



Digital Marketing of Healthcare Products: A Systematic Review of Trust, Engagement, and Commercial Outcomes

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ABSTRACT

Healthcare product markets have become increasingly digital, but evidence remains fragmented across pharmaceutical advertising, online pharmacies, mobile health applications, supplements, and influencer-led promotion. This study systematically reviews how digital marketing creates or destroys commercial value in healthcare product markets. Following PRISMA 2020 and SPAR-4-SLR principles, peer-reviewed studies published between 2010 and June 2026 were retrieved from PubMed and major publisher and indexing platforms using terms related to healthcare products, digital promotion, consumer trust, engagement, adoption, and commercial outcomes. Forty-two studies met the eligibility criteria and were synthesized through descriptive coding and thematic analysis. Five themes emerged: channel migration from one-way promotion to interactive ecosystems; trust and source credibility as the dominant conversion mechanisms; engagement, value co-creation, and brand equity as relational pathways; heterogeneous effects on purchase, adoption, adherence, and firm-level outcomes; and regulatory, privacy, misinformation, and health-literacy constraints. The review shows that digital reach alone does not generate sustainable value. Commercial outcomes are strongest when credible expertise, transparent sponsorship, evidence-based content, responsive interaction, and secure platform design jointly build trust. Conversely, persuasive personalization and influencer narratives can increase attention while weakening informed choice when disclosure and risk communication are inadequate. The study develops an integrated framework linking digital marketing capabilities to commercial outcomes through trust, engagement, and brand equity, moderated by product risk, regulation, platform governance, and health literacy.

Keywords: Consumer trust; Brand engagement; Online pharmacy; Purchase intention; Regulatory governance

1. INTRODUCTION

Healthcare products occupy a distinctive marketing environment because commercial communication is inseparable from clinical risk, professional authority, information asymmetry, and public regulation. Medicines, dietary supplements, medical devices, online pharmacy services, and digital health applications are marketed to consumers who may have limited capacity to evaluate efficacy, safety, and comparative value. The same communication that expands awareness and market access can therefore improve informed choice or intensify inappropriate demand. This tension makes healthcare product marketing economically important and ethically consequential.

Digitalization has moved the sector from controlled, one-way promotion toward interconnected ecosystems involving search engines, social networks, mobile applications, online pharmacies, healthcare professionals, patient communities, and influencers. Pharmaceutical firms can now personalize messages, observe behavioral responses in real time, and maintain relationships across the customer journey. Online platforms also reduce search and transaction costs, particularly for remote consumers and patients who value convenience, privacy, or continuous access. However, the reduction in transaction costs is accompanied by higher verification costs because consumers must distinguish regulated providers, sponsored content, credible expertise, and evidence-based claims from misinformation or covert persuasion (Almeman, 2024; Limbu & Huhmann, 2024).

Early debate about pharmaceutical promotion focused on direct-to-consumer advertising and its effects on information seeking, physician requests, prescribing, and healthcare expenditure. Digital channels have broadened this debate. Social media enables interactive communication and

relationship development, but it also embeds promotion in personal stories and peer-like recommendations. Patient influencers, health professionals, and fitness creators may be perceived as more authentic than corporate sources even when their content is commercially sponsored (Willis & Delbaere, 2022; Gell et al., 2026). The commercial attractiveness of such communication is clear, yet the boundaries between education, experience sharing, and advertising have become increasingly difficult to identify.

Marketing research indicates that digital activities may strengthen awareness, engagement, perceived value, and purchase intention. In healthcare, these effects depend more heavily on trust than in many low-risk product categories. Trust can emerge from professional expertise, transparent disclosure, platform security, evidence quality, brand reputation, and responsive service. It can also be transferred from a credible endorser or community to a brand. Recent studies of e-healthcare products, online pharmacies, dietary supplements, and healthcare services consistently position trust as a key predictor or mediator of adoption and purchase behavior (Chou et al., 2024; Gupta et al., 2025; Saraswat & Singh, 2025).

Commercial outcomes are also more complex than a single purchase. For nonprescription products, marketers may prioritize conversion, repurchase, and advocacy. For prescription medicines and digital therapies, relevant outcomes include physician discussion, treatment initiation, medication adherence, persistence, and appropriate use. Healthcare firms must therefore evaluate marketing efficiency together with quality of information and long-term relationship outcomes. A campaign that produces short-term attention but increases skepticism, regulatory exposure, or unsafe behavior can destroy brand and firm value.

The literature is fragmented across health communication, pharmaceutical marketing, digital commerce, information systems, consumer behavior, public health, and business ethics. Existing reviews have examined social media use for health purposes, health misinformation, ethical issues in direct-to-consumer healthcare, online pharmacy purchasing, and influencer promotion (Chen & Wang, 2021; Nagappan et al., 2024; Suárez-Lledó & Álvarez-Gálvez, 2021). These reviews provide valuable domain-specific insights, but they do not integrate the commercial mechanisms through which digital marketing capabilities influence trust, engagement, brand equity, and market outcomes across multiple healthcare product categories.

This systematic literature review addresses that gap by synthesizing evidence across pharmaceuticals, nutraceuticals and supplements, online pharmacies, mobile health products, and healthcare-related services. It answers four questions: (1) Which digital marketing strategies and channels dominate the healthcare product literature? (2) Through which consumer and relational mechanisms do these strategies influence commercial outcomes? (3) Which ethical, regulatory, and market conditions strengthen or weaken their effectiveness? and (4) What integrated framework and research agenda can guide firms, scholars, and policymakers? The study contributes by connecting health communication risks with marketing value creation and by treating trust, engagement, and brand equity as linked strategic mechanisms rather than isolated outcomes.

2. LITERATURE REVIEW AND CONCEPTUAL BACKGROUND

2.1. Healthcare Product Marketing as a High-Risk Exchange

Healthcare exchanges differ from ordinary consumer transactions because buyers often cannot evaluate product quality before use and may remain unable to evaluate it afterward. Prescription status, clinical complexity, and potential adverse effects increase dependence on physicians, pharmacists, regulators, and trusted brands. This creates a market in which information quality and source credibility are strategic assets. Relationship marketing is consequently central: firms must demonstrate competence, integrity, and benevolence before communication can translate into action. The commitment-trust perspective predicts that reliable and transparent exchanges support durable relationships, while opportunistic communication weakens cooperation and loyalty (Morgan & Hunt, 1994).

Digital platforms alter this exchange by increasing accessibility and interactivity. Consumers can compare prices, read reviews, consult professionals, join patient communities, and purchase products without traditional geographic constraints. Online pharmacies and mobile health applications create value through convenience, time savings, personalization, and availability, but perceived risk remains substantial. Counterfeit products, data misuse, insecure payment systems, misleading claims, and uncertain professional accountability can offset the economic benefits of digital access (Almaman, 2024; Gupta et al., 2025). Evidence from the Indonesian over-the-counter medicine market likewise shows that halal labeling, brand cues, and price shape purchase decisions (Ismail et al., 2022).

2.2. Trust and Source Credibility

Trust is the most consistently observed mechanism in the reviewed literature. It reduces perceived uncertainty and allows consumers to act on information that they cannot independently verify. In healthcare product markets, trust is multidimensional: consumers evaluate the brand, the message, the professional or influencer, the platform, and the regulatory environment. Professional expertise and evidence-based information usually strengthen trust, while hidden sponsorship and exaggerated claims weaken it. The role of trust is particularly pronounced for online pharmacies and mobile health products, where the platform itself becomes part of the product experience (Gupta et al., 2025; Saraswat & Singh, 2025). Recent evidence also indicates that trust mediates the effects of online reviews, price perceptions, and website quality on purchase decisions (Ismail et al., 2026).

Source credibility can be transferred to a product. Pharmacist professionalism and celebrity attractiveness both contribute to supplement brand trust, but professional credibility provides a stronger basis for sustained confidence when consumers possess higher product knowledge (Chou et al., 2024). Influencer research similarly shows that expertise and information credibility matter more than follower counts or physical attractiveness for supplement purchase decisions (Kumar et al., 2024). Yet credibility cues can also lower consumers' persuasion knowledge. Personal illness disclosure and

narrative transportation make promotional messages feel experiential rather than commercial, which may increase favorable responses while reducing critical evaluation (Darmawan & Huh, 2022; Kim, 2022).

The evidence supports the first proposition: P1. Digital marketing capabilities improve consumer response when professional credibility, content accuracy, platform assurance, and sponsorship transparency jointly strengthen trust.

2.3. Engagement, Value Co-Creation, and Brand Equity

Digital marketing is not limited to message exposure. Consumers comment, share, review, ask questions, and contribute experiential knowledge. Service-dominant logic treats these interactions as value co-creation because value emerges through use and participation rather than being embedded only in the product (Vargo & Lusch, 2004). In healthcare, participation can improve relevance and emotional support, but it can also circulate inaccurate information. The managerial challenge is to facilitate engagement without surrendering scientific and regulatory control.

Consumer-brand engagement provides a relational bridge between digital interaction and commercial performance. Social media can strengthen cognitive attention, emotional involvement, and behavioral participation (Hollebeek et al., 2014). Healthcare studies show that structured content processes and responsive interaction can enhance brand engagement, while social media marketing generated by professionals may increase value co-creation and brand equity (de Assis & Vilela, 2025; Hung et al., 2023). Brand equity then provides a memory and preference structure that supports choice under uncertainty. In Keller's (1993) terms, strong, favorable, and unique associations reduce perceived risk and increase the probability that a brand enters the consumer's consideration set.

These relationships lead to two propositions: P2. Engagement and value co-creation mediate the effect of digital marketing on brand equity. P3. Brand equity converts repeated trustworthy interactions into purchase, adoption, retention, and advocacy.

2.4. Commercial Outcomes and Economic Value

The reviewed studies employ varied outcome measures, including click and interaction behavior, purchase intention, willingness to use, actual purchase, physician discussion, adherence intention, repurchase, and advocacy. Digital marketing can lower customer acquisition costs and increase targeting efficiency, but most studies stop at perceptual or intentional outcomes. Evidence linking campaigns to sales, margins, customer lifetime value, or firm value remains limited. This is a major gap for journals and managers concerned with economic performance.

The customer journey perspective suggests that financial value depends on consistency across pre-purchase information, transaction quality, post-purchase support, and ongoing engagement (Lemon & Verhoef, 2016). A persuasive campaign cannot compensate for weak fulfillment, inaccessible pharmacists, poor data security, or inconsistent risk communication. Healthcare product firms should therefore treat digital marketing as an organizational capability integrated with medical affairs, compliance, customer service, pharmacovigilance, and channel management rather than as a stand-alone promotional function.

2.5. Ethical and Regulatory Boundary Conditions

Healthcare marketing effectiveness is bounded by regulation, health literacy, privacy, and platform governance. Digital content crosses national borders and can remain visible after claims or indications change. Sponsorship may be disclosed inconsistently, and algorithmic targeting can reach vulnerable audiences who were not the intended clinical population. Reviews of direct-to-consumer healthcare and prescription drug influencer marketing identify recurring concerns about misinformation, incomplete risk disclosure, covert persuasion, and outdated oversight (Gell et al., 2026; Nagappan et al., 2024).

Health literacy determines whether consumers can distinguish personal testimony from clinical evidence and evaluate benefit-risk information. Platform design also shapes outcomes by rewarding emotional, novel, and highly engaging content. Consequently, the same narrative strategies that improve reach and engagement can weaken informed decision-making. The synthesis therefore proposes: P4. Product risk, prescription status, health literacy, privacy protection, regulatory enforcement, and platform governance moderate the relationship between digital marketing and commercial outcomes.

3. RESEARCH METHODOLOGY

3.1. Review Design

This study used a systematic literature review design to consolidate a multidisciplinary and conceptually fragmented field. The review followed the transparency principles of PRISMA 2020 and the domain, theory, method, and characteristics logic of SPAR-4-SLR (Page et al., 2021; Paul et al., 2021). The approach was also informed by management review guidance emphasizing reproducible search decisions, explicit inclusion criteria, critical appraisal, and theory-building synthesis (Snyder, 2019; Tranfield et al., 2003).

The unit of analysis was a peer-reviewed scholarly article examining marketing communication, digital commerce, or consumer response related to a healthcare product or closely connected healthcare service. Healthcare products included prescription and over-the-counter medicines, nutraceuticals and supplements, medical and wellness products, online pharmacy offerings, and mobile or platform-based health products. General social media studies were retained only when they provided a mechanism directly applicable to healthcare marketing, such as source credibility, engagement, electronic word of mouth, or influencer disclosure.

3.2. Search Strategy and Eligibility

Searches were conducted and updated through July 12, 2026 using PubMed and major publisher and indexing platforms that expose peer-reviewed metadata, including ScienceDirect, SpringerLink, Emerald Insight, Wiley Online Library, Taylor & Francis, JMIR, BMJ, JAMA Network, and Frontiers. Search strings combined product terms (healthcare product, pharmaceutical, medicine, nutraceutical, dietary supplement, online pharmacy, medical device, health app) with marketing terms (digital marketing, social media marketing, influencer, direct-to-consumer advertising, content marketing, electronic word of mouth) and outcome terms (trust, engagement, brand equity, purchase intention, adoption, adherence, sales, commercial performance). Backward and forward citation chaining was used to identify additional influential studies.

Table 1. Review Protocol and Eligibility Criteria

Component	Operationalization
Review period	2010–June 2026; earlier foundational theory retained separately
Sources	PubMed and major peer-reviewed publisher/indexing platforms; citation chaining
Population/context	Consumers, patients, platform users, healthcare professionals, and product-related communities
Phenomenon	Digital promotion, social media, influencers, online pharmacies, mobile health commerce, and digital direct-to-consumer communication
Outcomes	Trust, credibility, engagement, value co-creation, brand equity, purchase/adoption, adherence, advocacy, and commercial performance
Inclusion	English, peer-reviewed, substantive healthcare-product relevance, and clear marketing or consumer outcome
Exclusion	Purely clinical interventions, non-scholarly commentary without analytical value, inaccessible metadata, and studies without marketing relevance

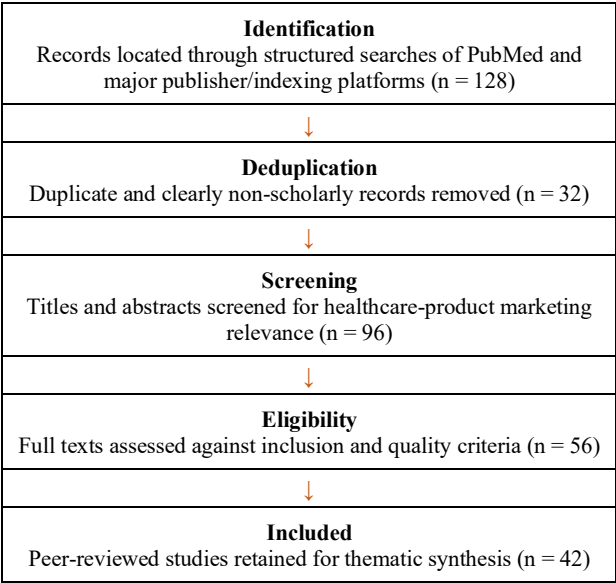
3.3. Screening, Quality Appraisal, and Coding

The structured search produced 128 candidate records. After removing 32 duplicate or clearly non-scholarly records, 96 titles and abstracts were screened. Fifty-six full texts were assessed, and 14 were excluded because they fell outside product marketing, lacked a consumer or commercial outcome, were not peer-reviewed, or provided insufficient methodological detail. The final analytical corpus contained 42 substantive studies. Methodological and foundational theory sources were not counted in the corpus.

Each retained study was coded for publication year, geographical setting, product domain, channel, research design, theory, focal mechanism, outcome, and regulatory or ethical issue. Quality appraisal considered clarity of the

research question, appropriateness of design, transparency of sampling and measurement, coherence between evidence and conclusions, and relevance to the review questions. Rather than assigning a single numerical score across heterogeneous methods, the study used a fit-for-purpose appraisal and gave greater interpretive weight to studies with transparent methods, validated measures, or systematic review procedures.

Thematic synthesis followed an iterative process. Initial codes were grouped into channel capabilities, trust and credibility, engagement and value co-creation, brand outcomes, commercial outcomes, and boundary conditions. Relationships across themes were then compared across product categories and methods. Because study designs and outcomes were heterogeneous, meta-analysis was not appropriate; the review used descriptive frequencies and theory-building synthesis.



Full-text exclusions (n = 14): outside product-marketing scope (5); no consumer or commercial outcome (4); non-peer-reviewed (3); insufficient methodological detail (2).

Figure 1. PRISMA-Style Study Selection Process

4. RESULTS AND DISCUSSION

4.1. Profile of the Evidence Base

The literature expanded rapidly after 2020. Three studies in the corpus were published between 2010 and 2015, nine between 2016 and 2020, eighteen between 2021 and 2023, and twelve between 2024 and June 2026. The concentration of recent work reflects the accelerated adoption of digital health, online purchasing, and influencer communication. Fourteen studies focused primarily on pharmaceuticals, seven on supplements or nutraceuticals, eight on online pharmacies and e-health commerce, eight on healthcare applications or services, and five on general health communication mechanisms directly relevant to product marketing.

Table 2. Descriptive Profile of Included Studies (n = 42)

Dimension	Category	Studies
Publication period	2010–2015 / 2016–2020	3 / 9
Publication period	2021–2023 / 2024–2026	18 / 12
Product domain	Pharmaceuticals / supplements	14 / 7
Product domain	Online pharmacy / e-health commerce	8
Product domain	Health apps and services / general mechanisms	8 / 5
Research design	Survey or structural modeling	14

Dimension	Category	Studies
Research design	Content, observational, or digital trace analysis	9
Research design	Experiment / qualitative	5 / 4
Research design	Systematic, scoping, or conceptual review	10

Survey-based designs were most common, followed by content and observational analyses, reviews, experiments, and qualitative studies. This distribution reveals a maturity imbalance. The literature has developed robust models of intention and trust, but relatively few studies observe actual purchases, long-term adherence, marketing cost efficiency, or firm-level financial outcomes. Geographic coverage has improved, especially in Asia and emerging markets, yet cross-country comparisons remain limited.

4.2. From Broadcast Promotion to Interactive Market Ecosystems

The first theme is a structural shift from broadcast advertising to interactive market ecosystems. Traditional direct-to-consumer promotion primarily created awareness and stimulated physician discussion. Digital platforms add search, comparison, transaction, community, and post-purchase functions. Consumers may encounter a product through a social post, verify it through reviews or professional content, compare price and availability through an online pharmacy, and continue the relationship through an application or patient community. Marketing effectiveness is therefore distributed across multiple touchpoints rather than attributable to a single advertisement.

Healthcare organizations benefit when these touchpoints are integrated. Hung et al. (2023) show how the 5A customer path can be combined with a structured identify-develop-engage-assess process to guide social media content and relationship building. Enyinda et al. (2018) similarly position social media as a relationship-marketing capability for pharmaceutical firms. The broader digital marketing literature supports this interpretation: omnichannel consistency and meaningful interaction strengthen the customer journey, whereas intrusive or fragmented communication increases avoidance (Appel et al., 2020; Dwivedi et al., 2021).

Online pharmacies and mobile platforms transform distribution as well as communication. Consumers value convenience, availability, price, privacy, and rapid access, but their evaluations depend on platform reputation, service quality, professional access, and security. The importance of these attributes means that digital marketing cannot be separated from the operating model. A marketing promise of convenience creates value only when delivery, inventory, consultation, and complaint resolution meet expectations.

4.3. Trust Is the Central Conversion Mechanism

Trust appeared more frequently and consistently than any other mechanism. It predicts willingness to purchase e-healthcare products, adopt online pharmacies, and respond to supplement endorsements (Chou et al., 2024; Gupta et al., 2025; Saraswat & Singh, 2025). Trust reduces perceived performance, privacy, financial, and health risk. It also allows consumers to rely on a brand or professional when technical evidence is difficult to interpret.

The synthesis distinguishes five trust sources. First, professional trust arises from pharmacists, physicians, and qualified experts. Second, informational trust reflects evidence quality, balance, and clarity. Third, brand trust reflects accumulated performance and reputation. Fourth, platform trust depends on security, usability, verification, and service reliability. Fifth, relational trust develops through responsive and respectful interaction. Strong healthcare strategies align these sources rather than relying on a single endorser.

Influencer communication demonstrates both the power and fragility of trust. Patient stories and illness disclosure increase identification and narrative transportation, which can reduce resistance to persuasive messages (Darmawan & Huh, 2022; Kim, 2022).

Expertise and information credibility can improve purchase decisions, but personal narratives may obscure promotional intent. Willis and Delbaere (2022) and Gell et al. (2026) show that influencer promotion creates particular risks when sponsorship, evidence limitations, and adverse effects are not clearly disclosed. Trust generated through authenticity is commercially valuable but unstable when audiences later perceive manipulation.

The managerial implication is that trust should be managed as an auditable strategic asset. Firms should measure not only awareness and engagement but also claim comprehension, source recognition, disclosure visibility, perceived credibility, and post-exposure risk understanding. In high-risk categories, these trust indicators are leading measures of long-term commercial value and regulatory resilience.

4.4. Engagement, Co-Creation, and Brand Equity

The second major pathway involves engagement and value co-creation. Interactive content creates opportunities for consumers to ask questions, share experiences, and participate in health-related communities. Such engagement can increase perceived relevance and emotional connection. Onofrei et al. (2022) show that source credibility, homophily, and content quality mediate the effects of social interaction on purchase intention and behavioral engagement. In healthcare settings, engagement is especially valuable when it links consumers to qualified support rather than merely encouraging visible reactions.

De Assis and Vilela (2025) find that social media marketing by healthcare professionals influences purchase intention through value co-creation and brand equity. Hung et al. (2023) likewise demonstrate that systematic content design can support engagement with healthcare brands and services. These studies suggest that the economic value of engagement is indirect: interaction builds knowledge, confidence, perceived value, and brand associations before it affects purchase or continued use.

Brand equity is particularly important where products are difficult to compare. A trusted healthcare brand reduces search effort and perceived risk, supports price tolerance, and increases the probability of repurchase or recommendation. However, digital brand equity is vulnerable to misinformation, negative electronic word of mouth, and inconsistent responses across platforms. Firms should therefore integrate social listening with medical and regulatory review so that emerging concerns are addressed before they become persistent brand associations.

4.5. Purchase, Adoption, Adherence, and Commercial Performance

Most empirical studies find positive associations between credible digital communication and purchase or adoption intentions, but the strength and meaning of the effects vary. Healthcare applications are adopted when they provide functional, emotional, and conditional value, while perceived risk and involvement shape the translation of value into purchase intention (Chakraborty & Paul, 2023). Online pharmacy adoption is influenced by trust, convenience, usefulness, price, and prior digital experience. Supplement purchases respond to credible expert and influencer recommendations, but consumers' knowledge changes how they interpret these cues.

Intentions are not equivalent to actual behavior. Healthcare purchases may require prescriptions, reimbursement, professional approval, or repeated adherence. Marketing studies should therefore distinguish exposure, intention, conversion, appropriate use, persistence, and advocacy. Sullivan et al. (2020) show that direct-to-consumer advertising can stimulate patient-provider discussion, while earlier and recent research raises concerns about increased demand for products with limited incremental therapeutic value (Schwartz et al., 2023). These findings imply that commercial performance should be evaluated together with clinical appropriateness and information quality.

Firm-level evidence remains the weakest part of the literature. Few studies directly connect digital marketing investment to sales response, marketing productivity, profitability, or valuation. This omission limits managerial budgeting. Future work should combine campaign data, prescription or transaction data, customer relationship metrics, regulatory events, and financial performance. Econometric designs, field experiments, marketing-mix models, and longitudinal customer-level analysis are necessary to determine whether trust and brand equity generate durable returns rather than temporary attention.

Table 3. Thematic synthesis of review findings

Theme	Synthesized result and references
Channel migration	Digital promotion now links search, comparison, transaction, community, and service; value depends on platform quality and channel integration (Hung et al., 2023; Limbu & Huhmann, 2024).

Theme	Synthesized result and references
Trust and source credibility	Trust is the most consistent mechanism. Expertise, disclosure, content accuracy, and platform assurance support purchase, adoption, and retention (Ismail et al., 2022, 2025, 2026; Gupta et al., 2025; Saraswat & Singh, 2025).
Engagement and brand equity	Qualified interaction creates knowledge, perceived value, advocacy, repurchase, and price tolerance (de Assis & Vilela, 2025; Onofrei et al., 2022; Hung et al., 2023).
Commercial outcomes	Evidence is strongest for intentions and adoption; direct evidence on adherence, customer value, and firm-level financial returns remains limited (Sullivan et al., 2020; Patel et al., 2023).
Ethics, privacy, and regulation	Misinformation, hidden sponsorship, and weak privacy governance can reverse gains through trust erosion and regulatory exposure (Suarez-Lledo & Alvarez-Galvez, 2021; Gell et al., 2026; Persaud et al., 2024).

Note: Qualitative synthesis of 42 included studies; no pooled effect size was estimated because designs and outcomes were heterogeneous.

4.6. Ethics, Misinformation, Privacy, and Regulation

The commercial benefits of digital marketing are inseparable from ethical and regulatory risk. Suárez-Lledó and Álvarez-Gálvez (2021) document substantial health misinformation across social platforms. Gell et al. (2026) identify misinformation, weak oversight, and parasocial narratives as recurring concerns in prescription drug influencer promotion. Specific studies reveal inaccurate birth-control content, promotional bias in performance-enhancing products, and uneven quality of medical advice (Nickles et al., 2022; Paoli & Cox, 2024; Pfender & Devlin, 2023; Trepanowski & Grant-Kels, 2023).

Professional participation can improve the information environment. Suzuki et al. (2024) found that identifiable physician influencers often shared accurate drug-related information, yet financial relationships can complicate professional credibility. Persaud et al. (2024) show that some physicians endorsing products on social media receive industry payments. Disclosure must therefore cover both explicit sponsorship and relevant financial ties.

Privacy is another strategic boundary. Personalization requires data, but healthcare data are sensitive and can expose consumers to discrimination, stigma, or unwanted targeting. Zoupos and Spais (2023) demonstrate that marketing ethics and privacy management affect consumer comfort with digital pharmaceutical and nutraceutical marketing. Firms that treat privacy merely as a compliance requirement may sacrifice trust; firms that make data practices understandable and controllable can differentiate their platforms.

Regulation often develops more slowly than platform practices. Promotional content is short, interactive, cross-border, and algorithmically distributed. Risk information may be technically present but visually inferior to the benefit claim. The evidence therefore supports standardized disclosure, proportionate benefit-risk presentation, documented expert review, continuous monitoring, and rapid correction processes. These practices protect both public health and brand value.

4.7. Integrated Framework

The synthesis produces an integrated framework in which digital marketing capabilities affect commercial and behavioral outcomes through three linked mechanisms: trust and credibility, engagement and value co-creation, and brand equity. Trust reduces uncertainty; engagement increases interaction and perceived relevance; brand equity converts repeated positive experiences into preference and resilience. These mechanisms influence purchase and adoption, retention and adherence, advocacy, customer value, and marketing efficiency. Product risk, prescription status, health literacy, privacy, regulation, and platform governance moderate every pathway.



Figure 2. Integrated Digital Healthcare Product Marketing Framework

The framework clarifies why high reach or engagement does not automatically create value. If content is inaccurate, sponsorship is hidden, or platform security is weak, attention may increase without trust. Conversely, a technically compliant campaign may generate little value if it is inaccessible, irrelevant, or unresponsive. Effective healthcare marketing requires simultaneous optimization of scientific quality, relational quality, and commercial usability.

4.8. Managerial and Policy Implications

Table 4. Strategic Decision Matrix for Healthcare Product Marketers

Decision Area	Recommended Practice	Primary Metric
Content	Use balanced evidence, plain language, and visible risk information.	Comprehension; credibility
Endorsers	Prioritize relevant expertise; disclose sponsorship and financial ties.	Source trust; disclosure recall
Engagement	Route questions to qualified support and document recurring concerns.	Resolved interactions; sentiment
Platforms	Verify sellers, secure data, and integrate service fulfillment.	Conversion; complaints; retention
Personalization	Use consent-based segmentation and limit sensitive inference.	Opt-in; privacy trust
Performance	Link media exposure to adoption, retention, adherence, and value.	Incremental return; customer value
Governance	Combine marketing, medical, legal, privacy, and pharmacovigilance review.	Compliance events; correction time

For managers, the review recommends a trust-first rather than reach-first strategy. Content should be designed around consumer information needs and clinical risk, not only platform engagement algorithms. Healthcare professionals and patient voices can add relevance, but their roles, evidence basis, and commercial relationships should be transparent. Marketing teams should establish escalation pathways so that medical questions, adverse-event reports, and misinformation are rapidly transferred to qualified functions.

Performance dashboards should combine marketing and quality indicators. Recommended commercial measures include incremental conversion, acquisition cost, retention, repurchase, adherence, advocacy, and customer lifetime value.

Trust and safety measures should include comprehension, source recognition, disclosure recall, perceived privacy control, complaint rates, and correction time. This balanced scorecard reduces the risk that short-term engagement is rewarded at the expense of long-term value.

For policymakers, the findings support channel-neutral rules that focus on promotional function rather than format. Disclosures should be standardized, visually prominent, and persistent. Platforms should maintain searchable records of paid health promotion, verified professional identities, and correction histories. Regulators should also encourage public digital-health literacy so consumers can identify commercial intent and evaluate claims. In emerging markets such as Indonesia, verified e-pharmacy standards, clear influencer rules, and interoperable complaint mechanisms would support both access and consumer protection.

4.9. Research Agenda

Future research should move beyond cross-sectional intention models. First, studies should use experiments and longitudinal behavioral data to test causal effects of disclosure, professional expertise, content balance, and personalization. Second, researchers should connect digital touchpoints to actual purchases, prescriptions, adherence, and financial performance. Third, comparative research should examine differences across prescription medicines, over-the-counter products, supplements, devices, and health applications because risk and regulatory requirements vary substantially.

Fourth, scholars should investigate vulnerable groups, including consumers with low health literacy, chronic illness, limited access to professionals, or high privacy concerns. Fifth, research should examine how generative artificial intelligence, conversational agents, and algorithmic recommendations change source attribution and trust. Sixth, firm-level studies should test whether integrated governance and trust capabilities produce superior marketing productivity, lower regulatory risk, and stronger brand or firm value. Finally, studies in emerging economies should examine how institutional trust, informal commerce, mobile-first behavior, and regulatory capacity alter the framework.

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

This systematic review integrates 42 studies on digital marketing across pharmaceuticals, supplements, online pharmacies, health applications, and related healthcare products and services. The evidence shows that the sector has shifted from one-way advertising to interactive ecosystems in which communication, service, transaction, and community are interconnected. Digital marketing can create substantial value by improving access, relevance, engagement, and customer relationships, but its effectiveness depends on trust.

Trust is produced by credible expertise, accurate and balanced information, transparent sponsorship, secure platforms, and reliable service. Engagement and value co-creation strengthen brand equity when interaction is supported by qualified guidance. These relational mechanisms can improve purchase, adoption, retention, adherence, and advocacy. However, misinformation, covert promotion, privacy risk, weak platform governance, and limited health literacy can transform the same digital capabilities into sources of commercial and social harm.

The study contributes an integrated framework connecting digital marketing capabilities to commercial outcomes through trust, engagement, and brand equity, with regulation and consumer vulnerability as boundary conditions. The central conclusion is that sustainable healthcare marketing is not the maximization of attention. It is the disciplined conversion of credible information and responsible interaction into informed demand and long-term customer value.

5.2. Recommendations

Healthcare firms should implement cross-functional governance that integrates marketing, medical affairs, legal and regulatory review, privacy, customer service, and pharmacovigilance. Campaigns should use evidence-based content, visible disclosure, qualified endorsers, and plain-language risk communication. Online pharmacies and health platforms should treat verification, data security, professional access, and fulfillment quality as core marketing assets.

Researchers should prioritize behavioral and financial outcomes, causal designs, cross-country comparisons, and category-specific analyses. Policymakers should modernize disclosure and monitoring rules for influencers, short-form video, personalized advertising, and artificial-intelligence-generated content. Platforms should strengthen verification, advertising archives, and correction mechanisms. These actions can support innovation and market access while protecting informed choice and public confidence.

5.3. Limitations

The review is limited to English-language peer-reviewed studies retrievable through PubMed and major publisher and indexing platforms. The field uses heterogeneous concepts, product categories, and outcome measures, which prevented meta-analysis. The rapid evolution of platform practices also means that new evidence may emerge quickly. Before formal submission, the authors should archive the final database exports and screening sheet and update the search to the submission date. These limitations do not alter the central pattern of evidence but indicate the need for continuing review and stronger reporting standards.

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Data Availability: No new empirical dataset was generated. All included studies are identified in the reference list, and the screening counts and coding categories are reported in the manuscript.

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