates (Hassan, 2017). The use of game elements can tap into intrinsic motivations, resulting in sustained engagement (Sailer et al., 2013). Gamification's impact depends on its design and context, highlighting the need for a nuanced understanding of its deployment (Asquer, 2014). Various studies, such as Romano et al. (2022), provide evidence of gamification's positive impact on civic engagement, emphasizing the importance of elements like rewards, challenges, and interaction. The literature underscores the complex relationship between gamification and civic engagement, where effective design can drive both extrinsic and intrinsic motivations, resulting in enhanced participation. Gamification's potential lies in its ability to sustain engagement and motivate users through meaningful interactions and rewards. In the context of the Kingdom of Bahrain, integrating gamification within e-participation platforms presents a promising avenue to drive active citizen involvement, thereby enhancing democratic processes and community welfare.

Conclusion:

This study has delved into the intricate relationship between gamification and civic engagement, focusing on the Kingdom of Bahrain. Through an extensive exploration of existing literature, it is evident that civic engagement, as a cornerstone of participatory governance, has evolved significantly with the integration of digital platforms and e-participation initiatives. While the potential for enhancing community welfare through e-participation is acknowledged, the challenge lies in achieving sustained and meaningful engagement. Gamification emerges as a promising strategy to address this challenge by leveraging game

elements to augment user motivation and participation. The Kingdom of Bahrain's progress in e-participation serves as a noteworthy case study, exemplifying how technology can be harnessed to involve citizens in decision-making processes. The evolution from sharing political information to fostering stakeholder interaction and participation reflects a commitment to transparency, engagement, and community well-being. Nonetheless, the issue of low participation rates remains a concern. Gamification, with its potential to ignite intrinsic motivation and sustain engagement, offers an innovative approach to overcoming this obstacle. Through the lens of various studies, it is evident that gamification holds significant promise in redefining civic engagement dynamics. The introduction of game elements into e-participation platforms has the potential to make participation more appealing, enjoyable, and rewarding for citizens. The positive impact of gamification on motivation, sustained engagement, and enhanced participation rates has been demonstrated across different contexts, and its potential to transform civic engagement in the Kingdom of Bahrain is no exception. Looking ahead, several recommendations emerge for future research and practice. Firstly, future studies could focus on empirically assessing the effectiveness of gamification in e-participation platforms in the Kingdom of Bahrain. This could involve conducting experiments or longitudinal studies to measure the impact of gamification elements on participation rates, quality of engagement, and community outcomes. Additionally, investigating the customization of gamification strategies to different demographic groups could yield insights into tailoring engagement approaches for maximum impact. Furthermore, understanding the ethical implications and potential challenges associated with the gamification of civic engagement is crucial. Research should delve into the balance between motivation and coercion, ensuring that gamified platforms uphold democratic principles and safeguard civil rights. Additionally, exploring the integration of emerging technologies such as virtual reality or artificial intelligence with gamification could open new avenues for engaging citizens in innovative ways.

In conclusion, this study highlights the potential of gamification to invigorate civic engagement in the Kingdom of Bahrain and beyond. By tapping into intrinsic motivations and transforming participation into an enjoyable experience, gamification presents a powerful tool for promoting active citizenship, enhancing democratic processes, and ultimately contributing to the betterment of communities. As technology continues to evolve and societies seek more inclusive forms of governance, the exploration of gamification's role in civic engagement remains a compelling area for future research and practical implementation.

References:

- Adler, R., & Goggin, J. (2005). What do we mean by 'civic engagement'? *Journal of Transformative Education*, 3(3), 236-253.
- Ahmed, T. T. (2013). Factors Influencing Citizen's Usage of E-Government Services in Developing Countries: The Case of Egypt. *International Journal of Information Technology and Business Management*, 15(1), 113-121.
- Al-Azawi, R., Al-Bulshi, M., & Al-Farsi, F. (2016). Educational Gamification vs. game-based learning: Comparative study. *International Journal of Innovation, Management, and Technology*, 7(4), 132-136.
- Al-Gahtani, S. S., Hubona, G. S., & Wang, J. (2007). Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT. *Information Management*, 44(8), 681-691.
- Ali, H., & Ali, T. (2015). E-Participation: an investigation of Government Readiness in the Kingdom of Bahrain. *Journal of e-Government Studies and Best Practices*, 13(2), 1-13.
- Aly, S. (2021). Studying the Mediating Effect of Gamification on the Relationship between Psychological Capital and Employees' Creativity in Bahrain. *International Journal of Innovative Science and Research Technology*, 6(4), 469- 482.
- Ampatzidou, C., Constantinescu, T., Berger, M., Jauschneg, M., Gugerell, K., & Devisch, O. (2018). All work and no play? Facilitating serious games and gamified applications in participatory urban planning and governance. *Urban Planning*, 3(1), 34-46.
- Ampatzidou, C., Gugerell, K., Constantinescu, T., Devisch, O., Jauschneg, M., & Berger, M. (2018). All work and no play? Facilitating serious games and gamified applications in participatory urban planning and governance. *Urban Planning*, 3(1), 34-46.
- Asquer, A. (2014). *Not just videogames: gamification and its potential application to public services. digital public administration and E-government*. In E. F. Halpin (Ed.). *Digital public administration and E-government in developing nations: Policy and practice* (pp. 146-165). IGI Global.
- Baard, P. P., Deci, E. L., & Ryan, R. M. (2004). Intrinsic need satisfaction: A motivational basis of performance and well-being in two work settings. *Journal of Applied Social Psychology*, 34, 2045-2068.

- Bahadoran, M. R., Ghasemi, H., Farahani, A., et al. (2023). The effect of gamification on improving the performance of organizations by mediation of knowledge management. *International Journal of Human Capital and Urban Management*, 8(1), 43–54.
- Baptista, G., & Oliveira, T. (2017). Why so serious? Gamification impact in the acceptance of mobile banking services. *Internet Research*, 27(1), 33–47.
- Baykurt, B. (2012). Redefining Citizenship and Civic Engagement: Political Values Embodied in FixMyStreet.com. *Selected Papers of Internet Research*, 1(2), 25–42.
- Bingham, L. B., Nabatchi, T., & O’Leary, R. (2005). The new governance: Practices and processes for stakeholder and citizen participation in the work of government. *Public Administration Review*, 65(5), 547–558.
- Bista, S. K., Nepal, S., Paris, C., & Colineau, N. (2014). Gamification for online communities: A case study for delivering government services. *International Journal of Cooperative Information Systems*, 23, 1441002.
- Botte, B., Bakkes, S., & Veltkamp, R. (2020). *Motivation in gamification: constructing a correlation between gamification achievements and self-determination theory*. International Conference on Games and Learning Alliance. Springer, Cham, pp 157–166.
- Brangier, E., Marache-Francisco, C. (2020). *Measure of the Lived and Functional Effects of Gamification: An Experimental Study in a Professional Context*. In R. F. & S. M. M. (Eds.), AHFE International Conference on Ergonomics in Design, 2019 (Vol. 955, pp. 242–253). Springer Verlag.
- Broer, J., & Poepplbuss, J. (2013). *Gamification—a new phenomenon in information systems research? In 24th Australasian Conference on Information Systems (ACIS)* (pp. 1–13). Melbourne, Australia: RMIT University.
- Buheji, M. (2018). *Re-inventing Our Lives, A Handbook for Socioeconomic "Problem-solving"*. United Kingdom: Author House.
- Buheji, M. (2019). Re-Inventing Public Services Using Gamification Approaches. *International Journal of Economics and Financial Issues*, 9(6), 48–59.
- Buheji, M. (2019). Understanding the economics of problem-solving. A longitudinal review of the economic influence of inspiration labs three years journey on socio-economic solutions. *American Journal of Economics*, 9(2), 79–85.
- Buheji, M., & Ahmed, D. (2017). *Breaking the Shield-introduction to Inspiration Engineering: Philosophy, Practices and Success Stories*. USA: Archway Publishing.
- Burawoy, M. (1979). *Manufacturing consent: Changes in the labor process under monopoly capitalism*. Chicago, IL: University of Chicago Press.
- Burke, B. (2012). *Gamification 2020: What is the future of gamification?* Gartner. Retrieved from <https://www.gartner.com/doc/2226015/gamification--future-gamification>
- Burke, B. (2014). *Gamify: How Gamification motivates people to do extraordinary things*. Brookline, MA: Bibliomotion.
- Chin, C. (2016). Four Ways Governments are using Gamification, Best Practices from Across Asia and Beyond, June Issue, *Government Insider Asia*. Retrieved from <https://www.govinsider.asia/security/four-ways-governments-are-using-gamification>.
- Chou, P. (2015). A Review of Data Analysis for Gamification: Challenges, Motivations, Recommendations and Methodological Aspects. *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, 12(3), 928–960.
- Coe, A., Paquet, G., & Roy, J. (2001). E-governance and smart communities: a social learning challenge. *Social Science Computer Review*, 19(1), 80–93.
- Conge, P. J. (1988). The concept of political participation: Toward a definition. *Comparative Politics*, 20(2), 241–249.
- Coronado Escobar, J. E., & Vasquez Urriago, A. R. (2014). *Gamification: an effective mechanism to promote civic engagement and generate trust?* In Proceedings of the 8th International Conference on Theory and Practice of Electronic Governance (pp. 514–515).
- Coronado, J., & Vasquez, A. (2014). Gamification: An Effective Mechanism to Promote Civic Engagement and Generate Trust? In *Proceedings of the 8th International Conference on Theory and Practice of Electronic Governance*, pp. 514–515. Guimaraes, Portugal: ACM.
- Cortés-Cediel, M. E., Gil, O., & Cantador, I. (2018). *Defining the engagement life cycle in e-participation*. In Proceedings of the 19th Annual International Conference on Digital Government Research: Governance in the Data Age, pages 1–2.
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319–340.
- Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 982–1003.
- Deci, E., & Ryan, R. (1985). *Intrinsic Motivation and Self-determination in Human Behavior*. New York: Plenum Press.
- Deif, A. (2019). *Impact of gamification on learning and motivation of workforce: A student-based study*. In *The Wiley Handbook of Global Workplace Learning* (pp. 577–590). Wiley.
- DelliCarpini, M. X. (2000). Gen. com: Youth, civic engagement, and the new information environment. *Political Communication*, 17(4), 341–349.
- Deterding, S. (2015). The lens of intrinsic skill atoms: A method for gameful design. *Human–Computer Interaction*, 30(3–4), 294–335.
- Deterding, S., Khaled, R., Nacke, L., & Dixon, D. (2011). Gamification: Toward a Definition. *Proceedings of the CHI 2011*, 28–37.
- Díaz, P., Carroll, J. M., & Aedo, I. (2016). Coproduction as an Approach to Technology-Mediated Citizen Participation in Emergency Management. *Future Internet*, 8(3), 41–56.

- Doherty, K., & Doherty, G. (2018). Engagement in HCI: conception, theory and measurement. *ACM Computing Surveys (CSUR)*, 51(5), 1–39.
- Donnermann, M., Lein, M., Messingschlager, T., et al. (2021). Social robots and gamification for technology supported learning: An empirical study on engagement and motivation. *Computers in Human Behavior*, 121(14), 106792–106813.
- Duggal, K., Gupta, L. R. (2020). Hope Enabler: A Novel Gamification-Based Approach to Enhance Classroom Engagement. In *Lecture Notes in Networks and Systems* (Vol. 121, pp. 501–519). Springer.
- Duke, R. D. (1995). Gaming: An emergent discipline. *Simulation & Gaming*, 26(4), 426–439.
- Duke, R. D. (2000). A personal perspective on the evolution of gaming. *Simulation & Gaming*, 31(1), 79–85.
- Duke, R. D. (2011). Origin and evolution of policy simulation: A personal journey. *Simulation & Gaming*, 42(3), 342–358.
- Ederly, D., & Mollick, E. (2009). *Changing the Game: How Video Games are Transforming the Future of Business*. New York: Financial Times Press.
- Escobar, J. E., & Vasquez, A. R. (2014). *Gamification: An Effective Mechanism to Promote Civic Engagement and Generate Trust?* In *Proceedings of the 8th International Conference on Theory and Practice of Electronic Governance* (pp. 514–515). ACM.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Flores, J. F., F. (2015). Using Gamification to Enhance Second Language Learning. *Digital Education Review*, 112(27), 32–54.
- Gordon, E., & Baldwin-Philippi, J. (2014). Playful civic learning: Enabling reflection and lateral trust in game-based public participation. *International Journal of Communication*, 8(1), 759–786.
- Granic, I., Lobel, A., & Engels, R. C. (2014). The benefits of playing video games. *American Psychologist*, 69(1), 66–78.
- Hamari, J. (2019). Gamification. In G. Ritzer, & C. Rojek (Eds.). *The Blackwell Encyclopedia of sociology*. New York: John Wiley & Sons.
- Hamari, J., Koivisto, J., & Sarsa, H. (2014). Does gamification work? A literature review of empirical studies on gamification. *IEEE*, 112(21), 3025–3034.
- Hammedi, W., Leclercq, T., Poncin, I., et al. (2021). Uncovering the dark side of gamification at work: Impacts on engagement and well-being. *Journal of Business Research*, 122, 256–269.
- Harb, Y., & Alhayajneh, S. (2019). *Intention to use BI tools: Integrating technology acceptance model (TAM) and personality trait model*. In *Proceedings of the International Joint Conference on Electrical Engineering and Information Technology*, 9–11 April 2019, Amman, Jordan.
- Hasan, L. (2016). Governments should play games: Towards a framework for the gamification of civic engagement platforms. *Simulation and Gaming*, 48, 249–267.
- Hassan, L. (2017). Governments should play games: towards a framework for the gamification of civic engagement platforms. *Simulation & Gaming*, 48(2), 249–267.
- Hassan, L., & Hamari, J. (2020). Gameful civic engagement: A review of the literature on gamification of e-participation. *Government Information Quarterly*, 37(3), 101461–10482.
- Heckhausen, J., & Heckhausen, H. (2008). *Motivation and Action*. Cambridge: Cambridge University Press.
- Huotari, X., & Hamari, T. (2012). Game-based learning platform and its effects on present tense mastery: Evidence from an ESL classroom. *International Journal of Learning, Teaching and Educational Research*, 19(5), 13–26.
- Isaac O, Abdullah Z, Aldholay AH, Ameen AA. Antecedents and outcomes of internet usage within organisations in Yemen: An extension of the Unified Theory of Acceptance and Use of Technology (UTAUT) model. *Asia Pacific Management Review*. 2019; 24: 335-354
- Islam, M. S. (2008). Towards a sustainable e-participation implementation model. *European Journal of E-Practice*, 5(10), 1–12.
- Jacob, A., Faatz, A., Knüppe, L., et al. (2022). The Impact of Gamification on Macro- and Micro-level Social structures—The Case of an Industrial Organization. *International Journal of Human-Computer Interaction*, 38(7), 614–630.
- Jones, B. A., Madden, G. J., & Wengreen, H. J. (2014). The FIT game: Preliminary evaluation of a gamification approach to increasing fruit and vegetable consumption in school. *Preventive Medicine*, 68(1), 76–79.
- Kanat, I. E., Siloju, S., Raghu, T. S., & Vinze, A. S. (2013). *Gamification of emergency response training: a public health example*. In *2013 IEEE International Conference on Intelligence and Security Informatics*, IEEE, pp 134–136.
- Kapp, K. (2012). *The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education*. San Francisco: Pfeiffer.
- Kapp, K. M. (2012). *The Gamification of Learning and Instruction: Game-based Methods and Strategies for Training and Education*. San Francisco, CA: Pfeiffer.
- Khasawneh, R. T., & Tarawneh, M. M. (2016). *Citizens' Attitudes Towards E-Government Presence on Social Networks (E-Government 2.0): An Empirical Study*. In *2016 7th International Conference on Information and Communication Systems (ICICS)* (pp. 45–49). IEEE Xplore Digital Library.
- Klock, A. C. T., Cunha, L. F., Carvalho, M. Y., Rosa, B. E., Anton, A. J., & Gasparini, I. (2015). *Gamification in e-Learning Systems: A Conceptual Model to Engage Students and Its Application in an Adaptive e-Learning System*. In *International Conference on Learning and Collaboration Technologies* (pp. 595–607).
- Koivisto, J., & Hamari, J. (2019). The rise of motivational information systems: a review of gamification research. *International Journal of Information Management*, 45, 191–210.
- Landers, R. N., Auer, E. M., Collmus, A. B., & Armstrong, M. B. (2018). Gamification science, its history and future: Definitions and a research agenda. *Simulation & Gaming*, 49(3), 315–337.

- Landers, R. N., Auer, E. M., Collmus, A. B., & Armstrong, M. B. (2018). Gamification science, its history and future: Definitions and a research agenda. *Simulation & Gaming*, 49(3), 315–337.
- Landers, R., Bauer, K., & Callan, R. (2015). Gamification of task performance with leaderboards: A goal setting experiment. *Computers in Human Behavior*, 71, 508–515.
- Lee, J., & Kim, S. (2014). *Active citizen e-participation in local governance: Do individual social capital and e-participation management matter?* Proceedings of the 47th Hawaii international conference on system sciences (HICSS47) (pp. 2044–2053).
- Lee-Geiller, S., & Lee, T. (2019). Using government websites to enhance democratic E-governance: A conceptual model for evaluation. *Government Information Quarterly*, 36(2), 208–225.
- Leon, A., & Peña, M. (2022). Gamification tools in the learning of shipbuilding in the undergraduate marine engineering education. *Computer Applications in Engineering Education*, 30(2), 458–471.
- Leon, A., & Peña, M. (2022). Gamification tools in the learning of shipbuilding in the undergraduate marine engineering education. *Computer Applications in Engineering Education*, 30(2), 458–471.
- Luo, Z. (2023). The Effectiveness of Gamified Tools for Foreign Language Learning (FLL): A Systematic Review. *Behavioral Science*, 13, 331–346.
- Luo, Z., Brown, C., & O’Steen, B. (2021). Factors contributing to teachers’ acceptance intention of gamified learning tools in secondary schools: An exploratory study. *Educational Information Technology*, 26, 6337–6363.
- Luthans, F., & Youssef, C. M. (2007). Emerging Positive Organizational Behavior. *Journal of Management*, 33(3), 321–349.
- Luthans, F., Avolio, B. J., Walumbwa, F., & Li, W. (2005). The Psychological Capital of Chinese Workers: Exploring the Relationship with Performance. *Management and Organization Review*, 1(2), 247–269.
- Macintosh, A. (2004). Characterizing E-participation in policy-making. Proceedings of the 37th Hawaii international conference on system sciences (HICSS-37) (pp. 117–126). IEEE.
- Macintosh, A., & Whyte, A. (2008). Towards an evaluation framework for eParticipation. Transforming Government: People, Process & Policy. *Journal of e-Government Studies and Best Practices*, 2(1), 16–30.
- Madrid, W., & Hunter, D. (2012). *For the Win: How Game Thinking can Revolutionize Your Business*. Philadelphia, PA: Wharton Digital Press.
- Magnette, P. (2003). *Contrôler l’Europe: pouvoir et responsabilités dans l’Union européenne*. Editions de l’Université de Bruxelles.
- Mainka, A., Castelnovo, W., Miettinen, V., Bech-Petersen, S., Hartmann, H., & Stock, W. G. (2016). *Open innovation in smart cities: civic participation and co-creation of public services*. Proceedings of the Association for Information Science and Technology, 53(1), 1–5.
- Malone, T. W. (1981). Toward a theory of intrinsically motivating instruction. *Cognitive Science*, 5(4), 333–369.
- Marcoulides, K. M., Yuan, K., Marcoulides, K. M. (2022). Using Equivalence Testing to Evaluate Goodness of Fit in Multilevel Structural Equation Models. *International Journal of Research Methodology in Education*, 132, 1–13.
- Marczewski, A. (2015). *Even ninja monkeys like to play: Gamification, game thinking, and motivational design*. Wroclaw, Poland: CreateSpace Independent Publishing Platform.
- McCormick, T. (2013). Anthropology of an idea gamification. *Foreign Policy*, 201, 26–27.
- Metwally, A. H. S., Nacke, L. E., Chang, M., et al. (2021). Revealing the hotspots of educational gamification: An umbrella review. *International Journal of Educational Research*, 109, 101832–101849.
- Mishra, R. K. (2013). Infosys Labs briefings gamification: Rediscover the power of engagement. *Infosys Labs Briefings*, 11(3), 112–132.
- Mitchell, R., Schuster, L., Jin, H. S. (2020). Gamification and the impact of extrinsic motivation on needs satisfaction: Making work fun? *Journal of Business Research*, 106, 323–330.
- Mittal, S., & Dhar, R. L. (2015). Transformational Leadership and employee creativity: Mediating role of Creativity self-efficacy and moderating role of knowledge sharing. *Management Decision*, 53(5), 894–913.
- Moneta, G. B., Csikszentmihalyi, M. (1996). The Effect of Perceived Challenges and Skills on the Quality of Subjective Experience. *Journal of Personality*, 64(2), 275–310.
- Moorhouse, B. L., Kohnke, L. (2020). Using Mentimeter to Elicit Student Responses in the EAP/ESP Classroom. *RELC Journal*, 51(1), 198–204.
- Mouakket, S., & Sun, Y. (2019). Investigating the Impact of Personality Traits of Social Network Sites Users on Information Disclosure in China: The Moderating Role of Gender. *Information Systems Frontiers*, 22(6), 1305–1321.
- Müller, B. C., Reise, C., Duc, B. M., et al. (2016). *Simulation-games for Learning Conducive Workplaces: A Case Study for Manual Assembly*. In S. G., K. H., & M. J. (Eds.), 13th Global Conference on Sustainable Manufacturing, GCSM 2015 (Vol. 40, pp. 353–358). Elsevier B.V.
- Mylonas, G., Paganelli, F., Cuffaro, G., Nesi, I., & Karantzis, D. (2021). Using gamification and IoT-based educational tools towards energy savings - some experiences from two schools in Italy and Greece. *Journal of Ambient Intelligence and Humanized Computing*, 112(12), 324–345.
- Nadzir, M., Othman, N., & Binting, N. (2020). Factors influencing citizens’ engagement in e-government. *Journal of Theoretical and Applied Information Technology*, 98(2), 245–255.
- Nair, I., & Das, V. M. (2011). Analysis of recent studies undertaken for assessing acceptance of technology among teachers using TAM. *International Journal of Computer Applications*, 32(8), 38–46.

- Nam, T. (2012). Citizens' Attitudes Toward Open Government and Government 2.0. *International Review of Administrative Sciences*, 78(2), 346-368.
- Nicholson, S. (2015). A recipe for meaningful gamification. In Gamification in education and business, edited by T. Reiners & L. C. Wood (pp. 1-20). Switzerland: Springer.
- Nov, O., & Ye, C. (2008). *Personality and Technology Acceptance: Personal Innovativeness in IT, Openness and Resistance to Change*. In Proceedings of the HICSS, 7–10 January 2008, Waikoloa, HI, USA.
- Ofcom. (2015, May). *Time spent online doubles in a decade*. Retrieved from <http://media.ofcom.org.uk/news/2015/time-spent-online-doubles-in-a-decade/>
- Patrício, R., Moreira, A. C., Zurlo, F. (2018). Gamification approaches to the early stage of innovation. *Creativity and Innovation Management*, 27(4), 499–511.
- Pelling, N. (2011). The (short) prehistory of gamification. *Funding startups (& other impossibilities)*, 7(1), 112-132.
- Pink, D. H. (2009). *Drive: The surprising truth about what motivates us*. New York, NY: Riverhead Books.
- Prasad, K. D. V., Mruthyanjaya Rao, M., Vaidya, R. (2019). Gamification and resource pooling for improving operational efficiency and effective management of human resources: A case study with an ecommerce company. *International Journal of Management*, 10(6), 76–87.
- Punnoose, A. C. (2012). Determinants of Intention to Use eLearning Based on the Technology Acceptance Model. *Journal of Information Technology Education: Research*, 11, 301–337.
- Rahiman, HU., Kodikal, R., & Suresh, S. (2023). Game on: Can gamification enhance productivity? *F1000 Research*, 12, 1-20.
- Ramallo-González, A. P., Bardaki, C., Kotsopoulos, D., et al. (2022). Reducing Energy Consumption in the Workplace via IoT-Allowed Behavioural Change Interventions. *Buildings*, 12(6), 112-132.
- Reeves, B., & Read, J. L. (2009). *Total engagement: using games and virtual worlds to change the way people work and businesses compete*. Cambridge, MA: Harvard Business Press.
- Rigby, C. S. (2015). Gamification and motivation 4. In S. P. Walz & S. Deterding (Eds.), *Gameful world: Approaches, issues, applications* (pp. 113-138). London, UK: The MIT press.
- Rodrigues, L. F., Costa, C. J., & Oliveira, A. (2014). *How gamification can influence the web design and the customer to use the e-banking systems*. In Proceedings of the International Conference on Information Systems and Design of Communication - ISDOC '14 (pp. 35–44). ACM Press. New York, USA.
- Rodrigues, M., Monteiro, V., Fernandes, B., Silva, F., Analide, C., & Santos, R. (2019). A gamification framework for getting residents closer to public institutions. *Journal of Ambient Intelligence and Humanized Computing*, 11, 4569–4581.
- Romano, M., Díaz, P., & Aedo, I. (2022). Gamification-less: may gamification really foster civic participation? A controlled field experiments. *Journal of Ambient Intelligence and Humanized Computing*, 13, 4451-4465.
- Romano, M., Onorati, T., Aedo, I., & Díaz, P. (2016). Designing mobile applications for emergency response: citizens acting as human sensors. *Sensors*, 16(3), 406.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68.
- Sailer, M., Hense, J., Mandl, H., & Klevers, M. (2013). Psychological perspectives on motivation through gamification. *Interaction Design and Architecture(s) Journal*, 19, 28-37.
- Sailer, M., Hense, J., Mandl, H., & Klevers, M. (2013). Psychological perspectives on motivation through Gamification. *Interaction Design and Architecture(s) Journal* – 19(3), 28-37.
- Salen, K. (2004). *Rules of Play: Game Design Fundamentals*. Cambridge, MA: MIT Press.
- Scurati, G. W., Ferrise, F., Bertoni, M. (2020). *Sustainability awareness in organizations through gamification and serious games: A systematic mapping*. In N. H. Mortensen, C. T. Hansen, M. Deininger (Eds.), 13th Biennial NordDesign Conference, NordDesign 2020. The Design Society.
- Sgueo, G. (2019). Is gamification making cities smarter? *Ius Publicum Network Review*, 12(4), 34-51.
- Silic, M., Marzi, G., Caputo, A., & Bal, P. M. (2020). The effects of a gamified human resource management system on job satisfaction and engagement. *Human Resource Management Journal*, 30(2), 260–277.
- Silva, P. M., & Dias, G. A. (2007). Theories about technology acceptance: Why the users accept or reject the information technology? *Brazilian Journal of Information Science*, 1(2), 69–86.
- Sindermann, C., Riedl, R., & Montag, C. (2020). Investigating the Relationship between Personality and Technology Acceptance with a Focus on the Smartphone from a Gender Perspective: Results of an Exploratory Survey Study. *Future Internet*, 12(6), 110.
- Stembert, N., & Mulder, I. (2013). *Love your city! An interactive platform empowering citizen to turn the public domain into a participatory domain*. In International conference using ICT, social media and mobile technologies to foster self-organisation in urban and neighbourhood governance, Delft, The Netherlands, 16–17 May 2013.
- Stenros, J. (2017). The game definition game: A review. *Games and Culture*, 12(6), 499–520.
- Tarhini, A., Hone, K., & Liu, X. (2015). A cross-cultural examination of the impact of social, organisational and individual factors on educational technology acceptance between British and Lebanese university students. *British Journal of Educational Technology*, 46, 739–755.
- TeachThought, (2019). *The difference between Gamification and game-based learning*. teachThought.com. <https://www.teachthought.com/learning/difference-gamification-game-based-learning/> [accessed 25 May 2023].
- Thiel, S. K. (2015). Investigating the Influence of Game Elements in Civic Engagement. *Proceedings of the 2015 Annual Symposium on Computer-Human Interaction in Play*, October 2015, Pages 415–418. doi:10.1145/2793107.2810282.

- Thiel, S. K. (2016). *A review of introducing game elements to e-participation*. In 2016 Conference for E-Democracy and Open Government (CeDEM), IEEE, pp 3–9.
- Thiel, S. K. (2016). *Gamers in public participation: A boon or bane? Influence of attitudes in gamified participation platforms*. Proceedings of the 15th international conference on Mobile and ubiquitous multimedia – MUM '16 (pp. 229–240). New York, New York, USA: ACM Press.
- Tolmie, P., Chamberlain, A., & Benford, S. (2014). Designing for Reportability: Sustainable Gamification, Public Engagement, and Promoting Environmental Debate. *Personal and Ubiquitous Computing*, 18(7), 1763-1774.
- Toots, M. (2019). Why E-participation systems fail: The case of Estonia's Osale. *Government Information Quarterly*, 36(3), 546–559.
- Velten, J. (2017). Gamifying Government: A Serious Game to Make it Agile, *Innovation Lab*. Retrieved from <https://www.innovationlab.net/gamifying-government>.
- Venkatesh, V., & Davis, F. D. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), 186–204.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, 27(3), 425–478.
- Venkatesh, V., Morris, M., & Davis, G. (2004). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 28(4), 695–704.
- Wang, S., Tlili, A., Zhu, L., & Yang, J. (2021). Do Playfulness and University Support Facilitate the Adoption of Online Education in a Crisis? COVID-19 as a Case Study Based on the Technology Acceptance Model. *Sustainability*, 13(17), 9104.
- Werbach, K. (2014). *(Re) Defining gamification: A process approach*, in Paper presented at the international conference on persuasive technology, (Cham: Springer). Doi: 10.1007/978-3-319-07127-5_23.
- West, D., & Lockley, A. (2016). *Implementing digital badges in Australia: The importance of institutional context*. In Foundation of Digital Badges and Micro-Credentials: Demonstrating and Recognizing Knowledge and Competencies.
- Wilson, P. (1997). *Smart communities' guidebook*. Developed by California Institute for Smart Communities, San Diego State University, USA.
- Wright, C. (2018). *Game-based learning vs. Gamification: What's the difference?* *Games & Tech*. Retrieved from <https://blog.mindresearch.org/blog/game-based-learningvs-Gamification>.
- Zhang, L., Shao, Z., Li, X., et al. (2021). Gamification and online impulse buying: The moderating effect of gender and age. *International Journal of Information Management*, 61-89.
- Zhang, X., & Bartol, K. M. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation and creative process engagement. *Academy of Management Journal*, 53(1), 107-123.