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From Engagement to Mastery: A Bibliometric Analysis of Gamification in Corporate Learning

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ABSTRACT

Gamification has received increasing attention as an approach to support engagement and learning in corporate contexts. However, the conceptual development and thematic structure of research on *gamification in corporate learning* remain insufficiently consolidated. This study maps the development, intellectual structure, and emerging research themes in corporate gamification research and identifies areas requiring further conceptual integration. A bibliometric analysis was conducted on 110 distinct English-language journal articles published between 2018 and 2024, retrieved from Scopus and ScienceDirect. Data were analyzed using VOSviewer and Bibliometrix through publication performance, co-authorship, co-citation, and keyword co-occurrence analyses. The findings indicate growing research attention to gamification, motivation, game mechanics, and employee outcomes, with Self-Determination Theory emerging as a prominent theoretical perspective. The thematic structure emphasizes design elements, motivation, employee outcomes, and organizational context, while organizational culture and integration across learning perspectives appear comparatively less central. The findings suggest opportunities for more integrated models connecting motivational, learning, instructional, and organizational perspectives. Practically, gamification should be aligned with learning objectives, competency development, organizational values, and cultural context. These findings provide a basis for future empirical research across diverse organizational settings.

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1. INTRODUCTION

Rapid technological development and intensifying global competition have substantially changed the way organizations develop and maintain employee capabilities. In increasingly dynamic and uncertain business environments, workforce skills are not merely operational resources but strategic assets that support organizational adaptability, innovation, and competitiveness. Consequently, corporate training and organizational

learning have increasingly shifted from being viewed primarily as operational cost centers toward being recognized as strategic investments in organizational capability and performance [1], [2], [3].

Despite this strategic importance, organizations continue to face challenges in designing learning approaches that can effectively engage employees and support meaningful learning. Conventional training practices, including lecture-based instruction, passive presentations, and non-interactive electronic learning modules, may provide information efficiently but offer limited opportunities for active participation, contextualized learning, and sustained engagement. The increasing complexity of organizational learning further intensifies this challenge because employees are expected not only to acquire procedural knowledge but also to understand abstract and context-dependent issues, including organizational values, corporate culture, ethical principles, and expected workplace behaviors. Thus, the central challenge is no longer simply the digital delivery of training content, but the development of learning environments that can integrate engagement, knowledge construction, behavioral development, and organizational values. Recent reviews of gamified professional and workplace training similarly indicate that employee gamification research has expanded substantially, while theoretical integration and the alignment of game elements with broader learning objectives remain areas requiring further development [14], [15], [3].

Gamification has emerged as one potential approach for addressing this challenge by incorporating game-related elements into non-game contexts to support participation, motivation, interaction, and learning. Previous research has demonstrated the development of interactive multimedia and digital learning media as alternatives to passive instructional practices [4], [6]. However, much of this literature has been developed in educational rather than workplace contexts. Studies involving animated learning media [7], web-based platforms such as Kahoot! [8], and electronic modules developed with Canva [9], for example, demonstrate the broader movement toward interactive and digitally mediated learning, but their direct implications for corporate learning remain insufficiently synthesized. Similarly, studies examining Virtual Field Trips [10] and Augmented Reality flashcards [11] illustrate the expansion of immersive and interactive learning technologies. In contrast, research combining Problem-Based Learning with interactive multimedia [12] and Mobile Learning through Ethno-Edu Games [13] indicates increasing attention to contextualized and active learning. These studies collectively suggest that digital learning is moving beyond simple content delivery; nevertheless, their fragmented contexts make it difficult to determine how such innovations have shaped the intellectual and conceptual development of corporate gamification research. In workplace settings, systematic reviews have likewise identified recurring use of points, levels, leaderboards, challenges, badges, and other achievement-oriented elements, while noting that theoretical perspectives and learning-oriented integration are not consistently articulated [14], [15].

Within the corporate learning literature, gamification research has expanded across organizational learning, employee development, training, motivation, and performance-related domains. Nevertheless, the existing body of research remains conceptually fragmented. Previous studies frequently examine individual game elements, such as points,

badges, and leaderboards, or emphasize short-term outcomes such as engagement and motivation. Although these approaches provide valuable evidence regarding specific mechanisms of gamification, they provide a limited basis for understanding how the field has collectively developed, which themes have become central, and which areas remain peripheral or disconnected. A fragmented research landscape also makes it difficult to determine whether corporate gamification is developing toward broader organizational purposes or remains predominantly focused on immediate individual-level outcomes. This concern is consistent with empirical workplace studies showing that gamification can be associated with employee engagement, satisfaction, psychological need satisfaction, and work-related outcomes, but that these outcomes depend on the design and organizational context in which gamification is implemented [16], [17], [27].

This study conceptualizes two related gaps that can be examined through bibliometric evidence. First, the Corporate Culture Gap refers to the limited conceptual integration between gamification research and the use of gamified learning to reinforce organizational culture, values, ethics, and desired workplace behaviors. Rather than assuming that this gap exists, the present study examines whether corporate culture-related concepts are represented through keyword frequency, keyword co-occurrence, thematic clustering, and their connections with dominant research themes. Second, the Holistic Model Deficit refers to the limited integration of multiple learning perspectives within corporate gamification research, particularly beyond a predominant emphasis on motivation and engagement. This gap is examined by identifying the theoretical and conceptual terms represented in the literature and assessing their frequency, co-occurrence relationships, thematic clusters, and intellectual connections. These operational definitions allow the proposed gaps to be evaluated empirically rather than presented solely as rhetorical claims. Recent research directly connecting gamified competition with perceived innovation culture [18], culturally sensitive corporate gamification [19], and gamified pathways for institutionalizing organizational values [20] further demonstrates that organizational culture is an emerging but still developing dimension of workplace gamification research.

Bibliometric analysis is therefore appropriate for examining the structure and development of this fragmented research domain. Bibliometric methods can systematically identify publication trends, influential sources, intellectual relationships, and thematic patterns within a defined corpus [21], [22]. Science-mapping approaches supported by Bibliometrix and VOSviewer are particularly useful for examining fragmented research streams through descriptive indicators, citation relationships, co-authorship networks, co-citation structures, and keyword co-occurrence patterns [24], [25]. At the same time, bibliometric findings are shaped by methodological decisions, including database selection, search strategies, inclusion and exclusion criteria, keyword normalization, analytical thresholds, and interpretation of network structures. Accordingly, this study does not treat bibliometric analysis as completely objective or independent of scholarly judgment; instead, it uses a transparent and systematic procedure to provide reproducible evidence regarding the development and structure of corporate gamification research.

Against this background, the present study conducts a bibliometric review of 110 distinct documents retrieved from Scopus and ScienceDirect covering the period from 2018

to 2024. The period was selected to capture the development of corporate gamification research during a period of substantial digital transformation and increasing adoption of technology-mediated learning. The analysis moves beyond isolated examples of digital learning media [4], [13] by examining the broader intellectual and conceptual structure of the literature. The study focuses particularly on publication development, influential sources and documents, and thematic relationships within the corporate gamification domain. The selected period also captures a phase in which systematic reviews increasingly identified gamification as an emerging approach within professional training and organizational learning [14], [15].

The novelty of this study lies in integrating these dimensions into a systematic bibliometric examination of corporate gamification while explicitly investigating the extent to which the field connects gamification with corporate culture reinforcement and broader learning-model integration. Rather than evaluating the effectiveness of individual gamification elements, the study maps the development of the research field itself. It uses bibliometric indicators to identify whether corporate culture and holistic learning concepts occupy central, peripheral, or weakly connected positions within the literature. This approach provides a basis for distinguishing established research directions from underdeveloped conceptual areas and for identifying priorities for future investigation.

Accordingly, this study aims to: (1) examine annual publication trends and the development of corporate gamification research between 2018 and 2024; (2) identify the geographic and intellectual distribution of the field through publication and co-citation analyses; (3) determine influential journals, documents, and authors that constitute the intellectual structure of corporate gamification research; (4) map dominant thematic clusters and relationships using keyword co-occurrence analysis in VOSviewer; and (5) identify research gaps associated with the Corporate Culture Gap and Holistic Model Deficit based on the frequency, centrality, co-occurrence, and thematic positioning of relevant concepts.

The study contributes theoretically by providing a structured representation of the intellectual and conceptual development of corporate gamification and by identifying areas where organizational culture and integrated learning perspectives remain weakly represented. Practically, the findings can assist learning and development practitioners, human resource professionals, and organizational decision-makers in understanding the dominant directions of corporate gamification research and in considering broader learning objectives beyond short-term engagement. The resulting research map can also provide a foundation for future studies seeking to develop culturally responsive, theoretically integrated, and organizationally relevant gamification models.

2. METHOD

2.1. Research Design

This study employed a quantitative bibliometric research design to systematically examine the intellectual and conceptual structure of research on gamification in corporate learning. Bibliometric analysis was selected because it enables the systematic examination of publication patterns, citation relationships, and thematic structures within a defined body of scientific literature. Rather than assuming complete objectivity, the study applied a

transparent and reproducible analytical procedure while acknowledging that database selection, search strategies, inclusion criteria, data cleaning, analytical thresholds, and interpretation involve methodological decisions [21], [22], [25].

The bibliometric analysis was designed to address three complementary dimensions: research productivity and performance, the intellectual structure of the field, and its conceptual structure. Research productivity was examined through publication trends and geographical distribution; the intellectual structure was examined through citation and co-citation relationships; and the conceptual structure was examined through keyword co-occurrence and thematic mapping. The analytical framework was therefore aligned with the study objectives of identifying established research directions and examining the extent to which corporate culture and integrated learning perspectives are represented in the literature.

2.2. Data Sources and Search Strategy

The research corpus was constructed from two scientific databases, Scopus and ScienceDirect, covering publications from 2018 to 2024. Scopus was selected because of its broad multidisciplinary coverage and structured bibliographic metadata, whereas ScienceDirect was included to capture relevant peer-reviewed publications available through Elsevier's scientific journal platform. Using both databases was intended to broaden the coverage of the literature and reduce dependence on a single database. Because the two databases differ in coverage, indexing practices, and metadata structures, records retrieved from both sources were subsequently merged, screened, and standardized before bibliometric analysis.

The search strategy used Boolean combinations of the principal concepts of the study. The search expression combined terms related to gamification and organizational learning, represented by "gamification" AND ("corporate training" OR "workplace learning"). The search was restricted to publications dated from 2018 through 2024. The initial search produced 120 records, consisting of 87 records from ScienceDirect and 33 records from Scopus.

2.3. Eligibility Criteria

The eligibility criteria were established before the final bibliometric analysis. Records were included when they met all of the following criteria: (1) publication year between 2018 and 2024; (2) written in English; (3) published as an original peer-reviewed journal article; (4) directly related to gamification, corporate training, workplace learning, organizational learning, or closely related employee-learning contexts; and (5) contained sufficient bibliographic metadata for citation and keyword analysis.

Records were excluded when they were conference proceedings, book chapters, editorial materials, notes, non-English publications, duplicate records, or publications that did not substantively address gamification or learning in organizational/workplace contexts. This procedure was intended to ensure that the final corpus represented research relevant to the conceptual domain of corporate gamification rather than the broader field of digital learning in general.

2.4. Screening and Deduplication

The identification and screening procedure consisted of four sequential stages: identification, screening, eligibility assessment, and final inclusion. The reporting logic was aligned with the transparency principles emphasized in PRISMA 2020, although this study was designed as a bibliometric review rather than a conventional systematic review [23]. First, records were collected independently from Scopus and ScienceDirect. Second, the records were merged into a single working dataset and screened according to document type, publication language, publication period, and topical relevance. Third, duplicate records were identified using DOI matching and, when DOI information was unavailable or inconsistent, combinations of article title, author names, journal information, and publication year were compared.

The initial dataset contained 120 records. Ten duplicate records were identified and removed, resulting in a final corpus of 110 distinct journal articles (N = 110). The annual publication counts in Table 1 sum to 120 because they represent the publication distribution of the records retrieved during the initial identification stage, before duplicate removal. The subsequent citation, co-citation, and keyword analyses were conducted on the final deduplicated corpus of 110 articles. This distinction was maintained to prevent the initial retrieval count from being interpreted as the final analytical sample.

2.5. Data Cleaning and Standardization

Following deduplication, bibliographic metadata were standardized before analysis. Author names were checked for variations in initials, surname order, and alternative name forms, and equivalent author records were consolidated where the identity could be established from the available metadata. Institutional names were similarly standardized by consolidating spelling, abbreviation, and naming variants referring to the same institution.

Keyword data were cleaned to reduce artificial fragmentation in the conceptual network. Singular and plural forms were consolidated when they represented the same concept, synonymous terms were merged when their meanings were equivalent within the research context, spelling variants were standardized, and commonly used abbreviations were reconciled with their full forms. Particular attention was given to the abbreviation "PBL," which can refer to *Problem-Based Learning*, whereas the expression "Points, Badges, and Leaderboards" represents a different gamification construct. These two concepts were therefore treated as distinct terms during keyword cleaning and interpretation to avoid conceptual contamination of the co-occurrence analysis.

A thesaurus-based standardization procedure was applied before VOSviewer analysis to document keyword substitutions and prevent equivalent terms from being counted as separate concepts. The cleaned dataset was then exported for bibliometric analysis using Biblioshiny and VOSviewer.

2.6. Research Instruments and Software

Bibliometric software constituted the principal analytical instruments in this study. Biblioshiny, accessed through the Bibliometrix package in RStudio, was used to examine descriptive bibliometric indicators, including annual scientific production, country-level

contributions, citation performance, and thematic development [25]. VOSviewer was used primarily for network visualization and analysis of keyword co-occurrence, co-authorship, and co-citation relationships [24].

The use of these two software environments was complementary rather than interchangeable. Biblioshiny was used to generate descriptive indicators and thematic-map analyses, whereas VOSviewer was used to construct and visualize bibliometric networks. The thematic-map quadrants generated through Biblioshiny were therefore not treated as equivalent to the network clusters generated by VOSviewer.

2.7. Data Analysis

The bibliometric analysis was conducted in three analytical stages. The first stage examined research productivity and performance. The second stage examined the intellectual structure of the field through citation and co-citation analysis. The third stage examined the conceptual structure through keyword co-occurrence and thematic mapping. The analytical procedures were selected to correspond with the research objectives and to provide complementary evidence rather than relying on a single bibliometric indicator.

2.7.1. Research Productivity and Performance

Biblioshiny was used to analyze annual scientific production, country-level contributions, and citation performance. Annual publication counts were used to describe changes in research productivity during 2018–2024. Country-level publication output and total citations were used to identify geographical concentrations of research activity. Because the initial retrieval dataset contained 120 records while the deduplicated analytical corpus contained 110 articles, Table 1 explicitly reports the initial annual distribution and distinguishes it from the final corpus used for network analyses.

Table 1. Annual Document Production of the Initial Retrieved Dataset

Year	Number of Documents (ND)
2018	9
2019	11
2020	16
2021	19
2022	23
2023	29
2024	13
TOTAL INITIAL RECORDS	120
Duplicate Records Removed	10
FINAL DISTINCT ARTICLES	110

The annual distribution indicates an overall expansion of retrieved publications during most of the study period, with the highest initial number of records occurring in 2023. The 2024 decrease was interpreted cautiously because publication indexing and database coverage may differ across publication years. The annual publication distribution was used descriptively and was not interpreted as evidence of causal changes in research activity.

2.7.2. Intellectual Structure and Co-citation Analysis

The second analytical stage examined the intellectual structure of corporate gamification research through citation and co-citation analysis. Co-citation analysis was used to identify publications, authors, and sources that were frequently cited together and therefore represented influential intellectual connections within the research domain. Citation relationships were examined using the deduplicated corpus of 110 articles.

The analysis also considered the theoretical foundations represented in the literature. For example, Self-Determination Theory has been influential in research concerning motivation and gamification, particularly through its emphasis on psychological needs and motivation [26], [27]. The presence and position of theoretically relevant publications were examined through citation and network structures rather than being assumed to represent the dominant theoretical framework of the entire field.

For co-authorship and co-citation networks, thresholds were determined based on the number of available records and the need to retain sufficiently connected items for meaningful visualization. The selected threshold values and the resulting number of items included in each network were recorded and reported with the corresponding VOSviewer analysis to improve reproducibility.

2.7.3. Keyword Co-occurrence and Conceptual Structure

The third analytical stage examined the conceptual structure of the field using keyword co-occurrence analysis in VOSviewer. The unit of analysis was author keywords. Keyword co-occurrence was used to identify concepts that frequently appeared together and to visualize relationships among dominant research topics. The analysis used the cleaned and standardized keyword dataset to minimize fragmentation caused by spelling differences, abbreviations, singular/plural forms, and synonymous expressions.

VOSviewer network clusters were interpreted as groups of terms with relatively strong co-occurrence relationships. These clusters were not equated with the thematic-map quadrants generated by Biblioshiny. The latter classify themes according to their relative centrality and density and distinguish four thematic categories: Motor Themes, Basic Themes, Emerging or Declining Themes, and Niche Themes. Thus, VOSviewer clusters describe network proximity among terms, whereas the Biblioshiny thematic map provides a strategic classification of themes.

The VOSviewer analysis used full counting to represent the occurrence of each keyword and association among keywords. Association strength was used as the normalization method for constructing the bibliometric network. The minimum keyword-occurrence threshold, minimum citation threshold, clustering resolution, minimum cluster size, and thesaurus-based keyword-merging procedure were specified for each corresponding analysis. These settings were applied consistently to the deduplicated corpus to facilitate reproducibility.

2.8. Identification of the Corporate Culture Gap and Holistic Model Deficit

The identification of the two research gaps proposed in this study was based on bibliometric evidence rather than conceptual assertion alone. The Corporate Culture Gap

was operationalized as the relatively weak representation or connectivity of concepts associated with organizational culture, corporate values, ethics, and culture reinforcement within the corporate gamification research network. Evidence for this gap was assessed through keyword frequency, co-occurrence strength, network centrality, cluster membership, and thematic positioning.

The Holistic Model Deficit was operationalized as the limited integration of diverse learning theories and learning-model concepts within the dominant gamification research structure, particularly where the literature is strongly concentrated on motivation or engagement. Its identification was based on the presence, frequency, co-occurrence relationships, cluster position, and thematic relevance of concepts representing broader learning perspectives. The two gaps were therefore interpreted only when supported by patterns observed in the bibliometric networks and thematic analyses.

2.9. Analytical Workflow

The complete analytical workflow consisted of database selection and searching, record identification, screening, deduplication, eligibility assessment, metadata cleaning, descriptive bibliometric analysis, citation and co-citation analysis, keyword co-occurrence analysis, thematic mapping, and interpretation of research gaps. Figure 1 presents the screening and data-processing workflow, while Figure 2 summarizes the relationship between the bibliometric analyses and the research objectives. The overall methodological logic follows established approaches to bibliometric research and systematic science mapping [21], [22], [23], [25].

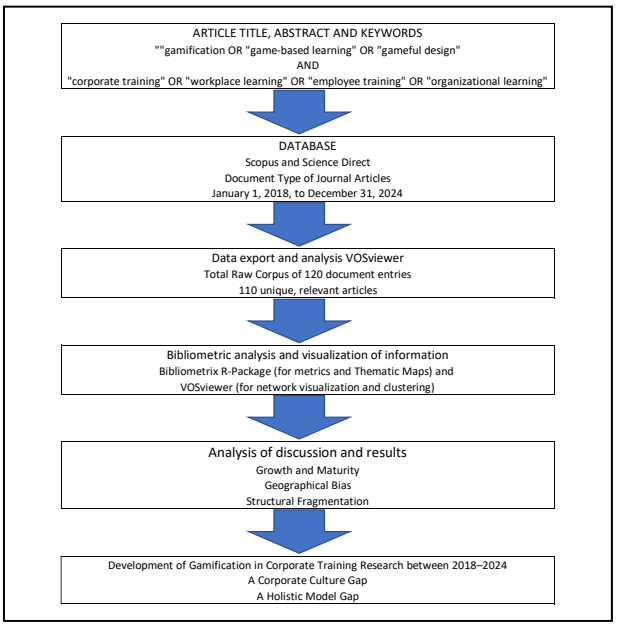

Figure 1. Bibliometric Screening, Deduplication, and Data-Processing Workflow

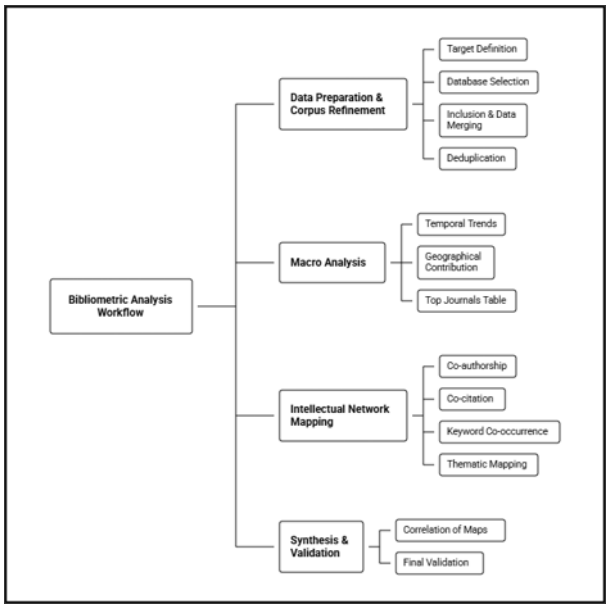

Figure 2. Bibliometric Analytical Framework and Research Workflow, adapted from established bibliometric methodological approaches [21], [22], [23], [25].

2.10. Geographical and Institutional Distribution

The geographical and institutional distribution of the final corpus was examined to identify concentrations of research activity. Table 2 presents the countries with the highest document output and their corresponding citation counts based on the bibliographic records analyzed. Institutional affiliations were standardized before aggregation to minimize differences caused by alternative institutional naming conventions.

Table 2. Geographical Contribution, Institutional Concentration, and Cultural Context

Country	Number of Documents	Total Citations	Leading Institution
USA	38	530	MIT Sloan School of Management
China	20	265	Tsinghua University
UK	15	215	University of Cambridge
Germany	10	125	RWTH Aachen University
Indonesia	5	63	Universitas Indonesia

The geographical distribution was interpreted as an indication of where research activity was concentrated rather than as evidence of national research superiority. Institutional affiliations were used descriptively to identify major contributors within the retrieved corpus.

2.11. Influential Publishing Channels

The distribution of publications across journals was also examined to identify the principal publication channels in the field. Table 3 reports the number of documents (ND), total citations (TC), and disciplinary orientation of selected journals represented in the corpus.

Table 3. Most Influential Publishing Channels

Journal Title	ND	TC	Discipline
Computers & Education	13	330	Educational Technology (Highly Cited)
Journal of Business Research	9	175	Management/Business
Entertainment Computing	8	140	Information Systems/Game Design
Electronic Commerce Research and Applications	7	100	IS/Business
Personnel Review	5	56	HRM/Organizational Behavior

The journal distribution was used to characterize the disciplinary positioning of corporate gamification research. The presence of journals from educational technology, business, information systems, and human resource management indicates the interdisciplinary nature of the field.

3. RESULTS

3.1. Publication Performance and Research Trajectory

The results indicate an expanding research interest in gamification within corporate learning between 2018 and 2024. The bibliometric analysis recorded an Average Annual Growth Rate (AAGR) of 22%, indicating an overall increase in research activity during the study period. As shown in Figure 3, publication output increased substantially during the early 2020s, coinciding with a period of accelerated digital transformation in learning and training practices. This trajectory is broadly consistent with recent reviews documenting the expansion of gamification research in employee training, professional development, and organizational learning [14], [15], [3]. The retrieved literature includes digitally mediated learning approaches such as Canva-based electronic modules [9] and web-based cognitive instruments such as Kahoot! [8], illustrating the broader movement toward technology-supported learning environments.

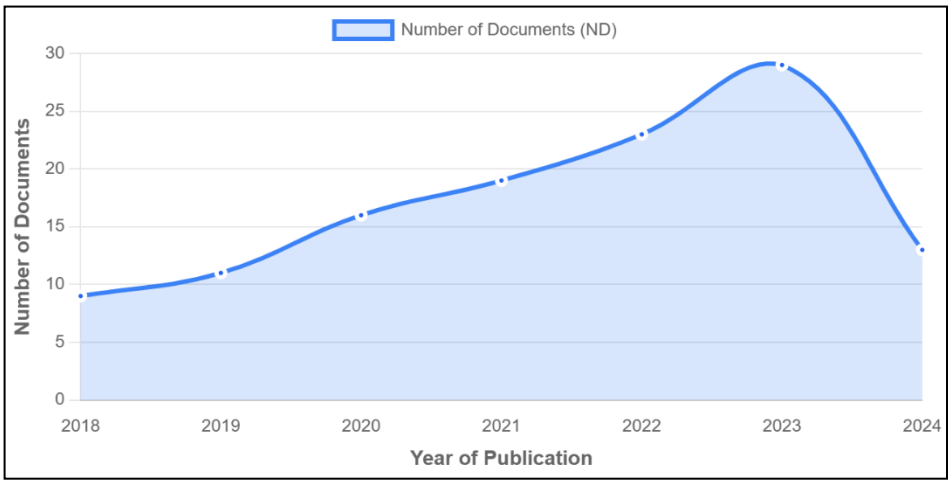

Figure 3. Annual Scientific Production

3.2. Geographical and Institutional Distribution

The geographical distribution presented in Table 2 shows that the United States recorded the highest number of documents (38) and total citations (530), followed by China

with 20 documents and 265 citations. Together, these two countries account for 58 of the 110 documents in the final corpus, indicating a substantial concentration of research output in these two countries. The findings suggest that corporate gamification research has developed particularly strongly within major research and technology-oriented economies.

Indonesia contributed five documents with 63 total citations, indicating a smaller but identifiable contribution to the field. The geographical distribution therefore demonstrates an uneven research landscape, with substantial differences in publication output and citation accumulation across countries. These descriptive patterns provide an empirical basis for examining whether concepts associated with cultural context and organizational alignment are adequately represented within the dominant research structure.

3.3. Social Structure: Author Collaboration Patterns

The author co-authorship analysis was used to examine the social structure and collaborative relationships within corporate gamification research. Figure 4 shows a fragmented collaboration network consisting of 57 identified authors distributed across multiple collaborative groups. The network includes 13 research components that are not connected to other components and 22 two-author collaborative relationships, indicating that collaboration is concentrated within relatively small research groups rather than being organized around a single highly integrated research community.

Table 4. Top Five Most Collaborative Authors

Author	Number of Documents (ND)	Number of Collaborators	Total Link Strength (TLS)
Hamari, J.	5	12	15
Wang, Y. F.	3	7	8
Hsu, Y. F.	3	7	8
Deterding, S.	2	4	5
Kriglstein, S.	2	5	6

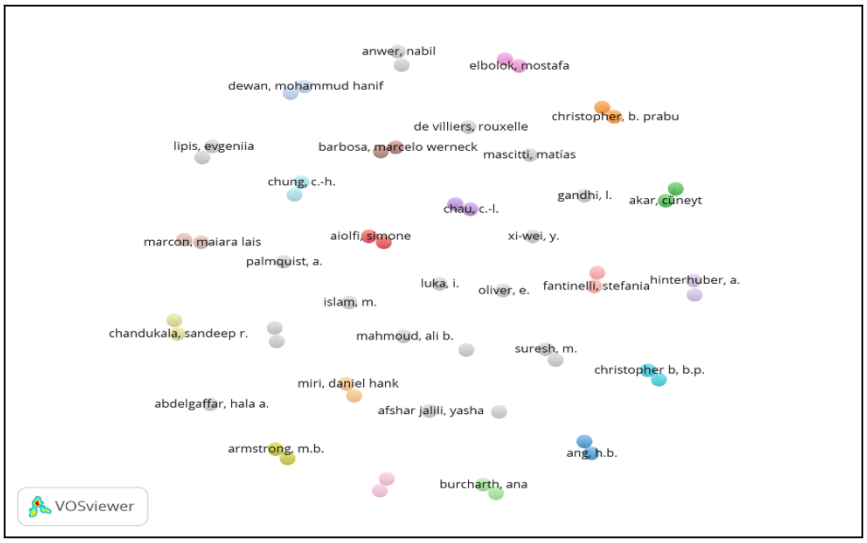

Figure 4. Author Collaboration Network Map

As presented in Table 4, Hamari, J. has the highest number of documents, collaborators, and total link strength among the identified authors. Wang, Y. F. and Hsu, Y. F. form the next most prominent collaborative positions based on the reported network indicators. These results indicate the presence of influential collaborative nodes but also show that the broader author network remains relatively fragmented.

3.4. Intellectual Structure and Theoretical Orientation

The co-citation analysis indicates that Self-Determination Theory (SDT) represents an important theoretical foundation within the analyzed literature. SDT emphasizes autonomy, competence, and relatedness as basic psychological needs associated with human motivation [12]. The prominence of SDT in the intellectual structure suggests that motivation and engagement constitute important theoretical lenses through which gamification has been examined.

The intellectual structure also contains research associated with interactive multimedia [6] and Problem-Based Learning (PBL) [12], indicating that gamification research intersects with broader instructional and learning approaches. This observation is compatible with broader reviews showing that gamification research often combines motivational explanations with instructional design considerations, although theoretical integration is not always explicit [15], [30], [31]. These relationships suggest that the field is not exclusively concerned with game mechanics but also incorporates theories and approaches related to learning design and psychological processes. Nevertheless, the observed prominence of motivational concepts provides an important basis for examining whether broader organizational and learning perspectives are sufficiently integrated.

4. DISCUSSION

4.1. Engagement-Centric Research and the Conceptual Structure of Gamification

The keyword co-occurrence analysis provides further evidence that corporate gamification research is strongly associated with design mechanics and motivational outcomes. As shown in Figure 5, the keyword network contains clusters related to gamification design, motivation and psychological processes, and employee-related outcomes. The prominence of terms such as “gamification,” “motivation,” “game mechanics,” “Self-Determination Theory,” “employee performance,” and “engagement” indicates that the field has concentrated substantially on the relationship between gamification mechanisms, psychological responses, and performance-related outcomes. This pattern is consistent with prior reviews showing that engagement, motivation, achievement-oriented game elements, and learning outcomes are recurring dimensions in the gamification literature [30], [31], [32].

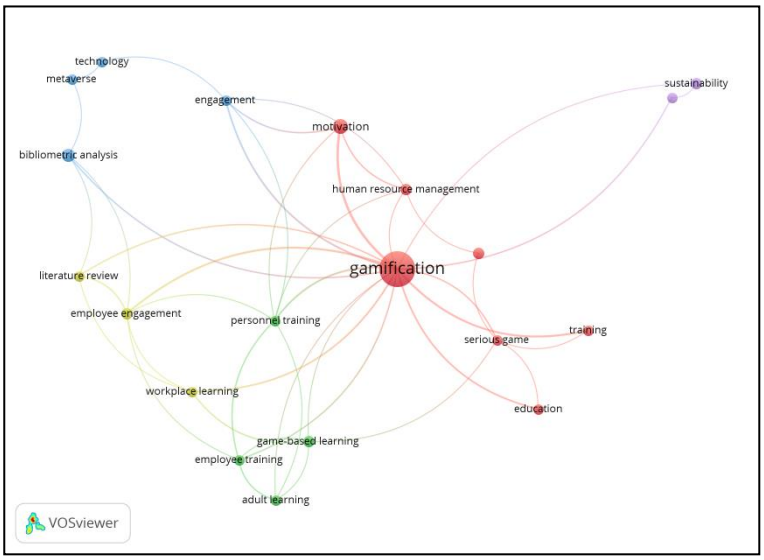

Figure 5. Keyword Co-occurrence Network Map

Table 5 summarizes the ten most frequently occurring keywords in the analyzed corpus. “Gamification” is the most frequent keyword with 110 occurrences, followed by “motivation” with 44 occurrences and “game mechanics” with 32 occurrences. “Self-Determination Theory” appears 25 times, while “PBLs (Points, Badges, Leaderboards)” appears 23 times. These frequencies demonstrate the strong representation of gamification mechanics and motivational constructs within the conceptual structure of the field.\

Table 5. Top 10 Core Keywords and Cluster Affiliation

Keyword	Frequency	Cluster	Focus Area
Gamification	110	Cluster 1	Design
Motivation	44	Cluster 2	Theory
Game Mechanics	32	Cluster 1	Design
Self-Determination Theory (SDT)	25	Cluster 2	Theory
PBLs (Points, Badges, Leaderboards)	23	Cluster 1	Design
Employee Performance	21	Cluster 3	Outcome
Design	19	Cluster 1	Design
Intrinsic Motivation	15	Cluster 2	Theory
Productivity	13	Cluster 3	Outcome
Work Gamification	9	Cluster 3	Outcome

The prominence of design-related keywords is consistent with the established gamification literature, in which points, badges, and leaderboards have been widely discussed as mechanisms for structuring user interaction and feedback [28]. At the same time, gamification scholarship has emphasized that effective instructional gamification should extend beyond the simple addition of reward mechanisms and should incorporate meaningful content, learning processes, and opportunities for interaction and failure [29]. Meta-analytic and systematic-review evidence similarly suggests that gamification can influence cognitive, motivational, and behavioral outcomes, but that the magnitude and

direction of these outcomes depend on implementation and contextual conditions [30], [31], [32]. The present bibliometric findings therefore suggest that structural gamification remains an important component of the research field, while broader learning integration represents an area requiring further examination.

4.2. Motivational-Theory Dominance and the Holistic Model Deficit

The co-citation and keyword analyses jointly indicate that motivation occupies a central position in the intellectual and conceptual structure of corporate gamification research. The recurring association among "motivation," "intrinsic motivation," and SDT suggests that psychological mechanisms have received considerable scholarly attention. This finding is consistent with the role of SDT in explaining how gamification may support motivational processes through autonomy, competence, and relatedness [26], [27].

However, the findings should not be interpreted as demonstrating that motivational theory is the only theoretical perspective used in corporate gamification. Rather, the bibliometric pattern suggests that motivational constructs occupy a relatively prominent position compared with broader organizational-learning constructs. In this study, the term Holistic Model Deficit therefore refers to the comparatively limited conceptual integration of motivational, learning, instructional, and organizational perspectives within a single corporate gamification framework. This is a conceptual interpretation of the observed bibliometric structure rather than a directly validated organizational condition. The interpretation is also consistent with systematic reviews reporting that gamified professional training has often been discussed without an explicit theoretical foundation, suggesting a need for stronger theoretical integration in future studies [14], [15].

This interpretation also suggests that SDT and Andragogy could serve complementary rather than competing perspectives in future corporate-learning models. SDT primarily explains motivational processes, whereas Andragogy emphasizes adult learners' responsibility, prior experience, relevance, and application of learning to practical contexts. Integrating these perspectives could therefore connect the question of why employees engage with gamified learning with the question of how adult employees construct and apply knowledge in their work contexts.

4.3. Corporate Culture Gap: From Micro-Level Engagement to Macro-Level Alignment

A central finding of the conceptual analysis is the comparatively peripheral positioning of "Corporate Culture" and "Strategic Alignment" within the thematic structure. This pattern provides bibliometric evidence of underrepresentation or weak conceptual integration, but it should not be interpreted as definitive proof that corporate gamification research neglects organizational culture. Instead, the relatively low occurrence, weaker network connections, or peripheral thematic positioning of culture-related concepts can be interpreted as indicators that these concepts occupy a less central position than engagement, motivation, and gamification mechanics. This interpretation is particularly relevant because empirical research has begun to connect gamification with perceived innovation culture [18],

while other recent work explicitly addresses culturally sensitive corporate gamification [19] and the institutionalization of organizational values through gamified learning [20].

This pattern forms the empirical basis for the *Corporate Culture Gap* proposed in this study. The gap refers specifically to the limited connection between gamification and organizational-level objectives such as corporate values, ethical principles, cultural reinforcement, and strategic alignment. The distinction is important because micro-level engagement concerns employees' immediate interaction with gamified activities, whereas macro-level organizational learning concerns how learning contributes to shared values, competencies, and organizational objectives. The emergence of culture-oriented studies suggests that this connection is developing, but its relatively recent appearance also supports treating organizational culture as an emerging research direction rather than an established core theme [18], [19], [20].

The findings also suggest that emerging digital learning approaches, including Virtual Field Trips [10] and Mobile Learning through Ethno-Edu Games [13], demonstrate the potential for contextualized and immersive learning but do not necessarily establish a direct connection with corporate culture. Therefore, the presence of innovative learning technologies should not automatically be interpreted as evidence of organizational-cultural integration. The bibliometric evidence instead points to an opportunity for future research to connect technological innovation with organizational meaning and cultural alignment.

4.4. Thematic Maturity and the Direction of Future Research

The thematic map in Figure 6 provides a complementary perspective on the maturity and strategic positioning of research themes. Unlike the VOSviewer keyword network, which represents relationships among co-occurring keywords, the thematic map classifies themes according to their relative development and centrality. Accordingly, a theme should be described as a Motor Theme only when its thematic-map position demonstrates both high centrality and high density. The classification is therefore interpreted from the thematic-map output rather than inferred solely from the VOSviewer network.

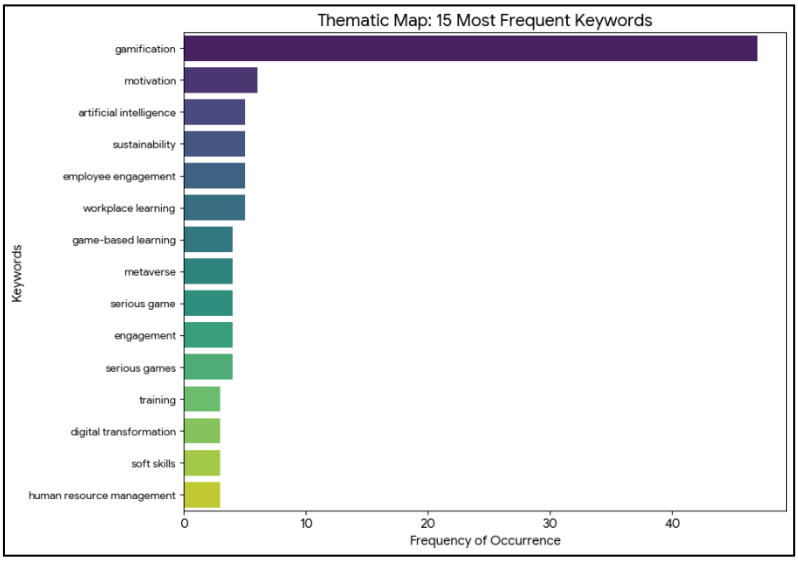

Figure 6. Thematic Map of Gamification

The positioning of design-related themes as comparatively developed areas, together with the peripheral positioning of corporate-culture-related concepts, suggests an imbalance between established gamification mechanics and broader organizational applications. This pattern supports the interpretation that the field has achieved considerable conceptual development around engagement and design but has comparatively less integration of organizational culture and strategic learning objectives. The pattern is also compatible with systematic reviews showing that workplace gamification has developed around recurring mechanics and engagement-oriented outcomes, while broader theoretical and organizational integration remains comparatively less developed [14], [15].

4.5. From Digital Innovation to an Integrated Corporate Learning Framework

The development of gamification research also reflects a broader transition from relatively simple digital learning media toward increasingly interactive and technology-mediated environments. Earlier work involving animated learning media [7] represents one stage of this development, while later research has explored more sophisticated digital and mobile learning approaches [10], [13]. The present findings suggest, however, that technological sophistication alone does not resolve the conceptual challenge of integrating gamification with organizational learning and cultural objectives.

A more comprehensive direction for future research is therefore to conceptualize corporate gamification as a learning system rather than merely a collection of game mechanics. Such a framework could connect gamification mechanics with motivational processes, learning processes, competency development, and ultimately organizational and cultural outcomes. This direction is consistent with the broader principle that training and development should be aligned with organizational objectives [2]. It also corresponds with the importance of adult-learning principles in organizational learning, particularly the relevance, autonomy, experience, and work application emphasized in Andragogy [33]. Recent empirical evidence from corporate and banking contexts further indicates that gamification can be connected to employee training, work engagement, job satisfaction, knowledge retention, knowledge sharing, and job performance [16], [17].

Within this proposed direction, SDT can explain motivational mechanisms, Andragogy can address the characteristics and needs of adult learners, and Cognitive Load Theory can provide a basis for managing the amount and organization of information presented through gamified learning environments [34]. These perspectives could complement one another by addressing different stages of the learning process rather than assuming that one theory can explain the entire mechanism of corporate gamification. The resulting framework could move the field from short-term engagement toward competency mastery and organizational learning.

4.6. Theoretical and Practical Implications

Theoretically, this study contributes a bibliometric interpretation of corporate gamification that distinguishes between engagement-centric research and broader organizational-learning objectives. The findings suggest that the field has developed a relatively strong intellectual foundation around motivation and gamification mechanics,

while organizational culture and integrated learning perspectives appear less central in the observed conceptual structure. The proposed *Corporate Culture Gap* and *Holistic Model Deficit* consequently provide conceptual directions for future empirical research rather than claims of conclusively established gaps.

Practically, the findings suggest that corporate learning and development practitioners should avoid evaluating gamification solely through immediate indicators such as participation, motivation, or engagement. Gamified training may have greater strategic relevance when its mechanics are connected to learning objectives, competency development, workplace application, organizational values, and long-term cultural alignment. Such an approach is consistent with the view that training and development should support broader organizational objectives [2]. Evidence from workplace applications also suggests that organizational context, employee experience, and the design of gamified systems should be considered when evaluating outcomes [16], [17], [18].

Future research should empirically test whether integrating motivational, adult-learning, cognitive, and organizational perspectives produces more sustainable learning outcomes than engagement-focused gamification alone. In particular, future studies could examine how gamification mechanics → motivational processes → learning processes → competency mastery → organizational and cultural outcomes are connected in workplace settings. This direction would provide an empirical basis for evaluating whether the conceptual gaps identified through bibliometric analysis correspond to meaningful differences in corporate learning practice and outcomes.

5. CONCLUSION

This study mapped the development and conceptual structure of corporate gamification research from 2018 to 2024 using bibliometric analysis of 110 journal articles. The findings show growing attention to gamification, motivation, game mechanics, and employee outcomes, with Self-Determination Theory as a prominent theoretical perspective, while organizational culture and integration across learning perspectives remain comparatively less central. These patterns inform the Corporate Culture Gap and Holistic Model Deficit as bibliometrically grounded conceptual observations, rather than empirically validated gaps. The study contributes by highlighting the potential value of integrating motivational, adult-learning, cognitive, and organizational perspectives, while suggesting that practitioners align gamification with learning objectives, competency development, organizational values, and cultural context. Interpretation is limited by database coverage, English-language restriction, search-string sensitivity, exclusion of other databases, metadata and keyword-cleaning decisions, citation-window effects, and analytical threshold selection. Future research should broaden databases and languages and empirically test integrated, culturally sensitive gamification models across organizational contexts, including Indonesia.

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