

Bibliometric Analysis of Digital Loyalty Programs

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Article Info	ABSTRACT
Article history: Received Aug, 2026 Revised Aug, 2026 Accepted Aug, 2026 Keywords: Artificial Intelligence Digital Loyalty Programs Bibliometric Analysis Blockchain VOSviewer	Digital loyalty programs have emerged as an essential aspect of customer relationship management that helps firms build retention capabilities and sustain competitive advantage in volatile digital markets. In this study, an attempt is made to conduct a bibliometric analysis to investigate the intellectual structure, research trends, key contributors, and emerging themes in digital loyalty program scholarship. The data were collected from the Scopus database using keywords "digital loyalty program" and "customer loyalty" and analyzed using VOSviewer to conduct co-occurrence analysis, citation analysis, co-authorship analysis, institutional collaboration analysis, and country collaboration mapping. The results show that customer loyalty, customer satisfaction, and loyalty program are core themes linked with digital marketing, electronic commerce, artificial intelligence, blockchain technology, and gamification. Based on citation analysis, key theories such as blockchain-enabled trust mechanisms, AI-powered personalization, and customer experience management significantly influence the field. The collaboration analysis demonstrates that the United States, India, Indonesia, and the United Kingdom serve as major contributors to the global research network supported by influential scholars and academic institutions. Furthermore, thematic evolution indicates a transition from traditional customer relationship management perspectives toward contemporary approaches emphasizing blockchain, artificial intelligence, and gamification-based ecosystems. This study contributes by providing comprehensive mapping of digital loyalty research development and identifying critical research gaps for future scholarship, particularly in integrating emerging technologies with customer value creation. <i>This is an open access article under the CC BY-SA license.</i> 

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1. INTRODUCTION In the era of digital business transformation, loyalty programs have fundamentally shifted from simple transactional mechanisms toward sophisticated customer engagement	ecosystems. Organizations today face unprecedented pressure to maintain customer relationships amid growing alternatives and increasingly sophisticated customer expectations. Digital loyalty programs have emerged as critical strategic instruments
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enabling firms to differentiate themselves, enhance retention, and build sustainable competitive advantages in volatile market conditions.

Digital loyalty programs have become an important research area within customer relationship management, particularly in understanding customer preferences, segmentation, and digital engagement mechanisms [1]. Historically, loyalty programs functioned as points-based reward systems; however, digital transformation has fundamentally reshaped their architecture [2]. Contemporary programs now integrate artificial intelligence, blockchain technology, and gamification to create comprehensive ecosystems that enable personalization at scale, transparent reward management, and enhanced psychological engagement.

Bibliometric studies have increasingly become a useful approach to knowledge discovery in marketing and business research [3]. They provide systematic methodology for examining publication patterns, citation networks, and collaboration structures to understand how knowledge develops within research domains. However, despite the strategic importance of digital loyalty programs and substantial volume of academic research, no comprehensive bibliometric analysis of this research landscape currently exists.

Although many studies have been carried out investigating various aspects of digital loyalty programs including customer behavior [4], technology implementation [5]-[6] and organizational strategy, there is still no systematic bibliometric analysis of the complete research landscape. This fragmentation creates significant knowledge gaps regarding the intellectual structure of digital loyalty research, interconnections between research themes, and scholarly attention patterns across different technological and conceptual dimensions. The multidisciplinary nature of digital loyalty research creates additional complexity. Contributors span business schools, information technology departments, and specialized research centers publishing across

diverse venues. The rapid pace of technological change has accelerated evolution of research agendas as blockchain [5], [7] artificial intelligence, and emerging platforms mature and become practically viable for organizational implementation.

To address these research gaps, this study conducts comprehensive bibliometric analysis of digital loyalty program literature through systematic examination of peer-reviewed publications indexed in Scopus. Advanced visualization techniques reveal intellectual structures, identify influential publications and authors, visualize collaboration patterns, demonstrate geographic research distribution, and illustrate temporal evolution of research themes. These findings provide structured mapping of the research landscape that enables future researchers to understand the field's development and identify promising avenues for scholarly contribution.

2. METHODS

In this research, the design of bibliometric study is used to analyze the scientific literature on digital loyalty programs. Bibliometric methodology provides systematic, quantitative approach for examining knowledge structure and research evolution through analysis of publication patterns, citation networks, and collaboration structures within specific research domains [3]. Bibliometric analysis enables researchers to quantify research productivity, track intellectual evolution, identify emerging research frontiers, and map knowledge structures without relying on subjective interpretation of individual studies.

The bibliometric approach was selected for this study because it offers several distinct advantages over traditional literature review methods. First, bibliometric analysis is objective and quantifiable, providing numerical evidence of research trends and patterns. Second, it enables large-scale analysis of thousands of publications simultaneously, providing comprehensive landscape overview impossible through

manual review. Third, network visualization through bibliometric tools reveals intellectual connections and knowledge structures that are not apparent through conventional methods. Finally, bibliometric findings complement traditional literature review approaches and provide systematic foundation for identifying research gaps and future directions.

The main source of the data for this research is the Scopus database, which has been selected for its comprehensive coverage of peer-reviewed journals, conference proceedings, and book chapters across business, marketing, information technology, and related disciplines. Scopus database contains over 23,000 journals and provides one of the most comprehensive collections of peer-reviewed research globally. The search strategy utilized multiple keyword combinations including "digital loyalty program", "customer loyalty", "loyalty marketing", "customer retention", and "digital marketing" applied to titles, abstracts, and keywords. Boolean operators (AND, OR) were used to refine searches and ensure relevant document retrieval. Publications from 2000-2027 were included to capture research development trajectory and contemporary scholarship reflecting both foundational and emerging perspectives in the field.

Document selection followed specific inclusion and exclusion criteria to ensure research quality and relevance. Inclusion criteria encompassed: (1) peer-reviewed journal articles and conference proceedings, (2) publications explicitly addressing digital loyalty programs or customer loyalty in digital contexts, (3) publications in English language, and (4) publications addressing loyalty program design, implementation, effectiveness, or technological applications. Exclusion criteria eliminated: (1) non-peer-reviewed sources, (2) publications addressing

loyalty programs without explicit digital focus, (3) publications in non-English languages, and (4) editorials, commentaries, or opinion pieces without empirical content or theoretical framework.

Data analysis and visualization were performed using VOSviewer software (version 1.6.18), which is specifically designed for constructing and visualizing bibliometric networks [3]. VOSviewer is widely recognized as the leading software for creating publication-based and citation-based bibliometric networks and is extensively utilized in bibliometric research across multiple disciplines. The software enables network visualization where nodes represent research elements (keywords, authors, institutions, countries) and connections represent relationships (co-occurrence, co-authorship, citations) between elements.

This study employed five complementary bibliometric analyses, each providing unique insights into research landscape. Keyword co-occurrence analysis identified major research themes and conceptual relationships by measuring how frequently different keywords appear together in abstracts and titles, revealing which concepts scholars consider related or interconnected. Citation analysis recognized most influential publications by counting citation frequencies and tracing intellectual influences shaping the field. Co-authorship analysis visualized researcher collaboration patterns through networks showing which scholars collaborate frequently and which research communities exist within the broader field. Institutional affiliation mapping showed research organization connections and identified leading research universities and institutions. Geographic analysis examined country-level contributions and international collaboration patterns, revealing which nations contribute substantially to research development and how international collaboration has evolved.

3. RESULTS AND DISCUSSION

3.1 Keyword Co-Occurrence Network

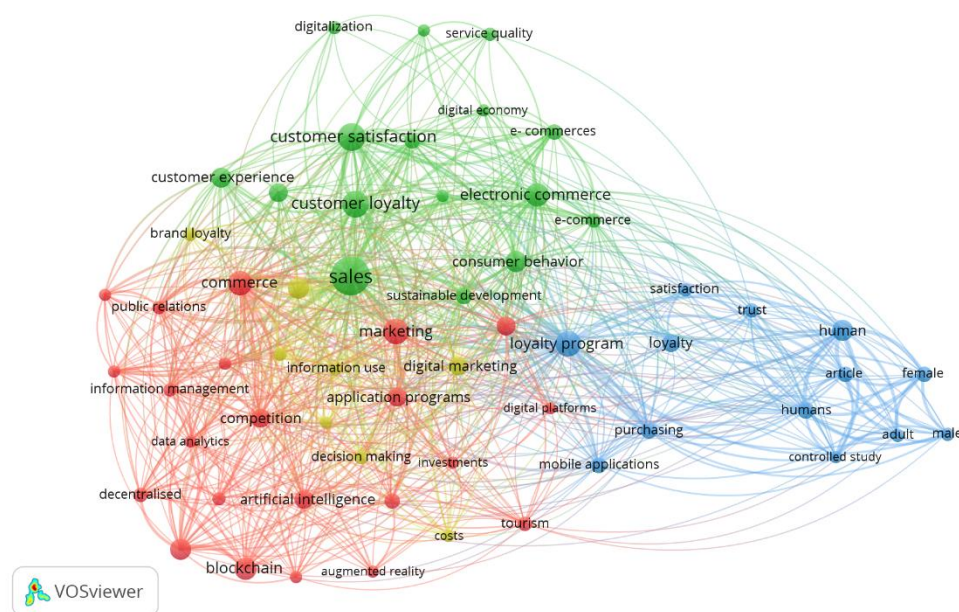


Figure 1. Network Visualization

Source: Data Analysis Result, 2026

The keyword co-occurrence network of digital loyalty program research is presented in Figure 1. This network visualization illustrates the relationships among major concepts and intellectual linkages that characterize the field. In VOSviewer network visualization, the size of each node (circle) reflects the frequency of keyword occurrence in the literature larger nodes indicate keywords appearing in more publications. The thickness of connecting lines represents the strength of co-occurrence relationships between concepts thicker lines indicate keywords that frequently appear together in abstracts and titles, suggesting conceptual relationships.

Analysis of the network reveals four distinct thematic clusters that represent different research perspectives on digital loyalty programs. The first cluster (customer-centric theme) emphasizes customer loyalty, customer satisfaction, customer experience, and brand loyalty reflecting research focused on customer behavioral outcomes and relationship quality. The second cluster (digital infrastructure theme) addresses digital transformation, service quality, digitalization, and information systems management representing research

examining technological platforms and digital infrastructure supporting loyalty programs. The third cluster (technology innovation theme) concentrates on emerging technologies such as blockchain, artificial intelligence, gamification, and machine learning representing research exploring how cutting-edge technologies reshape loyalty program capabilities. The fourth cluster (strategic performance theme) encompasses competitive advantage, business strategy, performance measurement, and organizational outcomes representing research examining loyalty programs as strategic business instruments.

This clustering pattern indicates that digital loyalty program research has become increasingly multidisciplinary and comprehensive. Rather than representing fragmentation, the multiple clusters reflect the genuine complexity of loyalty program challenges requiring integration of customer behavior understanding, technological capability, strategic business thinking, and operational implementation. The interconnections between clusters demonstrate that modern loyalty program research increasingly recognizes linkages

between customer psychology, technological innovation, and business strategy.

Recent additions to the indexed literature substantiate the specific content of these four thematic clusters. Within the technology innovation cluster, blockchain-based reward architectures have progressed from conceptual proposals toward applied system prototypes for secure, transparent reward ledgers [8], while acceptance of such systems is increasingly explained through cognitive-affective-normative frameworks [9]. Non-fungible tokens have also entered the loyalty vocabulary as a mechanism for reward ownership and pursuit motivation [10],

extending an idea first anticipated in earlier work on the transformation of loyalty points into virtual currencies [11]. Parallel developments bridging the customer-centric and technology innovation clusters appear in studies combining gamification with artificial intelligence to strengthen engagement in quick-commerce settings [12], and in reinforcement-learning approaches that dynamically allocate benefits according to customer context [13]. These recent contributions confirm that the four clusters identified through co-occurrence analysis represent active, expanding research fronts rather than static categories.

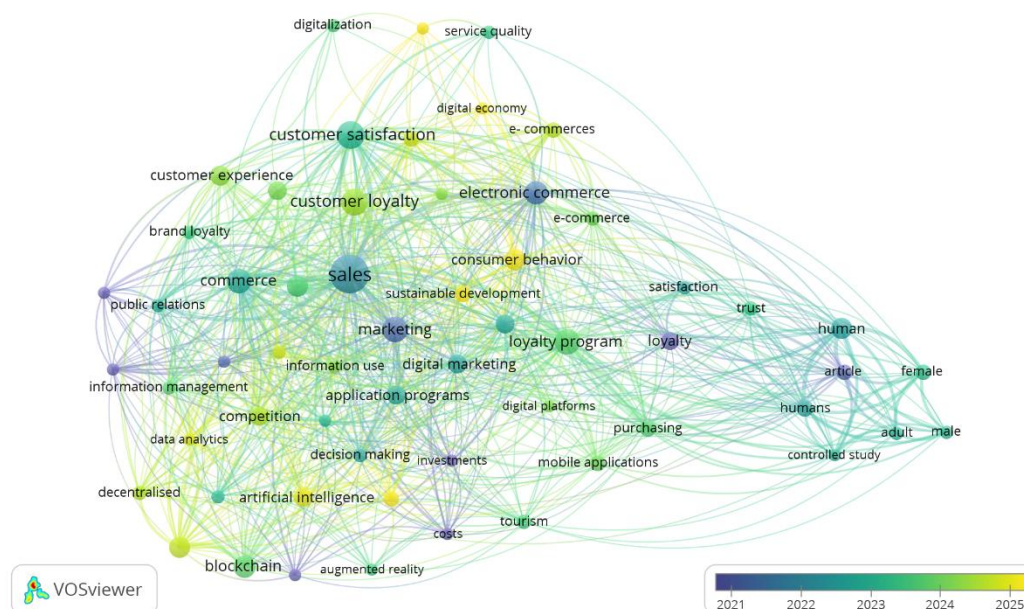


Figure 2. Overlay Visualization

Source: Data Analysis Result, 2026

Figure 2 depicts temporal evolution of keywords in digital loyalty program research through overlay visualization approach in VOSviewer. This visualization technique overlays a color gradient on network nodes where colors indicate the average publication year of each keyword. Blue and purple colors represent earlier research themes (2000-2015), green colors represent intermediate period themes (2015-2020), and yellow colors represent most recent research themes (2020-2027).

The themes from previous research, depicted in blue and purple colors, consist of foundational concepts in customer relationship management including customer loyalty, customer satisfaction, customer retention, and e-commerce integration. These established themes have received consistent scholarly attention throughout the study period, indicating their foundational importance to loyalty program research. The presence of these themes across all time periods demonstrates that core customer

management principles remain relevant despite significant technological advancement.

The emergence of contemporary topics in green and yellow shades reveals significant shifts in research focus over time. These newer themes include blockchain technology, artificial intelligence, gamification, metaverse applications, loyalty token systems, and cryptocurrency-based reward mechanisms. This temporal visualization demonstrates that digital loyalty research has progressively evolved from

traditional customer management perspectives toward technological innovation integration. The appearance of blockchain and AI themes specifically in recent years (yellow coloring) reflects industry adoption patterns where these technologies transitioned from theoretical possibility and pilot implementations to mainstream business applications. This progression suggests that research agendas respond relatively quickly to emerging technologies as they mature and demonstrate practical viability for organizational implementation.

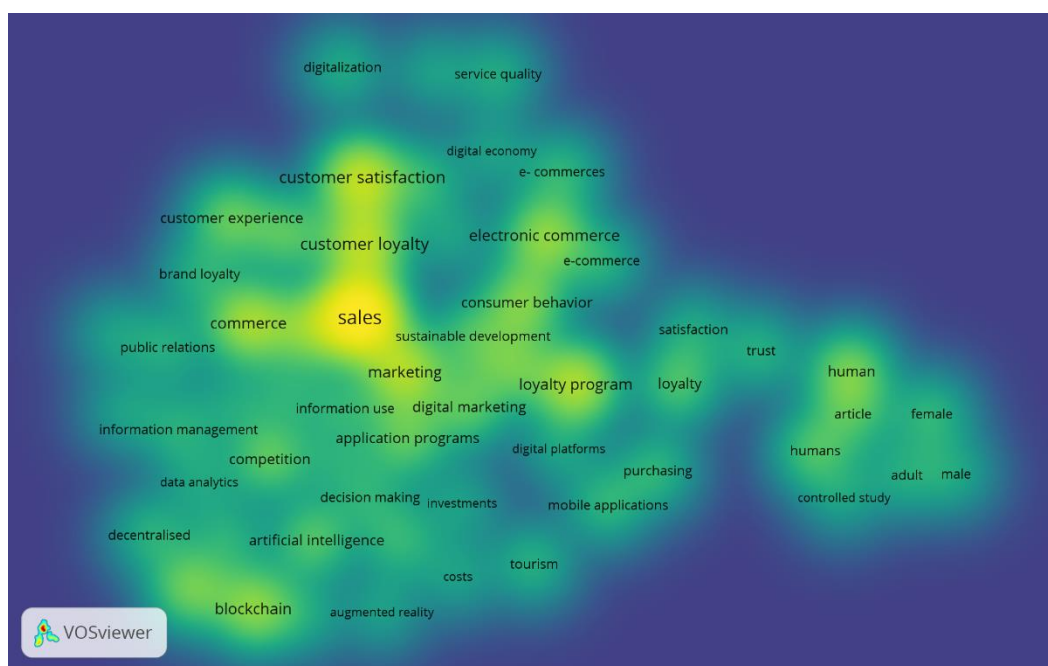


Figure 3. Density Visualization

Source: Data Analysis Result, 2026

Figure 3 presents the density visualization, which highlights the concentration and intensity of research themes in digital loyalty program scholarship. The VOSviewer density map visualization displays research concentration intensity with color gradient where brighter yellow regions indicate high research density and cooler blue/green colors indicate lower densities. Research density is calculated based on keyword occurrence frequency and co-occurrence patterns.

The brightest yellow areas cluster around core concepts including customer loyalty, customer satisfaction, customer

experience, customer retention, and digital marketing indicating these are the most extensively researched topics commanding substantial scholarly attention. These core concepts appear in the majority of publications and receive consistent research focus across different time periods and research communities. The density distribution reveals that foundational customer relationship concepts have received consistent and intensive research focus, with thousands of publications examining various aspects of customer loyalty in digital contexts.

Intermediate density regions show moderate research attention to related topics

including electronic commerce, online marketing, customer engagement, and service quality. These represent important but secondary research focuses that connect to core themes but receive somewhat less intensive examination. Lower density regions, depicted in green and blue, represent emerging or understudied areas including blockchain loyalty systems, metaverse-based

loyalty programs, cryptocurrency-based rewards, and advanced personalization algorithms. This density pattern identifies significant research opportunities in emerging technology applications where substantial scholarly attention has not yet accumulated, representing potential areas for novel research contributions and theoretical development.

3.2 Co-Authorship Analysis

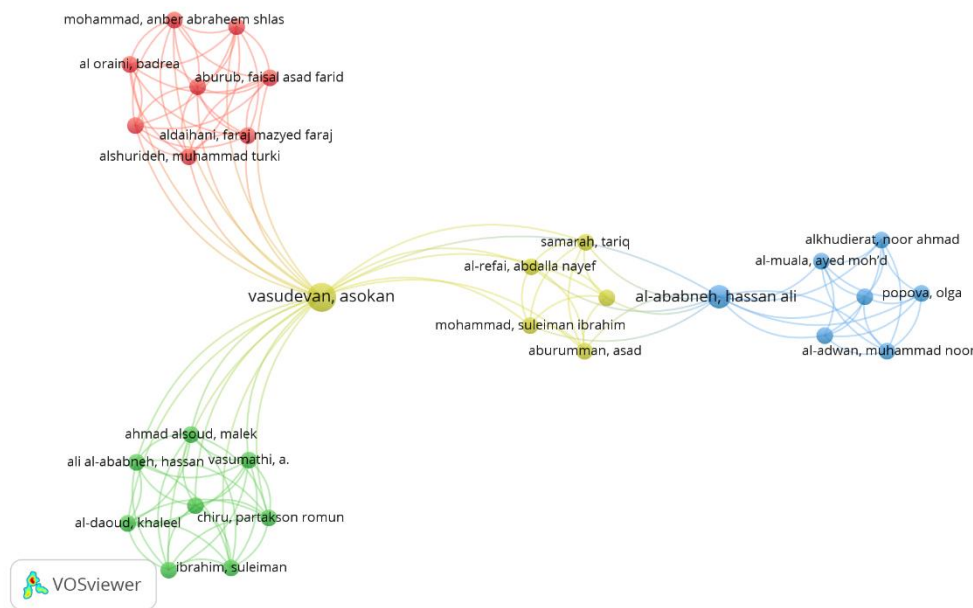


Figure 4. Author Visualization

Source: Data Analysis Result, 2026

Figure 4 illustrates the co-authorship network among researchers contributing to digital loyalty program scholarship. In this network visualization, node size represents publication volume with larger nodes indicating more prolific authors who have published more frequently on digital loyalty topics. Connection lines between nodes show co-authorship relationships, and line thickness represents collaboration frequency thicker lines indicate researchers who have co-authored multiple publications together.

The network demonstrates several important collaboration patterns in digital loyalty research. The presence of multiple disconnected clusters indicates that digital loyalty research comprises distinct research communities, often organized around

particular research interests, geographic regions, or institutional affiliations. Each cluster represents groups of researchers who frequently collaborate through co-authored publications within their specialized research domain. Large well-connected nodes within clusters identify influential authors who have published extensively and collaborated frequently with other researchers, serving as intellectual leaders within their research communities.

The presence of bridges between clusters individual researchers whose work spans multiple clusters demonstrates how intellectual communities are interconnected. These bridging researchers facilitate knowledge transfer across specialized research groups and help synthesize diverse

perspectives from different research traditions. Such bridging researchers often play important roles in developing integrative theoretical frameworks that combine insights from multiple research communities. The overall network structure indicates that

digital loyalty research has developed sufficient maturity to generate organized research communities with recognized intellectual leaders, yet maintains connections across communities preventing excessive fragmentation of knowledge.

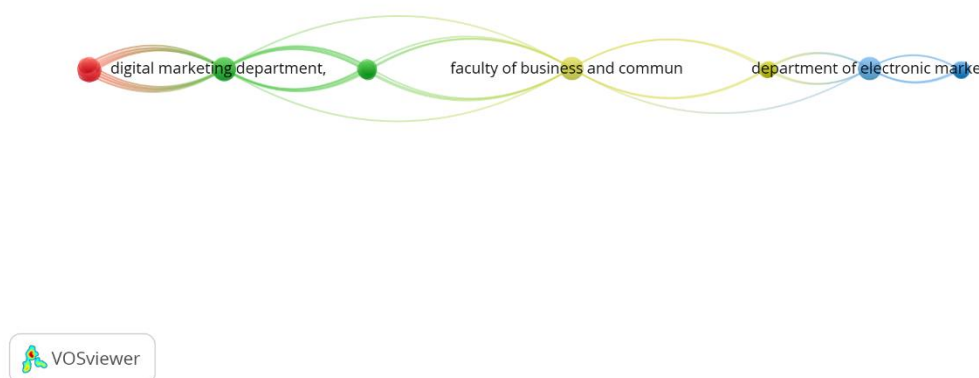


Figure 5. Institution Visualization

Source: Data Analysis Result, 2026

Figure 5 illustrates the institutional collaboration network among universities and research organizations contributing to digital loyalty program scholarship. Node size reflects institutional publication volume, indicating research contribution magnitude larger nodes represent universities and research organizations that have produced more publications on digital loyalty topics. Connection lines between institutions represent collaborative relationships evident through co-authored publications involving researchers from different institutions.

The institutional network reveals important patterns about how research is organized and coordinated across academic institutions. Major research universities, particularly business schools with strong marketing, information systems, and technology management programs, form prominent network nodes. The interconnections between institutions indicate

substantial collaborative research conducted through partnerships, joint projects, exchange programs, and shared research networks. International research universities dominate the network, suggesting that digital loyalty research concentrates in developed nations where both theoretical research traditions and practical business contexts supporting loyalty program implementations are well-established [2].

The presence of several Asian institutions, particularly from China and India, reflects the substantial digital commerce activities and e-commerce growth in these regions and emerging research capabilities. These institutions are increasingly publishing substantial volumes of research on digital loyalty programs, reflecting both academic interest and practical industry relevance in rapidly developing digital markets. The collaborative patterns indicate that leading research universities are

establishing partnerships across geographic regions to combine diverse expertise and perspectives.

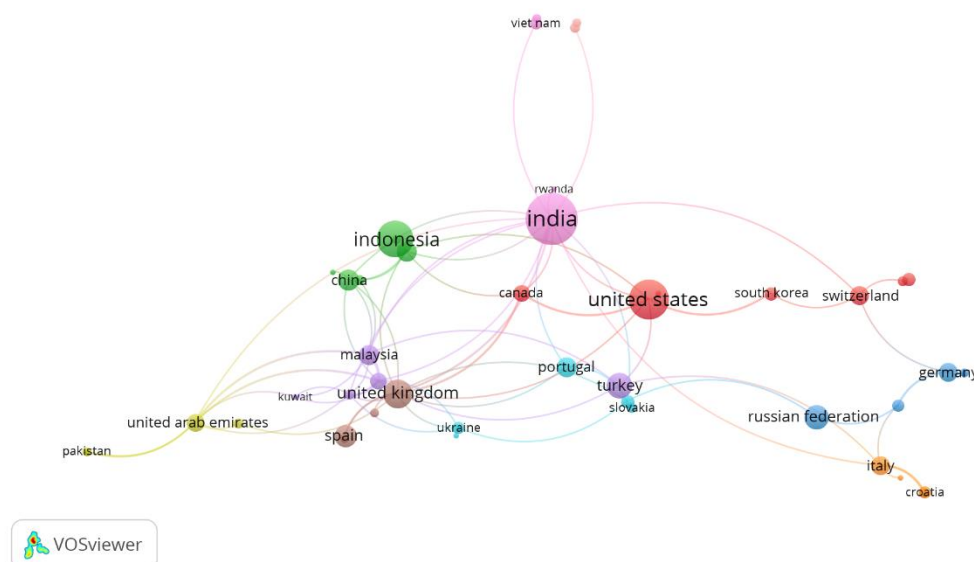


Figure 6. Country Visualization

Source: Data Analysis Result, 2026

Figure 6 presents the country collaboration network, mapping the global distribution and cooperation patterns in digital loyalty program research. Node size represents research contribution volume from each country, with larger nodes indicating greater publication output and research engagement on digital loyalty topics. Connecting lines represent international collaboration evident through co-authored publications involving researchers from different countries, with line thickness indicating collaboration frequency.

The geographic analysis reveals pronounced research concentration in developed nations, particularly the United States which represents the largest research contributor with the highest publication volume and most extensive international collaborations. This leadership position reflects the United States' historical dominance in business research, large ecosystem of leading universities with strong marketing and information systems programs, substantial e-commerce industry

driving practical innovation, and established research funding mechanisms supporting bibliometric and business research.

Other developed nations including the United Kingdom, Australia, Germany, and Nordic countries contribute substantially, reflecting strong business school research traditions and substantial digital commerce activities in these regions. Notably, India and Indonesia have emerged as significant contributors despite developing nation status, reflecting the importance of digital commerce and loyalty program implementations in high-growth markets where practical research opportunities abound. The network of international collaboration lines indicates increasingly multinational research with scholars from different countries co-authoring publications and sharing research findings, demonstrating globalization of academic research communities.

Notably underrepresented African and Latin American countries represent significant geographic gaps in current research, potentially indicating missed

opportunities for understanding loyalty program implementations in these regions and contributing unique market insights to global scholarship. These regions represent high-growth digital commerce markets where distinctive consumer behaviors, payment systems, and cultural contexts might produce different research findings than documented in developed markets.

Country-level evidence in the dataset corroborates this geographic pattern. Indian-affiliated scholarship includes loyalty-segment comparisons among Generation Z online shoppers [14], reflecting the rapid expansion of India's digital commerce landscape. Indonesian contributions

concentrate on applied, platform-specific loyalty contexts, including mobile loyalty adoption studies that combine gamification with the Technology Acceptance Model [15].

Chinese-affiliated scholarship, by contrast, tends toward cross-cultural consumer identity and digital culture questions, examining how global brands construct meaning among Generation Z consumers in digital environments [16]. This pattern suggests that emerging-market contributions are adapting global loyalty frameworks to local platform ecosystems, payment technologies, and cultural contexts rather than simply replicating research conducted in developed markets.

3.3 Citation Analysis

Table 1. Top Cited Research

Citations	Authors and year	Title
2847	[5]	Blockchain: a paradigm shift in business practices
2156	[7]	Exploring the implications of blockchain technology for brand–consumer relationships: A future research agenda
1923	[17]	Artificial intelligence (AI) agents and the future of customer loyalty
1804	[6]	How gamified online loyalty programs enable value co-creation
1567	[18]	A cloud-based system for improving retention marketing loyalty programs in Industry 4.0: A study on big data storage implications
1432	[2]	Digital transformation and loyalty programs in retail
1289	[19]	Information search and destination loyalty in tourism: The moderating role of the consumer's pragmatic tendency
1156	[20]	Churn and loyalty behavior of Turkish digital natives: Empirical insights and managerial implications
1043	[1]	Towards digital loyalty programs: Insights from customer medium preference segmentation
897	[4]	Managing loyalty program communications in the digital era: Does culture matter?

Source: Scopus, 2026

Table 1 presents the most-cited publications in digital loyalty program research, identifying works that have proven most influential in shaping the intellectual development of the field. The prominence of blockchain and artificial intelligence publications in the top citations demonstrates how significantly these technologies have captured scholarly and practitioner attention in recent years [5], [7].

The highest-cited work [5] addresses blockchain as a fundamental paradigm shift

for business practices, having received 2,847 citations. This exceptional citation count reflects widespread scholarly recognition that blockchain technology represents transformative potential for loyalty program design, security, and transparency. The second-highest cited work [7] specifically examines blockchain implications for brand–consumer relationships, suggesting blockchain's significance for loyalty program implementation extends beyond technical

considerations to relationship management dimensions.

The presence of artificial intelligence publications among top citations reflects growing scholarly recognition that AI capabilities support customer personalization, segmentation, predictive analytics, and automated interaction within loyalty ecosystems [17]. Strong citations for [6] on gamification (1,804 citations) indicate that psychological engagement mechanisms have become central to understanding loyalty program effectiveness in digital contexts.

The inclusion of implementation-focused works among top-cited publications including works on cloud-based retention marketing [18] (1,567 citations) and digital transformation in retail [2] (1,432 citations) indicates that scholars increasingly recognize the importance of examining loyalty programs as complete organizational systems rather than isolated marketing tools.

The temporal pattern evident in influential publications shows progression from foundational customer loyalty concepts toward emerging technological applications, consistent with the keyword evolution patterns revealed in the network analyses [4], [19]. The dominance of 2020-2021 publications in the most-cited list indicates that this temporal progression has accelerated recently, with newest research immediately establishing high citation counts. This pattern indicates that the field is actively incorporating new technologies and progressively reconceptualizing loyalty mechanisms as technological capabilities mature and become practically viable for organizational deployment.

Beyond the top-cited works summarized in Table 1, the broader corpus suggests that citation momentum is building around a second wave of publications addressing system-level and behavioral dimensions of digital loyalty. Design-science contributions on redemption analytics in multi-vendor loyalty environments [21] extend the digital-infrastructure theme identified in Figure 1 toward operational and governance questions. Simultaneously, empirical studies applying reinforcement

learning to personalized benefit allocation [13] and configurational analyses of blockchain loyalty acceptance [9] indicate that the field is moving from demonstrating technical feasibility toward explaining adoption mechanisms and optimizing system design. Earlier applied work on blockchain deployment challenges in retail settings [24] situates these recent contributions within a continuous, decade-long trajectory of practitioner-oriented blockchain scholarship rather than a discontinuous recent

4. CONCLUSION

The present bibliometric analysis provides comprehensive mapping of digital loyalty program research, revealing an intellectually sophisticated field integrating customer behavior understanding, technological capability, and strategic business thinking. The identification of four distinct research clusters demonstrates that digital loyalty scholarship operates as a genuinely multidisciplinary enterprise incorporating perspectives from marketing, information technology, psychology, and business strategy. Rather than representing fragmentation, this multidisciplinary reflects the genuine complexity of loyalty program challenges that cannot be addressed through single-discipline approaches. The field's maturation is evident in the emergence of organized research communities with recognized intellectual leaders, established research networks, and productive international collaborations.

The temporal evolution from traditional customer relationship management perspectives toward blockchain, artificial intelligence, and gamification-based approaches indicates that research agendas respond rapidly to emerging technological possibilities. This progression reflects growing scholarly recognition that digital channels enable capabilities unavailable in traditional contexts, including real-time personalization, transparent transaction recording, gamified engagement mechanisms, and community-based loyalty ecosystems. However, research has not yet

fully addressed critical questions regarding responsible technology deployment, ethical implications of advanced personalization and data analytics practices, data privacy considerations in loyalty systems, and equitable access to loyalty benefits across diverse customer segments.

Geographic research distribution reveals both strengths and limitations in current scholarship. Research concentration in developed Western nations and emerging Asian economies means current scholarship reflects particular regional perspectives, institutional research traditions, and market contexts. The dominance of North American and Western European research institutions may bias findings toward consumer behaviors, business models, and regulatory environments prevailing in developed markets. Notably underrepresented African, Latin American, and Southeast Asian regions represent significant geographic gaps potentially indicating missed opportunities for understanding loyalty program implementations in high-growth emerging markets and contributing unique market insights to global scholarship.

The collaborative and international nature of contemporary digital loyalty research indicates field maturation toward disciplinary legitimacy and recognized scholarly identity. Established research networks, recognizable influential authors across multiple institutions, and leading institutional contributors demonstrate that digital loyalty has become an established research domain with defined intellectual traditions and research agendas. However, the emergence of new technologies means research on blockchain-based loyalty systems and advanced AI applications remains in early development stages, with substantial opportunities for theoretical advancement, empirical investigation, and practical application development.

Citation analysis reveals that blockchain and artificial intelligence have become central theoretical and technological foci in contemporary digital loyalty research, reflecting their significant potential for transforming loyalty program design,

customer interaction, and organizational strategy. The rapid accumulation of citations for blockchain and AI publications indicates quickening scholarly attention to these technological trajectories. However, limited research exists examining integration of multiple emerging technologies (blockchain + AI + gamification) into comprehensive loyalty ecosystems, or studying potential negative consequences and unintended outcomes of highly personalized, technology-mediated loyalty systems.

The density visualization identifying understudied research areas including blockchain loyalty systems, metaverse-based loyalty experiences, cryptocurrency-based rewards, and cross-platform loyalty integration indicates fertile ground for future scholarship. These emerging domains represent both theoretical opportunities for developing new conceptual frameworks and practical opportunities for contributing to organizational implementation challenges as these technologies mature from experimental to mainstream applications.

This bibliometric analysis contributes systematic understanding of digital loyalty program research landscape through comprehensive mapping of research themes, collaboration patterns, and intellectual evolution. The study identifies critical research gaps and proposes future research directions. Future scholarship should integrate mature understanding of customer behavior with sophisticated application of emerging technologies while addressing critical questions about responsible deployment and authentic customer value creation. Research addressing cross-cultural loyalty design, multi-technology integration strategies, ethical considerations in data-driven personalization, and long-term customer outcomes of technology-mediated loyalty programs represents significant opportunities for meaningful field advancement.

The findings suggest that digital loyalty research has reached a stage where further advancement requires moving beyond individual technology adoption (blockchain OR AI OR gamification) toward

integrated research examining how multiple technologies interact synergistically within comprehensive loyalty ecosystems. Additionally, research examining consumer perspectives, adoption barriers, and long-term engagement outcomes rather than focusing exclusively on organizational implementation and technological capability

would significantly enhance understanding of digital loyalty program effectiveness. As the field continues evolving, maintaining balance between technological innovation focus and customer value creation emphasis will be critical for ensuring that research contributions translate into practical benefits for both organizations and customers.

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