

Integrating Transformational Core Marketing, Website Quality, Service Quality, and Electronic Medical Records Toward Marketing 5.0 Readiness

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Abstract. Digital transformation in hospitals involves clinical information systems, patient-facing interfaces, and service experience, yet these research streams are often examined separately. This study maps their intellectual connections and develops a conceptual interpretation of Marketing 5.0 readiness. The author-reported Scopus corpus comprises 842 English-language journal articles published in 2015–2025. A bibliometric science-mapping design combines performance indicators with keyword co-occurrence and thematic interpretation using VOSviewer and Biblioshiny. The reported keyword network contains three clusters: digital infrastructure, service and patient experience, and digital interface and marketing. Electronic medical records and patient satisfaction are prominent concepts, while website quality is interpreted as a potential connection between technical and relational domains. Drawing on digital transformation theory, service-dominant logic, and Marketing 5.0, the article proposes a Transformational Core Marketing framework linking infrastructure, interface quality, service experience, and relational outcomes. These bibliometric patterns indicate intellectual proximity, not tested causal effects. The proposed framework requires empirical validation and the underlying bibliographic exports are needed to independently reproduce the quantitative mapping.

Keywords: Digital transformation; Hospital marketing; Electronic medical records (EMR); Website quality; Service quality; Marketing 5.0.

Introduction

Digital transformation has reshaped healthcare systems by integrating electronic medical records (EMRs), artificial intelligence, data analytics, and patient-facing digital platforms into hospital operations and strategic management. Digital health

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infrastructure increasingly supports healthcare accessibility, organizational resilience, and service delivery (World Health Organization [WHO], 2021). The COVID-19 pandemic further accelerated digital adoption, expanding telehealth services and digitally mediated patient interactions (Keesara et al., 2020). Consequently, hospital digitalization extends beyond operational efficiency toward patient experience, institutional reputation, and competitive positioning.

This transformation aligns with Marketing 5.0, which emphasizes technology-enabled, human-centered value creation (Kotler et al., 2021). Digital capabilities increasingly connect operational performance with patient engagement, satisfaction, and relational value (Rust, 2020; Verhoef et al., 2021). Within hospitals, three interrelated dimensions are particularly relevant: EMRs support clinical coordination and information accessibility (Kruse et al., 2018); website quality facilitates information access, usability, and digital trust (Zhou et al., 2019; Kim & Niehm, 2020); and service quality influences patient satisfaction and loyalty across conventional and digital healthcare encounters (Fatima et al., 2018; Meesala & Paul, 2018; Aladwan et al., 2022).

Despite these developments, existing scholarship remains fragmented. EMR studies predominantly examine adoption, interoperability, and clinical performance (Kruse et al., 2018; Tsai et al., 2020), while website quality research emphasizes usability, security, and online trust (Zhou et al., 2019). Healthcare service quality studies primarily investigate satisfaction and behavioral intentions (Fatima et al., 2018; Meesala & Paul, 2018). Although digital transformation theory recognizes strategic value reconfiguration (Verhoef et al., 2021), few studies conceptually integrate these technological and experiential dimensions with hospital marketing outcomes. The resulting research gaps are summarized in Table 1.

Table 1. Research Gaps Identified in Digital Transformation Research in Hospitals

Thematic Domain	Dominant Focus in Existing Literature	Identified Limitation	Specific Research Gap Addressed in This Study
Electronic Medical Records (EMR)	Operational efficiency, interoperability, clinical documentation	Limited linkage to marketing and relational outcomes	Absence of conceptual integration between EMR and hospital image, trust, and loyalty
Website Quality	Usability, information quality, security	Analyzed as isolated digital interface	Insufficient integration with backend digital infrastructure
Service Quality	Patient satisfaction and behavioral intention	Treated independently from digital	Underexplored mediating role within digital



Thematic Domain	Dominant Focus in Existing Literature	Identified Limitation	Specific Research Gap Addressed in This Study
		transformation frameworks	transformation architecture
Digital Transformation	Technology adoption and organizational change	Technology-centric orientation	Limited alignment with Marketing 5.0 human-centric value creation
Healthcare Marketing	Branding and engagement	Minimal integration with health informatics	Fragmented cross-disciplinary scholarship

To address these gaps, this study proposes Transformational Core Marketing as an integrative conceptual architecture that connects digital infrastructure, digital interface quality, service experience, and relational marketing outcomes. Drawing upon Marketing 5.0 (Kotler et al., 2021), service-dominant logic (Vargo & Lusch, 2008), and digital transformation theory (Verhoef et al., 2021), the framework positions EMRs as technological infrastructure, website quality as a digital interface, and service quality as an experiential dimension potentially associated with hospital image and patient loyalty.

Using bibliometric analysis and science mapping of Scopus-indexed publications from 2015–2025, this study addresses four research questions: (RQ1) How has the intellectual structure of hospital digital transformation research evolved? (RQ2) How are EMRs, website quality, and service quality interconnected? (RQ3) How does existing scholarship associate these dimensions with hospital marketing outcomes? and (RQ4) Which emerging research themes indicate potential pathways toward Marketing 5.0 readiness?

Methodology

Research Design

This study used a bibliometric research design that integrates performance analysis and science mapping to examine the intellectual structure and thematic evolution of hospital digital transformation research. Bibliometric analysis enables systematic, replicable assessment of publication patterns, citation networks, and thematic relationships (Donthu et al., 2021; Zupic & Čater, 2015). Unlike narrative reviews, this approach applies quantitative techniques to identify research trajectories and conceptual convergence without testing causal relationships (Aria & Cuccurullo, 2017).

Research Context and Data Sources

The study examined Scopus-indexed publications addressing electronic medical records (EMRs), website quality, service quality, and hospital marketing outcomes. Scopus was selected for its interdisciplinary coverage and standardized citation metadata (Mongeon & Paul-Hus, 2016).

Data were retrieved in January 2026 using the following search string applied to titles, abstracts, and keywords:

"Digital transformation" AND hospitals AND ("electronic medical records" OR EMR OR "WEBSITE QUALITY" OR "QUALITY OF SERVICE") AND MARKETING

Inclusion criteria included English-language, peer-reviewed journal articles published between 2015 and 2025 in healthcare, management, marketing, and information systems. Conference proceedings, book chapters, editorials, and unindexed publications were excluded. Following eligibility screening and duplicate removal, 842 documents were retained.

Data Collection Procedure

Scopus metadata were exported in CSV and BibTeX formats and cross-validated for completeness. Data cleaning included verifying duplicates, standardizing author names, harmonizing keywords (e.g., consolidating EHRs under EMR), and removing irrelevant terms to minimize network fragmentation (Donthu et al., 2021).

Variables, Constructions, and Analytical Frameworks

Four conceptual domains guided the analysis: (1) digital infrastructure, encompassing EMRs, interoperability, and health information systems; (2) digital interface quality, including website usability, information credibility, and online engagement; (3) service quality and experience, covering responsiveness, reliability, satisfaction, and trust; and (4) marketing outcomes, including hospital image, loyalty, and competitive advantage.

These domains were interpreted through Marketing 5.0 (Kotler et al., 2021), service-dominant logic (Vargo & Lusch, 2008), and digital transformation theory (Verhoef et al., 2021).

Data Analysis Techniques

Performance analysis examined publication growth, geographical contributions, and citation indicators. Science mapping incorporated keyword co-occurrence, co-citation analysis, thematic mapping, and trend-topic analysis. VOSviewer 1.6.20 supported network visualization and cluster identification, while Biblioshiny (Bibliometrix R-package) facilitated performance indicators and thematic classification (Aria & Cuccurullo, 2017). A minimum keyword occurrence threshold of five was applied.

Network relationships were interpreted using total link strength, cluster structures, and modularity indicators.

Validity, Reliability, and Reliability

Methodological rigor was supported through transparent eligibility criteria, standardized metadata processing, and consistent analytical thresholds. Scopus indexing provided standardized bibliographic coverage (Mongeon & Paul-Hus, 2016). Cross-validation of co-occurrence, co-citation, and thematic mapping outputs strengthened interpretive consistency and reproducibility.

Ethical Considerations

The study analyzed only secondary bibliographic metadata and did not involve human participants, patient records, or confidential clinical information. Accordingly, human-subject ethical approval was not required. Research integrity was maintained through transparent reporting, accurate attribution, and responsible data processing.

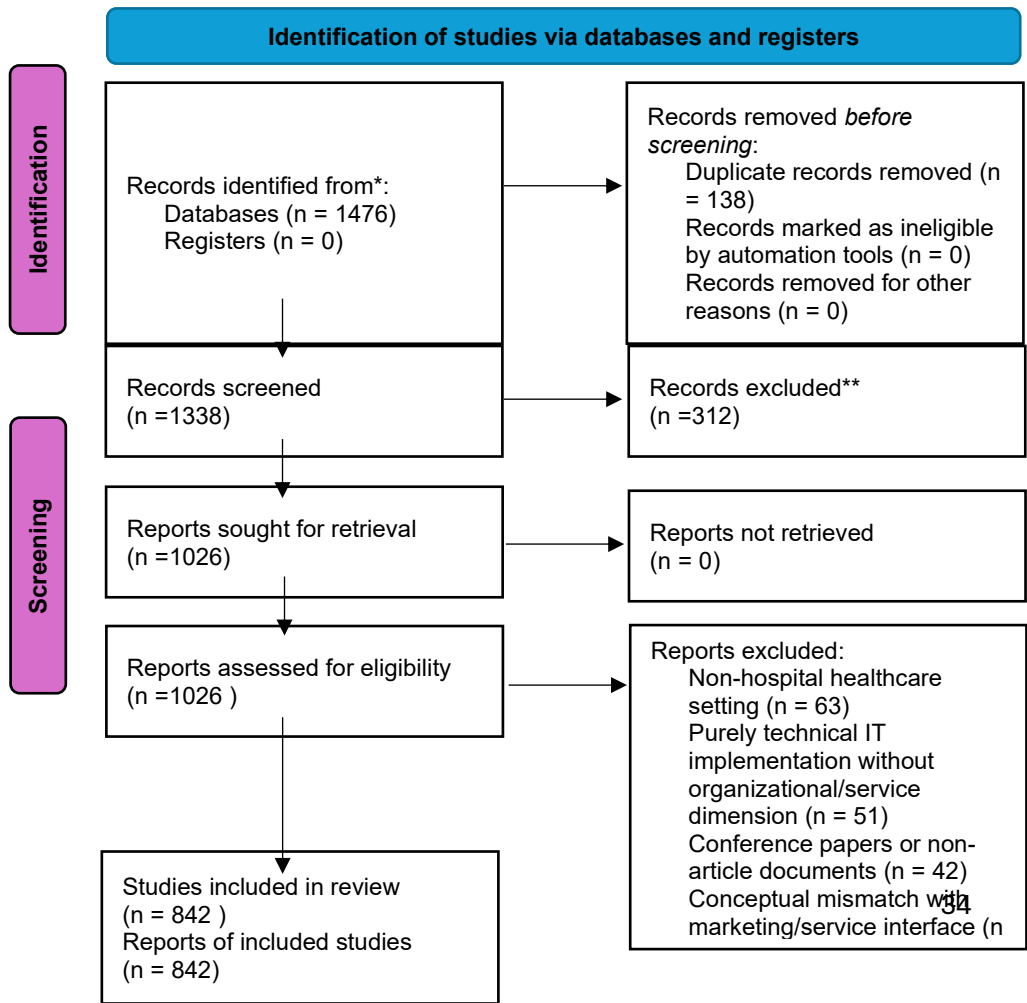




Fig 1. PRISMA 2020 flow diagram for new systematic reviews

Results

Data Overview and Analysis Results

The final dataset consists of 842 peer-reviewed journal articles published between 2015 and 2025 and indexed in Scopus. After removing duplicates and aligning keywords, 3,964 unique author keywords were identified. Applying a minimum appearance threshold of five, 127 keywords meet the inclusion criteria for the co-emergence network analysis. The dataset contains 28,516 cited references, which are used for shared citation mapping. Annual publication output increased from 37 articles in 2015 to 164 articles in 2024, indicating consistent growth. The publication's average annual growth rate is 18.6%. The average citation per document was 21.4, with an h-index of 63 for the entire dataset. These indicators confirm the corpus's resilience and analytical adequacy for science mapping. Network density, modularity index ($Q = 0.41$), and average link strength (12.8) indicate a well-structured but distinct thematic landscape, enabling reliable cluster detection.

Publication Trends and Performance Indicators

Descriptive performance analysis shows that research output accelerated significantly after 2019. The three most productive fields of study were Health Policy and Management (34%), Information Systems (27%), and Marketing/Service Management (19%). Geographically, the United States (23%), the United Kingdom (11%), China (10%), Australia (8%), and Germany (7%) contributed the most publications. Cross-border collaboration reached 42%, indicating substantial international research integration. The authors' most frequently cited keywords were "digital transformation" ($n = 312$), "electronic medical records" ($n = 214$), "quality of service" ($n = 187$), "patient satisfaction" ($n = 169$), "hospital management" ($n = 142$), and "website quality" ($n = 88$).

Keyword Co-Emergence Network

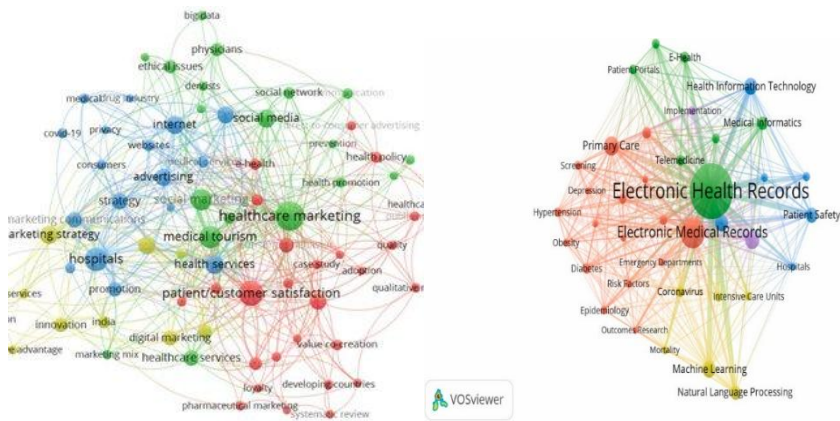


Fig 2. Keyword Co-occurrence Network of Hospital Digital Transformation Research (2015–2025)

Keyword co-occurrence analysis identified three clusters: digital infrastructure (48 keywords; TLS = 2,964), emphasizing EMRs, interoperability, and digital health; service and patient experience (39 keywords; TLS = 2,211), encompassing satisfaction, trust, and loyalty; and digital interface and marketing (40 keywords; TLS = 1,876), involving website quality, engagement, and branding. EMRs and patient satisfaction emerged as prominent nodes, while website quality potentially connected technological and experiential domains.

Discussion

Interpretation of Key Findings

Bibliometric findings indicate a shift in hospital digital transformation research from technological infrastructure toward integrated service experiences and marketing outcomes. Electronic medical records (EMRs) remain central to digital health scholarship, while their growing associations with service quality, patient satisfaction, and hospital image suggest increasing interdisciplinary convergence. Website quality appears as a potential conceptual bridge between digital infrastructure and patient engagement, although keyword relationships do not establish causal effects. Emerging themes of artificial intelligence, omnichannel engagement, and personalization further reflect Marketing 5.0's human-centered orientation (Kotler et al., 2021).

Theoretical Integration

These findings align with digital transformation theory, which conceptualizes technological change as strategic value reconfiguration rather than mere technology

adoption (Verhoef et al., 2021). Service-dominant logic further explains how technological and experiential resources may contribute to value co-creation (Vargo & Lusch, 2008). Previous studies associate digital healthcare services with satisfaction and service responsiveness (Aladwan et al., 2022), while customer experience theory emphasizes interconnected touchpoints throughout service journeys (Lemon & Verhoef, 2016). Unlike earlier EMR research emphasizing clinical efficiency (Kruse et al., 2018), the emerging literature increasingly considers relational outcomes. This development may partly reflect accelerated digital healthcare adoption during the COVID-19 pandemic (Keesara et al., 2020).

Theoretical Contributions

This study proposes Transformational Core Marketing as an integrative conceptual architecture connecting EMRs as foundational digital infrastructure, website quality as a patient-facing interface, service quality as an experiential dimension, and hospital image and loyalty as potential relational outcomes. By synthesizing digital transformation theory, service-dominant logic, and Marketing 5.0, the framework bridges health informatics and healthcare marketing scholarship. Methodologically, bibliometric mapping identifies interdisciplinary connections and emerging research directions, providing a foundation for subsequent empirical validation rather than demonstrating causal relationships.

Practical and Policy Implications

Hospital management should coordinate investments in EMRs, website functionality, and service delivery rather than implementing disconnected digital initiatives. Performance assessment may incorporate interoperability, information accessibility, responsiveness, patient satisfaction, and institutional trust. Policymakers should encourage interoperable, accessible, and patient-centered digital healthcare systems. However, personalized engagement must prioritize data privacy, informed consent, equity, and clinical quality over promotional objectives.

Robustness and Alternative Explanations

The observed convergence may reflect broader customer experience trends or pandemic-driven digital adoption rather than hospital-specific structural transformation. Disciplinary citation differences may also influence network configurations. Furthermore, reliance on English-language Scopus publications limits representativeness, while keyword normalization may introduce classification biases. Bibliometric associations cannot establish effect sizes, mediation, or causality.

Future research should empirically examine the proposed framework through structural equation modeling, longitudinal studies, and qualitative institutional comparisons. Cross-country investigations could clarify contextual differences, while

expanded bibliometric databases may improve coverage. Emerging technologies, including AI-enabled personalization and predictive analytics, also warrant investigation regarding patient trust, service equity, and institutional reputation.

Conclusion

Based on the author-reported Scopus corpus, hospital digital transformation scholarship contains distinguishable but connected clusters relating to digital infrastructure, patient experience, and digital marketing interfaces. This mapping motivates a Transformational Core Marketing framework in which EMR capabilities, website quality, and service quality are considered together when conceptualizing human-centered Marketing 5.0 readiness. The principal contribution is an integrative research model and agenda; the study does not establish causality, mediation, or the readiness of individual hospitals. Reproducible bibliometric outputs and empirical validation remain necessary before stronger claims can be made.

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