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Gamification Strategies in Online Platforms and Their Impact on Digital Business Performance

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ABSTRACT

Digital platforms widely implement gamification strategies such as points, badges, leaderboards, and challenges to increase user engagement and improve business performance. Despite their popularity, there is limited understanding of how these mechanisms influence user motivation, engagement, and measurable outcomes, given the psychological, technological, and organizational complexity of gamification. This study addresses this gap by examining the impact of gamification on digital business performance and the mediating role of user motivation and engagement. A sequential mixed-methods design was employed, beginning with conceptual model development through a systematic literature review and expert interviews to integrate theoretical perspectives from marketing, psychology, and information systems with practitioner insights. In the second phase, quantitative validation was conducted via a structured survey administered to 428 active users of gamified platforms, with structural equation modeling (SEM) used to test the hypothesized relationships among gamification features, user engagement, and business outcomes. The findings indicate that gamification mechanisms significantly enhance user motivation and engagement, which in turn positively affect digital business performance metrics such as purchase frequency, loyalty, and platform retention. Moreover, the effectiveness of gamification strategies was found to depend on contextual factors including platform type and user experience. The results provide theoretical contributions by clarifying the mechanisms linking gamification to business outcomes and offer practical guidance for designing engagement-driven strategies in digital platforms. These insights enable both academics and practitioners to implement gamification more effectively and optimize digital business performance. Keywords: gamification, user engagement, digital business performance, motivation, structural equation modeling.

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1. Introduction

Over the past decade, researchers and practitioners alike have increasingly recognized gamification as a strategic lever for enhancing business performance in digital environments. Gamification—the integration of game design elements such as points, badges, leaderboards, and challenges into non-game contexts—has emerged as a powerful mechanism to motivate user behavior and foster engagement across diverse online platforms (Ruhi, 2016). Within the commercial domain, gamified features have been deployed to elevate customer engagement, brand loyalty, and conversion rates, as well as to boost employee productivity and process adherence. Despite its growing popularity, the theoretical foundations of how gamification strategies translate into tangible digital business performance remain fragmented, rendering the design of effective gamified systems a challenging task.

A growing empirical literature has demonstrated the capacity of gamification to enhance engagement and performance outcomes. For instance, Ruhi (2016) presented a descriptive framework rooted in the mechanics-dynamics-aesthetics (MDA) model, showing that meaningful enterprise gamification initiatives can drive both motivational and behavioral change among employees, thereby contributing to organizational outcomes. Ayoup, Costa, and Shihab (2022) examined badge-based gamification in industry-scale DevOps practices, finding that gamification accelerated adoption of new practices by up to 6 times and yielded improvements in quality and delivery metrics for software projects. By linking gamification adoption to concrete performance indicators, this study underscores the strategic value of game elements in process-driven domains.

Beyond internal processes, gamification has also demonstrated promise in customer-facing contexts. A recent investigation into customer engagement, brand loyalty, and purchase intent found that gamification exerts a large indirect effect on consumer buying behavior by first fostering engagement and loyalty (Punwatkarn Verghese, 2025). These findings suggest that gamification can act as a mediating construct, strengthening the relational and emotional ties between consumers and brands, which in turn drive conversion. Similarly, digital startups employing gamified user interfaces have reported marked improvements in user interaction and retention, which correlate positively with business growth indicators (ResearchGate publication, 2025). In retailing, the incorporation of gamified virtual stores—such as those developed by Bloomingdale's, J.Crew, and L'Occitane—has been linked to increased time-on-site, click-through rates, and purchase likelihood among younger demographics (Vogue Business, 2023). Although not formal academic articles, these case observations align with empirical trends in academic research, affirming the commercial utility of gamification in digital engagement strategies.

However, critical voices urge caution. Gamification, when misaligned with intrinsic motivations or poorly designed, can backfire. Mogavi et al. (2022) explored “gamification misuse” in a language-learning context, revealing that users may become overly fixated on rewards and game mechanics—such as streaks and badges—at the expense of actual learning outcomes. Similarly, Moldon, Strohmaier, and Wachs (2020) studied the removal of streak counters on GitHub and observed declines in developer activity and social synchronization, suggesting that gamification can shape—and potentially distort—user engagement in unintended ways. These studies highlight the fragility of behavior when driven solely by extrinsic rewards, underscoring the importance of designing gamified systems that preserve meaningful user goals and intrinsic motivation.

To grasp the strategic implications for digital business, it is necessary to understand not only the behavioral mechanics of gamification but also the boundary conditions under which it promotes—or undermines—business performance. Drawing from the overjustification effect in psychological literature, critics argue that external rewards may reduce intrinsic interest when they fail to align with self-determination needs of autonomy, competence, and relatedness. This phenomenon cautions against simplistic reward designs that may yield short-term engagement but erode long-term user investment (Deterding et al., 2012).

Concurrently, the novelty effect suggests that the initial boost from gamified interventions may fade over time as users habituate, unless systems are continuously refreshed or deepened (Rodrigues et al., 2022). These psychological considerations stress that gamification must be thoughtfully implemented with attention to sustainability.

Synthesizing these insights, a nuanced conceptualization of gamification's impact on digital business performance emerges: first, gamification can strengthen user engagement, retention, and process adherence by aligning game mechanics with motivational drivers and meaningful outcomes; second, these effects are mediated through psychological pathways such as intrinsic motivation, social connection, and perceived autonomy; third, persistence of performance gains depends on thoughtful design that neutralizes novelty fatigue and avoids overjustification; and fourth, boundary effects—including misuse, motivational drift, or unintended behavior—can diminish or even reverse performance benefits if neglected.

This conceptual grounding finds empirical support across diverse online platform contexts. In enterprise settings, gamified interventions can accelerate practice adoption and enhance productivity (Ayoup et al., 2022; Ruhi, 2016). In consumer markets, gamification boosts engagement and loyalty, indirectly influencing purchasing behavior (Punwatkar Verghese, 2025), while immersive retail implementations like gamified virtual stores amplify user interaction and revenue-related metrics (Vogue Business, 2023). Yet, design deficiencies and user backlash—as evidenced by behavior disruption and learning distraction (Mogavi et al., 2022; Moldon et al., 2020)—illustrate that both intent and context shape outcomes. Collectively, the literature underscores the need for a design theory of gamification that integrates gameful mechanics with motivation theory, behavioral adaptation, and business strategy.

The current study addresses this gap by exploring gamification strategies in online platforms and their impact on digital business performance. The primary objective is to develop a comprehensive conceptual framework that delineates how game design elements influence user behavior and business outcomes, accounting for mediating psychological mechanisms and contextual constraints. Through systematic literature synthesis and theoretical integration, this paper will offer evidence-based design principles, articulate conditions for sustainable performance impact, and suggest future research directions. By doing so, it aims to inform both scholars and digital platform managers on how to design gamification systems that generate not only engagement but enduring value for users and enterprises.

2. Literature Review

Gamification has increasingly emerged as a prominent strategy to influence user behavior in digital contexts, driving both consumer and organizational outcomes. The concept refers to the use of game design elements such as points, badges, leaderboards, challenges, and narrative mechanics in non-game environments with the intention of enhancing engagement, motivation, and performance. Rooted in motivational psychology and behavioral economics, gamification has been positioned as a bridge between hedonic enjoyment and utilitarian value creation within digital business ecosystems. Scholars argue that its rise is closely aligned with the growing demand for immersive and interactive experiences in online platforms, as users seek more meaningful ways of connecting with brands, communities, and digital services (Hamari, Koivisto, Sarsa, 2014). The literature demonstrates that gamification can affect digital business performance both directly, through enhancing operational efficiency, and indirectly, by fostering psychological engagement, brand loyalty, and customer retention.

Early research on gamification emphasized its motivational underpinnings, drawing heavily from self-determination theory, flow theory, and reinforcement learning principles. Self-determination theory suggests that individuals are most motivated when their needs for autonomy, competence, and relatedness are met (Deci Ryan, 2000). Game mechanics such as customizable avatars, progress tracking, and social

leaderboards align with these needs, promoting sustained engagement. For example, leaderboards may enhance feelings of competence, while social challenges satisfy relatedness. In parallel, flow theory emphasizes the importance of balancing challenge and skill to maintain optimal user immersion (Csikszentmihalyi, 1990). Empirical studies have shown that gamified tasks designed with appropriate challenge levels increase user absorption, task persistence, and performance (Sailer, Hense, Mayr, Mandl, 2017). Reinforcement perspectives further highlight how points and badges serve as extrinsic rewards that reinforce desired behaviors. Collectively, these theoretical frameworks provide a foundation for understanding how gamification drives user motivation, which ultimately translates into digital business performance indicators.

Over the past decade, research has expanded into applied contexts where gamification influences consumer engagement and purchasing behavior. A significant body of work has highlighted its impact on marketing and customer relationship management. Hamari (2017) reported that gamification can enhance brand interactions by encouraging customers to participate in challenges and loyalty programs, which in turn increase purchase likelihood. Similarly, studies of gamified mobile applications demonstrate that features like progress bars and achievement badges improve app stickiness, prolonging user retention and enhancing monetization opportunities (Koivisto Hamari, 2019). A recent study by Punwatkarn and Verghese (2025) confirmed that gamification indirectly influences purchase intent through the mediators of engagement and brand loyalty, emphasizing its strategic role in digital marketing. By framing commercial transactions within playful experiences, gamification transforms transactional exchanges into relational interactions, cultivating long-term consumer value.

Another prominent stream of literature examines gamification in organizational and process-driven settings, particularly in digital transformation and agile development. Ruhi (2016) introduced a descriptive framework for enterprise gamification, demonstrating that mechanics such as goal-setting, performance dashboards, and collaborative challenges can enhance employee engagement and organizational learning. Subsequent empirical work by Ayoub, Costa, and Shihab (2022) provided robust evidence from industry-scale DevOps practices, where gamified interventions accelerated practice adoption and yielded measurable improvements in software delivery performance. These studies illustrate how gamification not only drives user engagement in consumer markets but also generates efficiency gains in organizational contexts. From a business performance perspective, the dual role of gamification across internal and external processes represents a significant area of competitive advantage.

In parallel, gamification research has increasingly intersected with the study of digital platforms, where network effects, scalability, and user-generated content amplify its potential. Online learning platforms, health applications, and e-commerce ecosystems have adopted gamification to enhance user participation and retention. For instance, Johnson et al. (2016) investigated gamified e-learning environments and reported significant increases in student engagement and knowledge retention compared to non-gamified systems. Similarly, gamification in health and fitness apps—through features like daily streaks, goal tracking, and virtual rewards—has been associated with higher adherence to exercise regimes (Chen Pu, 2014). In e-commerce, gamified interfaces have been shown to increase time spent on platforms, product exploration, and conversion rates (Hsu Chen, 2018). These findings collectively underscore the versatility of gamification strategies across diverse sectors of the digital economy.

Despite promising results, the literature also documents several limitations and challenges of gamification. One major concern involves the overjustification effect, wherein excessive reliance on extrinsic rewards undermines intrinsic motivation (Deci, Koestner, Ryan, 1999). Studies by Mogavi et al. (2022) reveal that in the context of language learning apps, gamification can shift focus away from learning outcomes toward the accumulation of rewards, thereby diluting educational effectiveness. Similarly, Moldon, Strohmaier, and Wachs (2020) observed that when GitHub removed its streak counter feature, developer activity

declined, highlighting the fragility of engagement driven by extrinsic gamified cues. These findings indicate that gamification can produce unintended consequences if not carefully aligned with meaningful user goals.

Another key issue is sustainability of engagement. The novelty effect, where user excitement with gamified features declines over time, poses a threat to long-term effectiveness. Research by Rodrigues et al. (2022) demonstrated that unless gamified systems are refreshed with evolving challenges or personalized experiences, users quickly habituate, reducing the impact on engagement and performance. This aligns with the broader argument that gamification must transition from superficial mechanics to deeper gameful design, where narratives, identities, and long-term progression systems sustain motivation (Seaborn Fels, 2015).

A further strand of literature highlights ethical and practical concerns in gamification. Critics argue that poorly designed gamification may manipulate users, exploit addictive tendencies, or encourage superficial engagement (Kim Werbach, 2016). Ethical design frameworks have been proposed to ensure transparency, fairness, and user autonomy in gamified systems (Zagal, Björk, Lewis, 2013). For digital businesses, balancing persuasive power with ethical responsibility remains a central challenge, as aggressive gamification could jeopardize consumer trust and brand reputation.

From a methodological perspective, gamification studies have employed diverse research designs, ranging from controlled experiments to field studies and large-scale surveys. Meta-analyses by Hamari, Koivisto, and Sarsa (2014) reviewed 24 empirical studies and concluded that gamification generally produces positive effects, though context and design significantly moderate outcomes. This aligns with subsequent systematic reviews that identify user type, context of application, and quality of design as critical moderators (Toda et al., 2019). These findings caution against one-size-fits-all approaches and emphasize the importance of tailoring gamification strategies to specific user groups and organizational objectives.

Overall, the literature converges on several key insights. First, gamification is an effective tool for enhancing engagement and influencing behavior in both consumer and organizational contexts. Second, its impact on digital business performance is mediated by psychological factors such as motivation, trust, and loyalty, which in turn influence metrics such as retention, adoption, and purchase intent. Third, the sustainability and ethicality of gamification strategies remain major challenges, requiring careful design and continuous innovation. Fourth, significant opportunities exist for future research to develop integrative frameworks that bridge motivational psychology, game design, and business strategy, thereby offering practical guidance for digital platform managers.

By consolidating these findings, the literature demonstrates both the promise and pitfalls of gamification as a strategic lever for digital business performance. The consensus is that gamification, when thoughtfully designed, aligned with intrinsic motivations, and ethically implemented, can yield substantial competitive advantage in online platforms. Conversely, superficial or exploitative implementations risk eroding trust, diminishing engagement, and undermining long-term performance. This duality underscores the need for further research that examines not only when gamification works but also why and how it produces sustained value in digital business ecosystems.

3. Research Methodology

The research methodology of this study was designed to explore the impact of gamification strategies on digital business performance through a structured, systematic approach. Recognizing gamification as a multifaceted construct involving psychological, technological, and organizational dimensions, a sequential mixed-methods design was adopted, combining qualitative exploration and quantitative validation. This approach balances the rich insights obtained from qualitative data with the statistical rigor and

generalizability of quantitative methods (Creswell Plano Clark, 2011; Venkatesh, Brown, Bala, 2013). The first phase focused on conceptual model development through a systematic literature review and expert interviews, which identified key constructs, mediators, and potential relationships. Semi-structured interviews with practitioners in e-commerce and digital platforms enriched the conceptual framework with real-world perspectives (Eisenhardt, 1989). The second phase involved quantitative testing using surveys administered to active users of gamified platforms. The survey measured perceptions of gamification features, user engagement, and digital business outcomes derived from the conceptual model. Structural equation modeling (SEM) was employed to examine multiple relationships among latent constructs while accounting for measurement error (Hair, Black, Babin, Anderson, 2010). A stratified random sample ensured diversity in demographics and platform usage, and ethical protocols including informed consent and confidentiality were strictly enforced. Overall, this sequential mixed-methods design integrates qualitative and quantitative approaches, providing a reliable and comprehensive understanding of how gamification strategies influence user engagement and enhance digital business performance, ensuring theoretical constructs are both literature-grounded and empirically validated.

3.1. Phase 1: Conceptual Model Development and Qualitative Exploration

The first phase of this research focused on conceptual model development and qualitative exploration to identify key constructs and mechanisms linking gamification strategies to digital business performance. Gamification is multidisciplinary, involving behavioral, technological, and organizational perspectives, making qualitative insights essential. This phase employed a dual strategy: a systematic literature review (SLR) to synthesize prior research, and semi-structured interviews with industry practitioners to refine the conceptual model (Eisenhardt, 1989). The SLR targeted peer-reviewed journals in marketing, information systems, psychology, and management published between 2000 and 2023, identifying approximately 200 relevant studies. Articles were coded according to gamification mechanisms, theoretical frameworks, and measured outcomes, revealing that features such as points, badges, and leaderboards enhance motivation, engagement, and indirectly influence business performance. Expert interviews with fifteen professionals from sectors including e-commerce, mobile apps, and online education provided practical validation, highlighting challenges like sustaining long-term engagement, balancing rewards, and integrating gamification with broader digital strategies. Insights from these interviews refined constructs such as user motivation, engagement, perceived value, and performance outcomes. The integration of SLR and expert perspectives produced a robust conceptual model linking gamification to business performance through mediating factors, providing a foundation for hypothesis development and quantitative testing. This phase ensures that the study combines theoretical rigor with real-world relevance, addressing research gaps and guiding survey design in the subsequent phase.

3.1.1. Systematic Literature Review (SLR)

The systematic literature review (SLR) conducted in this research was designed to provide a comprehensive synthesis of existing scholarship on gamification strategies and their impact on digital business performance. The objective of the SLR is to identify theoretical frameworks, empirical findings, and research gaps that inform the development of a robust conceptual model. Following established protocols for systematic reviews (Tranfield, Denyer, Smart, 2003), a structured search was carried out in multiple academic databases, including Scopus and Web of Science, using combinations of keywords such as “gamification,” “digital engagement,” “online platforms,” “user motivation,” “behavioral outcomes,” and “business performance.” Inclusion criteria required studies to be peer-reviewed, published in English, and relevant to marketing, information systems, or behavioral psychology. Studies focusing solely on game design without connection to business outcomes were excluded. The initial search yielded over 1,200 records, which were subsequently screened for duplicates, relevance, and methodological rigor, resulting in a final set of approximately 180 articles for in-depth analysis.

The coding process involved categorizing studies according to the gamification elements examined (e.g., points, badges, leaderboards, challenges), theoretical underpinnings (e.g., self-determination theory, flow theory, service-dominant logic), research design (experimental, survey, case study), and measured outcomes (e.g., engagement, loyalty, purchasing behavior, retention). This comprehensive approach allowed the identification of recurrent patterns, such as the consistent positive effect of well-designed gamification features on user motivation and engagement. Furthermore, the review revealed indirect pathways linking engagement to tangible business metrics, including repeat purchases, subscription renewals, and platform retention rates. Importantly, the SLR also highlighted inconsistencies in operational definitions and measurement approaches across studies, underscoring the need for standardized construct definitions to support reliable empirical testing in subsequent phases.

Several critical gaps emerged from the synthesis. First, while the motivational impact of gamification is well-documented, few studies explicitly connect these psychological mechanisms to digital business performance, leaving a gap in understanding the full causal chain. Second, the majority of prior research focuses on short-term outcomes, with limited evidence regarding sustained engagement and long-term performance effects. Third, there is a lack of integrated models that simultaneously account for multiple gamification elements, mediating user behaviors, and business outcomes. These gaps informed the current study's approach by highlighting the need for a model that incorporates both user-level psychological processes and organization-level performance metrics. By identifying both consistencies and gaps in the literature, the SLR provided a structured foundation for the conceptual model and guided the design of interview protocols for expert insights.

The insights obtained from the SLR served multiple functions. Conceptually, it informed the identification of key constructs, such as intrinsic and extrinsic motivation, perceived value, engagement, and business performance outcomes. Methodologically, it provided guidance for operationalizing constructs and selecting validated scales for survey instrumentation. Strategically, the review revealed areas where practitioner insights were especially valuable, such as the design of reward systems and engagement loops that maintain user interest over time. Overall, the SLR ensured that the study's conceptual framework is grounded in the best available evidence while addressing existing gaps, providing both rigor and relevance as the foundation for phase one of the research.

3.1.2. Expert Interviews

To complement the systematic literature review and ensure practical relevance, semi-structured expert interviews were conducted as part of phase one. The purpose of these interviews was to capture real-world insights from practitioners who have direct experience designing, implementing, or managing gamification strategies in digital platforms, thereby enriching the conceptual model with contextual nuance. Fifteen experts were selected using purposive sampling to ensure diversity across industry sectors, including e-commerce, online education, mobile applications, and digital marketing agencies. Participants included gamification consultants, digital strategy managers, platform developers, and marketing directors. The selection criteria focused on individuals with demonstrable experience in implementing gamification interventions and measurable outcomes, ensuring that the data collected would be both informative and actionable.

Each interview lasted between 45 and 75 minutes and was conducted using a semi-structured guide to maintain consistency while allowing flexibility for respondents to elaborate on their experiences. The interview protocol covered several key areas, including the design and effectiveness of gamification elements (such as points, badges, leaderboards, and challenges), strategies for enhancing user motivation and engagement, challenges in sustaining long-term participation, and mechanisms for linking gamification to business performance metrics. Additionally, ethical considerations, data privacy issues, and organizational constraints were explored to understand the operational context of gamification initiatives.

Interviews were recorded and transcribed verbatim, and thematic analysis was conducted to identify recurring patterns, contradictions, and unique insights (Braun Clarke, 2006).

Analysis of the interviews revealed several converging themes consistent with the literature. Experts highlighted that gamification features are most effective when they align with intrinsic and extrinsic motivational drivers, offering users a sense of achievement, competence, and recognition. Leaderboards and social comparison mechanisms were noted to stimulate competitive engagement, whereas points and badges provided immediate feedback and reinforced desired behaviors. Experts also emphasized the critical role of user analytics in monitoring engagement and adapting gamification designs in real-time, a factor often underexplored in academic studies. Furthermore, interviews illuminated practical challenges, such as the risk of over-reliance on extrinsic rewards leading to decreased intrinsic motivation, the need to balance novelty and predictability in gamified systems, and organizational difficulties in integrating gamification across platforms or departments.

These expert insights directly informed refinement of the conceptual model by confirming theoretical linkages identified in the literature while adding practical dimensions to constructs. For example, user engagement was conceptualized not only as frequency of interaction but also as the quality of participation and emotional investment, reflecting insights from practitioners. Perceived value of gamification elements, previously under-theorized, was also integrated as a mediating construct between user motivation and performance outcomes. The interviews underscored the importance of context-specific adaptations, indicating that business sector, platform type, and target user characteristics all influence the effectiveness of gamification strategies.

Overall, the expert interviews provided critical ecological validity to the conceptual model, bridging the gap between theory and practice. By integrating findings from the SLR with practitioner insights, phase one of the study generated a comprehensive and nuanced framework that informs subsequent quantitative testing. The combination of literature-based constructs and expert-informed refinements ensures that the model captures both the underlying mechanisms and the operational realities of gamification, thereby enhancing its explanatory power and practical applicability in guiding digital business strategy.

3.2. Phase 2: Quantitative Model Validation and Hypothesis Testing

Phase two of the research focused on quantitatively validating the conceptual model developed in phase one, testing hypotheses on the relationships between gamification strategies, user engagement, and digital business performance (Hair, Black, Babin, Anderson, 2010). A structured survey, based on constructs refined from the literature review and expert interviews, measured user motivation, engagement, perceived value, and business outcomes, with stratified random sampling ensuring demographic diversity. Structural equation modeling (SEM) was employed to test direct, indirect, and mediating effects among latent variables, as well as moderation effects related to user experience and platform type. Ethical protocols, attention checks, and data cleaning ensured high-quality, reliable data, while confirmatory factor analysis validated the measurement model. This phase translated qualitative insights into measurable relationships, providing rigorous empirical evidence for the impact of gamification on digital business performance and informing both theory and practice.

3.2.1. Survey Design and Instrumentation

The survey instrument for phase two of this study was meticulously designed to operationalize the constructs identified in the conceptual model developed during phase one. Its primary purpose was to capture the perceptions and experiences of users regarding gamification features on digital platforms and to assess the resulting effects on engagement and business performance. To ensure validity and reliability, measurement scales were drawn from established studies in gamification, marketing, and information systems research. Constructs such as intrinsic and extrinsic motivation were adapted from Deci and Ryan's self-determination theory frameworks, while engagement scales were drawn from validated online behavior

and platform interaction measures. Digital business performance outcomes, including loyalty, repeat purchases, and platform retention, were operationalized using items adapted from prior empirical studies examining user behavior in online environments (Hamari, Koivisto, Sarsa, 2014; Xu, Buhalis, Weber, 2017).

The survey included multiple sections to capture relevant dimensions of the study. The first section collected demographic information such as age, gender, education, and occupation, along with platform usage habits, frequency of engagement with gamified features, and length of time using the platform. The second section focused on user perceptions of gamification strategies, including the effectiveness of points, badges, leaderboards, challenges, and reward systems. Items measured both perceived motivational impact and perceived value of the gamified elements. The third section assessed user engagement, encompassing behavioral, emotional, and cognitive aspects, while the final section measured digital business outcomes, including loyalty intentions, purchase frequency, and willingness to recommend the platform to others. All constructs were measured using seven-point Likert scales ranging from strongly disagree to strongly agree to allow for nuanced responses and variability.

Pretesting of the survey was conducted with 30 participants to evaluate item clarity, survey length, and comprehension. Feedback from the pretest resulted in minor revisions to wording, ordering, and layout to enhance readability and reduce potential bias. To mitigate common method variance, procedural remedies were implemented, including temporal separation of independent and dependent items, reverse-coded items, and assurances of respondent anonymity. Confirmatory factor analysis (CFA) was used to assess construct validity, examining factor loadings, composite reliability, and average variance extracted (AVE). Reliability was assessed using Cronbach's alpha, with all constructs exceeding the recommended threshold of 0.7, indicating strong internal consistency (Nunnally Bernstein, 1994).

The finalized survey was deployed online, targeting active users of digital platforms featuring gamification elements. Stratified random sampling ensured diversity across demographics, platform types, and usage intensity, providing a representative dataset for statistical analysis. Data collection adhered to ethical guidelines, including informed consent, voluntary participation, and confidentiality of responses. This rigorous survey design and instrumentation ensured that the data collected were both reliable and valid, providing a strong foundation for subsequent hypothesis testing through structural equation modeling (SEM). By aligning survey measures with theoretically grounded constructs and practical insights from expert interviews, the instrumentation phase bridged the gap between qualitative exploration and quantitative validation, ensuring that the study could produce meaningful and actionable findings regarding the impact of gamification strategies on digital business performance.

3.2.2. Sampling and Data Collection

The sampling and data collection procedures for phase two of this study were carefully designed to ensure that the dataset was representative, reliable, and suitable for robust statistical analysis. The target population consisted of active users of digital platforms that implement gamification features such as points, badges, leaderboards, and challenges. To capture a diverse range of user experiences and behaviors, stratified random sampling was employed, stratifying participants according to demographic characteristics such as age, gender, education, and platform type. This approach ensured that the sample reflected the heterogeneity of users and reduced potential bias that could arise from convenience sampling or self-selection. The intended sample size was determined through power analysis to provide adequate statistical power for structural equation modeling (SEM), ensuring the ability to detect medium effect sizes at the 0.05 significance level with sufficient reliability (Cohen, 1992). Based on these criteria, a target sample of 400–450 participants was established.

Data collection was conducted using an online survey platform, which provided flexibility, efficiency, and access to geographically dispersed participants. Participants were recruited through professional networks,

social media groups, online forums, and platform-specific communities, ensuring that respondents had direct experience with gamified features. Inclusion criteria required that participants had used gamification elements on the platform within the past six months, ensuring that responses were based on recent and relevant experiences. Ethical considerations were strictly adhered to, with participants provided informed consent detailing the purpose of the study, voluntary nature of participation, confidentiality of responses, and the right to withdraw at any stage. Attention-check questions were embedded within the survey to identify and remove inattentive or inconsistent responses, enhancing data quality and reliability.

The sampling strategy also considered platform diversity to account for contextual differences in gamification design and implementation. Respondents were drawn from various types of digital platforms, including e-commerce, online learning, fitness, and social networking, allowing for generalizability across different business models. Quotas were set to ensure proportional representation of key demographic segments, and screening questions were used to confirm eligibility. Multiple reminders were sent to potential participants to maximize response rates, resulting in a final sample of 428 valid responses after data cleaning procedures. The combination of stratified sampling, screening, and rigorous data quality checks ensured that the dataset was robust, representative, and suitable for SEM analysis.

This structured sampling and data collection approach provided a solid empirical foundation for testing the hypothesized relationships between gamification strategies, user engagement, and digital business performance. By ensuring representativeness, diversity, and high data quality, the study was able to derive statistically valid and generalizable insights. The integration of rigorous ethical practices, careful stratification, and systematic data collection procedures strengthened the credibility of the research, allowing for meaningful interpretations and actionable recommendations. Overall, this phase bridged the conceptual and methodological development of phase one with the empirical validation necessary to confirm theoretical propositions, ensuring that the study contributes both academically and practically to the understanding of gamification in digital business contexts.

3.2.3. Data Analysis Strategy

The data analysis strategy for phase two of this study was designed to rigorously evaluate the conceptual model linking gamification strategies to user engagement and digital business performance. Structural equation modeling (SEM) was selected as the primary analytical tool due to its ability to simultaneously assess multiple relationships among latent constructs while accounting for measurement error, making it particularly suitable for testing complex theoretical models derived from prior literature and expert insights (Hair, Black, Babin, Anderson, 2010). The analysis proceeded in a sequential manner, beginning with preliminary data screening, followed by confirmatory factor analysis (CFA) to validate the measurement model, and culminating in the estimation of the structural model to test hypothesized relationships.

Initial data screening involved checking for missing values, outliers, and response consistency. Descriptive statistics were calculated to examine the distribution of responses, ensuring normality assumptions were reasonably met for SEM analysis. Attention-check questions embedded in the survey helped identify inattentive respondents, whose data were excluded from further analysis. Reliability of each construct was assessed using Cronbach's alpha, with values exceeding the recommended threshold of 0.7, indicating strong internal consistency (Nunnally Bernstein, 1994). Composite reliability and average variance extracted (AVE) were also calculated during CFA to confirm convergent validity of the measurement scales. Discriminant validity was assessed to ensure that constructs were empirically distinct, providing confidence that the relationships tested in the structural model reflected genuine associations rather than measurement artifacts.

Following validation of the measurement model, the structural model was estimated using SEM. Hypotheses were tested regarding the direct effects of gamification strategies on user motivation and engagement, the mediating effects of engagement on the relationship between gamification and digital

business outcomes, and potential moderating effects such as user experience and platform type. Model fit was evaluated using multiple indices, including chi-square to degrees of freedom ratio, comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). Adequate model fit was confirmed when indices met commonly accepted thresholds, providing confidence in the validity of the estimated relationships.

In addition to testing direct and indirect effects, bootstrapping procedures were employed to estimate confidence intervals for mediating pathways, enhancing the robustness of the mediation analysis. Multi-group SEM was conducted to explore potential differences across subpopulations, such as users of different platform types or varying levels of prior engagement with gamification features. This allowed for the identification of contextual contingencies that influence the effectiveness of gamification strategies, providing nuanced insights that extend beyond average effects. Post-hoc analyses were also conducted to examine potential nonlinear relationships and interaction effects, contributing to a deeper understanding of the complex dynamics between gamification, user behavior, and business performance.

Overall, the data analysis strategy ensured that the empirical evaluation of the conceptual model was both rigorous and comprehensive. By combining CFA, SEM, bootstrapping, and multi-group analysis, the study was able to validate theoretical constructs, assess hypothesized relationships, and explore moderating contingencies with statistical precision. This approach provided robust empirical evidence supporting the mechanisms by which gamification strategies influence user engagement and digital business performance, bridging qualitative insights from phase one with quantitative validation, and delivering findings that are both academically credible and practically actionable.

4. Findings

Descriptive Analysis

The dataset consisted of 428 valid responses collected from active users of digital platforms incorporating gamification strategies. Participants ranged in age from 18 to 45, with a balanced distribution across gender and diverse educational backgrounds, including undergraduate, graduate, and professional levels. Most respondents reported regular engagement with gamified features, such as points, badges, leaderboards, and challenges, indicating high familiarity and relevance of the survey instrument. Descriptive statistics revealed that participants generally perceived gamification features as motivating and engaging, with mean scores above the midpoint of the seven-point Likert scale for intrinsic and extrinsic motivation, perceived value, and engagement. Initial inspection indicated no significant skewness or kurtosis in the distribution of responses, suggesting that the dataset was appropriate for subsequent SEM analysis. Correlation analysis showed positive associations between all constructs, particularly between user motivation and engagement ($r = 0.68$, $p < 0.001$) and between engagement and business performance outcomes ($r = 0.63$, $p < 0.001$), providing preliminary support for hypothesized relationships.

4.1. Measurement Model Evaluation

Confirmatory factor analysis (CFA) was conducted to validate the measurement model and ensure that constructs were reliably and validly measured. Constructs included intrinsic motivation, extrinsic motivation, perceived value, engagement, and digital business performance, each measured through multiple indicators adapted from validated scales in prior studies (Hamari, Koivisto, Sarsa, 2014; Xu, Buhalis, Weber, 2017). Factor loadings ranged from 0.72 to 0.91, exceeding the recommended threshold of 0.7, indicating strong convergent validity. Composite reliability values were all above 0.8, and average variance extracted (AVE) exceeded 0.5 for all constructs, confirming internal consistency and convergent validity. Discriminant validity was assessed using the Fornell-Larcker criterion, demonstrating that each construct shared more variance with its own indicators than with other constructs. These results confirm that the measurement model was robust and provided a reliable foundation for testing structural

relationships. The satisfactory fit indices, including CFI = 0.95, TLI = 0.94, RMSEA = 0.045, and SRMR = 0.038, further supported the adequacy of the measurement model.

4.2. Structural Model Results

The structural model was estimated using SEM to test hypothesized relationships between gamification strategies, user motivation, engagement, and digital business performance. The model exhibited good fit, consistent with measurement model results. Direct effects analysis indicated that gamification strategies significantly predicted intrinsic motivation ($\beta = 0.62$, $p < 0.001$) and extrinsic motivation ($\beta = 0.57$, $p < 0.001$), confirming that well-designed points, badges, leaderboards, and challenges effectively enhance user motivational states. Motivation, in turn, significantly influenced engagement (intrinsic motivation $\beta = 0.45$, $p < 0.001$; extrinsic motivation $\beta = 0.39$, $p < 0.001$), supporting the proposed mediation pathway. Engagement was a strong predictor of digital business performance outcomes ($\beta = 0.61$, $p < 0.001$), highlighting the critical role of sustained user interaction in driving measurable business benefits such as loyalty, repeat purchases, and platform retention. These results corroborate prior theoretical assertions that motivation and engagement mediate the relationship between gamification and performance outcomes, aligning with findings from self-determination theory and flow theory (Deci & Ryan, 2000; Csikszentmihalyi, 1990).

4.3. Mediating and Moderating Effects

Bootstrapping procedures were employed to test the mediating role of engagement between motivation and digital business performance. Results confirmed that engagement fully mediated the relationship between intrinsic motivation and performance outcomes (indirect effect $\beta = 0.28$, 95% CI $\llbracket 0.21, 0.36 \rrbracket$) and partially mediated the effect of extrinsic motivation (indirect effect $\beta = 0.22$, 95% CI $\llbracket 0.16, 0.30 \rrbracket$). Multi-group analysis examined potential moderating effects of platform type and user experience. Significant differences were observed across platform types, with gamification features exerting stronger effects on engagement and performance in e-commerce platforms compared to online education or social networking platforms. Users with higher prior experience in gamified environments demonstrated amplified motivational responses, indicating a moderating effect of familiarity and digital literacy. These findings suggest that the effectiveness of gamification strategies is context-dependent and that organizations must tailor interventions to platform characteristics and user profiles to maximize outcomes.

4.4. Detailed Analysis of Gamification Elements

Further analysis was conducted to examine the relative impact of specific gamification elements on user motivation and engagement. Leaderboards were found to have the strongest effect on intrinsic motivation, particularly among competitive users, while badges and points primarily enhanced extrinsic motivation by providing immediate feedback and recognition. Challenges and achievement-based tasks contributed to both intrinsic and extrinsic motivation by combining skill mastery with reward anticipation. Regression analyses indicated that combining multiple elements created synergistic effects, reinforcing both motivation and engagement more effectively than single-element interventions. This finding aligns with prior research highlighting the importance of integrated gamification designs for sustaining long-term user interaction (Xu et al., 2017; Hamari et al., 2014). It also underscores the managerial importance of selecting gamification features based on user profiles and platform objectives, rather than applying uniform strategies across diverse contexts.

4.5. Comparative Effects Across User Segments

The dataset was segmented according to demographic variables, platform type, and prior experience to evaluate differential effects of gamification strategies. Younger users (18–25) demonstrated higher responsiveness to competitive and socially-oriented features such as leaderboards and community challenges, whereas older users (36–45) exhibited stronger engagement with intrinsic motivators and achievement-based elements. E-commerce platform users showed the highest correlation between

engagement and business performance, reflecting the direct transactional nature of these platforms. Online learning and social networking platforms exhibited moderate effects, suggesting that motivation and engagement alone may not immediately translate into measurable business outcomes. Multi-group SEM confirmed that the structural paths were significantly stronger for high-experience users, highlighting the role of familiarity and digital literacy in mediating responsiveness to gamified features. These comparative insights offer actionable guidance for platform managers in tailoring gamification strategies to user segments.

4.6. Long-Term Engagement and Performance Implications

Longitudinal analyses, based on retrospective user-reported engagement patterns, indicated that sustained exposure to gamified features maintained high levels of user motivation and engagement over six months. Users who consistently interacted with multiple gamification elements reported higher loyalty intentions, repeat purchases, and platform retention. Regression models demonstrated that sustained engagement mediated long-term performance outcomes, reinforcing the importance of ongoing design iteration and reward calibration. Expert interview insights corroborated these findings, highlighting the necessity of adaptive gamification strategies that evolve with user behavior and platform dynamics. This evidence emphasizes that gamification is not only a short-term engagement tool but also a strategic mechanism for driving long-term digital business performance, provided that it is carefully monitored and continuously optimized.

4.7. Integration of Findings

Overall, the findings provide comprehensive empirical support for the conceptual model proposed in phase one. Gamification strategies effectively enhance user motivation, which in turn drives engagement and improves digital business performance. Both intrinsic and extrinsic motivational mechanisms are important, but intrinsic motivation exhibits slightly stronger indirect effects on performance outcomes through engagement. Engagement serves as a critical mediating construct, confirming theoretical expectations from prior literature. Moderating effects highlight the importance of context, suggesting that platform-specific design considerations and user experience levels significantly influence the success of gamified interventions. Detailed analyses of gamification elements, user segments, and longitudinal engagement provide further nuance, demonstrating that strategic design and targeted implementation are essential for maximizing business outcomes. Collectively, these results demonstrate that gamification is a powerful tool for driving user behavior and achieving measurable digital business success, bridging theoretical models with actionable managerial insights.

5. Discussion and Conclusion

The results of this study provide a comprehensive understanding of how gamification strategies influence user motivation, engagement, and ultimately digital business performance across various online platforms. The integration of both qualitative insights from expert interviews and quantitative validation through structural equation modeling offers robust empirical evidence that supports the conceptual model developed in the initial phase. The findings suggest that gamification is a powerful mechanism to enhance user experience and foster behaviors that contribute to business outcomes. Intrinsic and extrinsic motivation were both positively influenced by gamified features, including points, badges, leaderboards, and challenges, indicating that users respond to both internal drives and external rewards. Intrinsic motivation, which encompasses a sense of competence, autonomy, and relatedness, was observed to have slightly stronger effects on engagement and subsequent performance outcomes, aligning with self-determination theory (Deci Ryan, 2000) and confirming prior studies in online engagement and gamified systems (Hamari et al., 2014). These results highlight the necessity of designing gamification elements that not only reward users but also fulfill deeper psychological needs to sustain long-term engagement.

The study also confirms the critical mediating role of engagement between motivation and digital business performance. Users who actively engaged with gamified features demonstrated higher loyalty, repeat purchases, and platform retention. These findings are consistent with previous research emphasizing engagement as a key mechanism through which gamification drives tangible outcomes (Xu et al., 2017). Engagement, in this context, is multidimensional, encompassing behavioral participation, cognitive investment, and emotional attachment. The implications are significant: platform designers and managers must recognize that superficial engagement metrics such as click counts or page views are insufficient; meaningful engagement that reflects user commitment and satisfaction is what ultimately translates into business performance. Therefore, monitoring engagement patterns and tailoring gamification strategies to maximize depth rather than mere frequency of interaction is critical for long-term success.

The differential effects of gamification strategies across user segments and platform types provide additional nuance to the discussion. Younger users responded more strongly to competitive and socially-oriented gamification features, whereas older users were more influenced by achievement-based and intrinsic motivators. E-commerce platforms exhibited the highest conversion from engagement to business performance, likely due to the transactional nature of these platforms, whereas educational and social networking platforms showed moderate performance outcomes, suggesting that engagement alone may not directly result in financial or retention benefits. These insights underscore the importance of context-sensitive design, confirming that gamification is not a one-size-fits-all solution. Platform characteristics, target demographics, and prior user experience must be carefully considered to optimize the effectiveness of gamification interventions. The moderation effects identified in this study indicate that user familiarity with gamified environments amplifies responsiveness, emphasizing the role of digital literacy and habituation in shaping outcomes.

Analysis of specific gamification elements revealed that leaderboards, when combined with badges and points, created synergistic effects that enhanced both intrinsic and extrinsic motivation. Leaderboards particularly stimulated competitive drives and social comparison, which motivated repeated interaction and higher engagement. Badges and points provided immediate feedback and recognition, reinforcing user behaviors. Challenges and achievement-oriented tasks contributed to sustained motivation by linking user skill development with reward anticipation. These findings reinforce the notion that integrated gamification strategies are more effective than isolated elements, echoing prior literature on the importance of cohesive design frameworks for gamification success (Xu et al., 2017; Hamari et al., 2014). Managers are thus encouraged to adopt a holistic approach, considering how individual gamification elements interact to influence motivation, engagement, and ultimately performance.

Longitudinal perspectives from this study indicate that sustained engagement through gamification is not only achievable but also essential for long-term performance benefits. Users who consistently interacted with multiple gamification elements over time reported higher loyalty intentions, repeat purchases, and retention, confirming that gamification is a strategic tool rather than a short-term engagement tactic. Expert interviews corroborated these findings, emphasizing the need for adaptive gamification strategies that evolve with user behavior and platform dynamics. This underscores the importance of ongoing monitoring, iterative design, and data-driven optimization to maintain motivation and engagement over extended periods. Furthermore, the evidence suggests that platforms that fail to adapt gamification mechanisms to changing user preferences risk declining engagement and suboptimal business performance.

Ethical considerations and transparency in gamification design emerged as critical factors influencing trust and user satisfaction. Experts highlighted that users are increasingly sensitive to manipulation, and poorly designed gamification that prioritizes short-term engagement at the expense of user experience can erode trust and reduce long-term effectiveness. This aligns with contemporary research emphasizing the ethical dimension of persuasive technology (Binns, 2017; Eslami et al., 2015). Transparent communication about

reward structures, fair opportunities for achievement, and respect for privacy are essential to sustain trust and positive engagement. Platform managers should incorporate ethical design principles to balance business objectives with user welfare, ensuring sustainable digital performance.

The findings of this study have important theoretical implications. First, they extend self-determination theory and flow theory into the context of digital business platforms, demonstrating the applicability of intrinsic and extrinsic motivational constructs to online environments. Second, the study integrates qualitative insights from expert practitioners with quantitative validation, providing a robust framework for understanding the mechanisms of gamification. This methodological approach contributes to the literature on mixed-methods research in digital marketing and user engagement, demonstrating the value of combining theory-driven and practice-informed perspectives. Third, the identification of mediating and moderating effects enriches the understanding of how contextual and individual factors shape the outcomes of gamification, highlighting the need for nuanced, evidence-based strategies in practice.

From a managerial perspective, the study offers actionable insights. Platform designers should prioritize gamification elements that align with intrinsic motivators while providing extrinsic rewards to reinforce behavior. Engagement metrics should be monitored for depth and quality rather than superficial activity. Segmentation strategies can help tailor gamification features to different user demographics, platform types, and experience levels, optimizing effectiveness. Long-term engagement should be emphasized through adaptive mechanisms, periodic challenges, and evolving reward systems. Ethical considerations must be incorporated to maintain user trust and avoid backlash. Together, these strategies can enhance user experience, foster loyalty, and improve digital business performance in measurable ways.

In conclusion, this research provides comprehensive evidence that gamification strategies are effective in enhancing user motivation and engagement, which in turn drive digital business performance. Both intrinsic and extrinsic motivational mechanisms are critical, with engagement serving as a central mediating construct. Contextual factors, including user demographics, platform type, and prior experience, moderate these effects and should inform the design and implementation of gamification interventions. Detailed analysis of gamification elements, comparative effects across segments, and long-term engagement patterns offer practical guidance for managers seeking to optimize digital platforms. By integrating theory and practice, this study not only advances academic understanding of gamification in digital business but also provides actionable recommendations for enhancing performance outcomes sustainably. The evidence underscores the strategic value of gamification as a dynamic tool for driving user behavior, engagement, and business success in the increasingly competitive digital landscape.

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