
**Post-COVID Digital Adoption and Omnichannel Customer Experience in
Pharmaceutical Marketing: A Systematic Review of
Healthcare Professional Engagement**

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Abstract

The rise of the coronavirus pandemic has been a major game-changer for the pharmaceutical industry, which has seen them turn away from relying on old-fashioned face-to-face interactions with physicians and embrace digital touchpoints that can be integrated into a unified omnichannel marketing strategy. Previously, healthcare professionals (HCPs) had to go through in-person scientific detailing and physical in-person relationship-building, which shifted rapidly and effectively to virtual communications, including webinar platforms, remote detailing systems, mobile platforms, customer relationship management (CRM) tools, and artificial intelligence (AI)-powered personalized engagement tools. This systematic analysis explores digital adoption's effects on omnichannel customer clinical experience and its possible implications for healthcare professional engagement in the context post-COVID. Highly related to the period under study (2020-2025), peer-reviewed literature was doggedly collected and evaluated in compliance with the PRISMA screening guidelines from Scopus, PubMed, Google Scholar, Web of Science, and other platforms. The findings indicated that the omnichannel model positively impacted the accessibility, personalization, continuity of communication, and results of building relationships among healthcare professionals. It's at the same moment a story about the permanent challenges of digital fatigue, data management challenges, technology interoperability challenges, and evolving regulatory mandates. The future of pharmaceutical marketing is shaped by various aspects such as Artificial Intelligence-powered engagement frameworks, predictive behavioral analysis, and hybrid engagement environments. This study contributes to the academic debate on

pharmaceutical digital transformation, identifies practices regarding healthcare professional interaction post-pandemic and provides suggestions for future research.

Keywords: Pharmaceutical marketing, Omnichannel marketing, Digital adoption, Healthcare professional engagement, Customer experience, COVID-19, Digital transformation

1. Introduction

The pharmaceutical industry has relied on field force models for decades, primarily medical reps, scientific symposia and face-to-face conferences, as the main method of communicating product information and building “prescriber relationships” with healthcare professionals (HCPs). All of the above traditional methods served as the basis of commercial activities in pharmaceuticals (syrups). In the face of the COVID-19 pandemic, current engagement channels were turned upside down, as in-person scientific meetings, hospital visits and interactions were restricted by limitations (Teguh et al., 2022).

For pharmaceutical companies, with an unprecedented operating environment, this meant that they had to accelerate digital transformation initiatives to continue serving clients and to keep companies running. Throughout the pandemic period, the shift to technology witnessed a massive acceleration in the healthcare industry, with pharmaceutical companies quickly thinking about using virtual engagement capabilities and integrated omnichannel communication frameworks (Cioppi et al., 2023).

Various digital communication channels such as webinar platforms, virtual detailing applications, targeted e-mailing, CRM platforms, mobile platforms and AI-based personalized communication tools have been increasingly adopted in the post-pandemic period (Kumar et al., 2024). This rapid development led to creating omnichannel marketing, which involves merging different communication channels to deliver basic and consistent, personalized and customers-centric experiences throughout the online and offline communication channels (Mansuralia et al., 2024).

A major difference between omnichannel marketing and former multi-channel marketing is that traditional multi-channel messaging maintained parallel marketing channels, while omnichannel messaging seeks to maintain interaction communications that are consistent, continuous and

structurally integrated. In the context of pharmaceutical marketing, we must clearly differentiate this from the fusion of various channels, as in the above definition of omnichannel engagement, because the fusion of multiple channels brings not only dynamic elements of a handshake, face-to-face meeting and other communication methods, but also brings scientific knowledge through a structured, allied, and flexible engagement paradigm.

Currently, healthcare workers prefer the use of different communication options, access to science at a moment's notice, constant educational support, and personalised experiences. As a result, pharma companies need to look into improving CX strategies whilst maintaining ethical standards and legal marketing requirements.

While omnichannel technology appears to be booming in the post-COVID-19 era of the pharmaceutical industry, definitions and concepts of its impact on HCP engagement are not widely agreed upon in the scholarly world. This systematic review synthesises the growing body of literature on post-COVID innovations in digital marketing and omnichannel customer experience for pharmaceuticals, allowing a structured appraisal of the current body of evidence and a prioritisation of research needs.

2. Objectives of the Study

This systematic review is directed by the subsequent objectives:

- To assess the extent to which pharmaceutical marketing functions had to undergo digital transformation as a result of the COVID-19 epidemic.
- To evaluate how omnichannel marketing strategies can lead to improved engagements with healthcare professionals.
- To establish the primary digital communications channels that are used between healthcare professionals in the present day in pharmaceutical communication.
- To evaluate the opportunities and obstacles of (omni) channel customer experience solutions thoroughly.
- To identify emerging trends and possible pathways in digital pharmaceutical writing and engagement with health professionals.

3. Research Methodology

The research is conducted by using systematic literature review approach with PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) screening protocol. A systematic search on PubMed, Scopus, Google Scholar, ResearchGate and Web of Science (WoS) was conducted for the papers published in 2020-2025 and are peer reviewed.

3.1 Inclusion Criteria

Articles for inclusion were considered suitable by the following inclusion criteria:

- Peer-reviewed journal publications
- Studies addressing pharmaceutical marketing or HCP engagement themes
- Research pertaining to omnichannel or multichannel engagement strategies
- Empirical, conceptual, or review articles published in English
- Publications released between 2020 and 2025

3.2 Exclusion Criteria

The following were used as criteria for omitting articles:

- For example, research that is not related to health care or the marketing of a drug.
- Multiple citations found in multiple databases
- Publications that are opinion-based or editorial, but not supported by empirical or theoretic research
- Duplicate/thin research which does not have a strong digital pharmacological interaction focus

3.3 Search Keywords

The following streams of keywords were used to guide the electronic database searching:

- Pharmaceutical omnichannel marketing
- Digital adoption in pharma
- Healthcare professional engagement
- Post-COVID pharmaceutical marketing
- Omnichannel customer experience

- Digital transformation in healthcare

A thematic synthesis approach was used to identify common conceptual themes, trends, and limitations and identify gaps in current research.

4. Literature Review

4.1 Digital Transformation in Pharmaceutical Marketing

Digital transformation refers to the proactive adoption of digital technologies in the core business processes to boost efficiency, customer interaction and business outcomes (Cioppi et al., 2023). COVID-19 has definitely hastened the move in the pharmaceutical side, making the old ways of getting the doctor's attention unsuccessful in an operational standpoint (Teguh et al., 2022).

Since the onset of the COVID-19 crisis, Pharma's industry companies quickly adopted new and inventive digital technologies to facilitate their communication with healthcare providers. The technologies included AI analytics platforms, advanced CRM systems, remote detailing systems, telemedicine support systems, and mobile communication systems (Kumar et al., 2024).

Notice: Digital transformation did not stop at the marketing department – it also spilled over to operations in manufacturing, clinical research, supply chain and patient engagements. Considering the pharmaceutical industry, the crisis emphasized the importance of Digital Resilience and indicated the necessity for new more flexible approaches of commercial interaction, integrated with a strong technology reference (Teguh et al., 2022).

4.2 Omnichannel Marketing in the Pharmaceutical Industry

Mansuralia et al. (2024) state that through seamless integration of digital and physical channels, companies can ensure a consistent consumer experience, which is the key to successful omnichannel marketing. Within the pharmaceutical enterprise, this approach combines real-world people, webinars, cell apps, digital medical conferences, social media, scientific portals, CRM expertise and electronic communication platforms into a unified engagement methodology.

Omnichannel communication can improve the satisfaction of physicians, providers, and clinical teams through such interactions as increasing flexibility, providing customized scientific content and consistent communication through the various platforms of engagement (Kumar et al., 2024).

Healthcare workers and people who benefit from their work are demanding more and more of a significant journey: an experience of getting access to scientific information in a timely way without compromising the care they receive.

Post-COVID has transformed the pharmaceutical landscape into one that shifts from product-centric marketing to relationship-based approaches, centered on individual scientific communication and continuous engagement with the healthcare provider.

4.3 Healthcare Professional Engagement in the Digital Era

The most crucial target group in the pharmaceutical marketing is healthcare professionals. The willingness to embrace digital channels generally determines the effectiveness of the Omni-Channel approach.

Recent research has shown that healthcare professionals are increasingly likely to prefer the interaction modalities listed below:

- Instant access to scientific and clinical materials
- Apps for mobile communication
- Adapted school nutrition programs
- Virtual scientific conferences/symposia
- Artificial Intelligence-driven content suggestion systems
- Having digital engagement frameworks that can be adapted and are not synchronous.

Digital engagement facilitates physicians accessing scientific information in their home offices, thereby eliminating the need for them to attend events held in person and significantly reduces the need to attend events altogether (Singh Chowhan et al., 2025).

AI-powered CRM systems support pharma companies in adopting analytical methods and strategies to delve into the healthcare workers' behavior, interests, and engagement patterns. This allows businesses to design and execute more personalized customer engagements as per the needs and improve the overall customer experience (Anthuvan et al., 2025). This personalized communication has consistently been reported to be associated with improved physician response rates, engagement and quality of long-term relationships (Mansuralia et al., 2024).

5. Findings and Discussion

5.1 Increased Adoption of Digital Engagement Channels

Literature assessment found major and sustained increases in the uses of digital interaction platforms since the COVID-19 pandemic. The key communication vehicles used by the Pharmaceutical commercial teams are webinars, remote detailing platforms, electronic communications, messaging apps, digital continuing medical education (CME) programs, and mobile engagement technologies (Kumar et al., 2024).

The basic conditions that enable this fast digital adoption were recognised as:

- Limited mobility to access health institutions during and after the epidemic
- Healthcare providers wish for more flexibility in the options to support asynchronous interactions.
- Institutional needs for cost-effectiveness and improvement of operations
- Strengthened analytical abilities to inform data-driven engagement choices
- The rising acceptance of physicians of virtual / digital standards of communication

These statistics signify that matter is changing, as digital is no longer merely a marketing channel, but a key strategic tool in pharma HCP communication.

5.2 Personalization and Customer Experience Enhancement

A commonly cited benefit about omnichannel marketing in the pharmaceutical industry is the improvement in the quality of the customer experience that can be achieved through tailored communication strategies and a cohesive approach across multiple channels (Mansuralia et al., 2024).

To deliver personalized scientific information relevant to different specialties, platforms used, prescribing patterns and engagement history of HCP, pharmaceutical companies have increasingly turned to technologies like predictive analytics and more powerful CRM systems.

The outcome of customized omnichannel interaction can be measured, and results include:

- Better communication with physician and sense of importance of communication
- Assists in sharpening brand recall and retention of science
- Higher percentage of time spent in engagement than open engagements
- Improvements in effectiveness of scientific communication and behaviour change impacts

- Improved LTc Healthcare Professional Relationship Management

These findings match known customer experience literature, which reports that customer experience continuity and customization are critical drivers to making interactions successful and keeping customers satisfied.

5.3 Emergence of Hybrid Engagement Models

While digital pharmaceutical engagement has increasingly expanded, the literature has uniformly stressed that there is a continued preference for “traditional” face-to-face interactions between HCP and pharmaceutical companies, particularly for more complex scientific conversations and establishing long-term relationships (Kumar et al., 2024).

Thus, hybrid forms of engagement that efficiently integrate online and offline personal interaction methods are now the preferred marketing approach in the post-pandemic pharmaceutical industry (Singh Chowhan et al., 2025). The benefit of these “hybrid” structures is that they are a mix of the effective, broad communications of the digital and the trust and sense of relationship of face to face contacts.

The trend suggests that the days of in-person engagement being replaced by them altogether are over, and that the future of pharmaceutical marketing will be about building these balanced omnichannel ecosystems where digital and in-person components work synergistically.

5.4 Challenges in Omnichannel Implementation

While all the benefits listed so far are certainly a big draw, there are still a number of complex organizational and operational challenges to be taken into account to make effective adoption of omnichannel possible.

a. Digital Communication Fatigue

Several pharma companies are sending huge bags of messages to everyone in the healthcare space, on a variety of platforms at once. Digital touchpoints are responsible for cognitive overload and channel saturation, which can impact engagement response and is characterized as “digital exhaustion” (Mansuralia et al., 2024).

b. Data Privacy and Regulatory Compliance

Pharmaceutical companies must operate under a strict code of regulations that ensures physician information remains confidential, marketing is done according to ethical guidelines, and proper methods for communicating are used. Those restrictions can be problematic and burdensome on compliance, especially when used in conjunction with the current high-tech implementation of digital interface devices (Cioppi et al., 2023).

c. Technology Integration and Interoperability

Many companies in the pharmaceutical industry struggle with managing to connect their various digital systems to form integrated omnichannel assessment systems. Technological fragmentation can also result in endless different customer experiences and in Engagement strategies that are fragmented and less effective.

d. Organizational Capability and Change Resistance

Commercial field-force staff should require continuing commitment to digital capability-building to effectively perform in an omnichannel campaign. Beyond lack of technical skills, institutional resistance to technology-based change remains as a constant challenge for the successful implementation within the confines of pharmaceutical (enterprises).

e. Return on Investment Measurement

One of the major challenges for the pharmaceutical industry in today's healthcare environment is measuring the return on investment (ROI) of digital engagement initiatives and omnichannel marketing tactics (Kumar et al., 2024).

6. Theoretical Implications

The outcomes of this review greatly contribute to the present academic literature on digital transformation and omnichannel customer experience in pharmaceutical marketing.

The results support and extend the relationship marketing theories which consider long-term relationship as a quality factor, interaction with stakeholders as trust creation and the communication and interaction with them individually as the way to customer happiness and stakeholder loyalty. This research demonstrates the theoretical frameworks in pharmaceutical healthcare professional interaction in practice with the use of omnichannel approach, thus

demonstrating the conceptual relationship between relationship marketing concepts and digital commercial practice.

This study is an addition to theory related to omnichannel marketing that integrated engagement ecosystems increase the experience for HCPs in complex and strictly regulated environments. This offers some insights in the sectors where it is detailed enough to help the study of omnichannel marketing as a whole.

This review unites two theories: digital transformation and customer experience, focusing on the increasing impact of digitalization on the effectiveness of pharmaceutical marketing and the importance of the strategic use of AI tools in customer engagement, predictive behavioral science and personalization of scientific communication in the post-pandemic period.

7. Managerial Implications

There are dramatic implications, for commercial executives and marketing strategists, included in the review conclusions.

Companies looking to maximize their omnichannel engagement effectiveness are encouraged to:

- Smartly invest resources in the integrated Omni-channel Engagement Technology Platforms.
- Improve AI capabilities for health care professionals, analytics and behaviors.
- Public, individually adapted scientific communication highlighting the tendency of healthcare professional profiles.
- In-text, in-person/explained digital proficiency development programmes put in place for field force teams
- Create engagement strategies focused around physicians' needs
- Proactively balance in-person and virtual interactions based on the healthcare professional these interactions are targeted to
- Improve CRM integrations and maintain a coherent data flow on all communication channels.

Pharmaceutical firms that can successfully bring the turnkey omnichannel approach to their commercial operating models are poised to gain stronger competitive positions and improved interactions with stakeholders in the new normal pandemic healthcare environment.

8. Research Gaps and Future Research Directions

While the use of multichannel pharmaceutical marketing is widely acknowledged in the academic world, there are still many missing components to the scholarly literature.

Identified Research Gaps

- Lack of research that reflects longitudinal studies of professional health care engagement outcomes over longer-term follow-up
- There are a few empirical evidence that need to be backed up with effective ROI measuring approaches to multichannel pharmaceutical initiatives.
- Research is not focused on emerging pharmaceutical markets such as India and other developing economies.
- No clear metrics to assess the omni experience of the patients during care in health care environments
- Lack of academic study into AI in ethics, algorithm transparency and physician data control in a digital interaction with pharmaceuticals

Future Research Directions

Future studies are suggested in the following priority areas:

- The Development and Evaluation of Omnichannel Engagement Models quantitatively
- Real-world assessment of AI-enabled engagement solutions and outcomes for HCP's
- Reports and trending of physician behavior and activities
- Comparative cross-national study of strategies of marketing drugs in difference regulatory environments
- Digital ethics and compliance in drug-related interactions via AI
- Optimization approaches to hybrid program design and management.

9. Conclusion

The COVID-19 pandemic was a big disruption in the pharmaceutical marketing world and accelerated the transformation of the industry to all things digital such as an integrated engagement ecosystem (Teguh et al., 2022). Within this context, omnichannel marketing has emerged in the healthcare sector not only as an operational shift but as a necessity to deliver personalized, cohesive, and patient-centered healthcare professional interaction experiences (Mansuralia, et al., 2024).

To sustain and enhance physician engagement throughout and after the pandemic, pharma companies turned to a myriad of digital tools including webinar platforms, remote detailing applications, AI-powered CRM, mobile applications and virtual communication solutions.

Based on the synthesis of research in this review, omnichannel tactics have proven to have a significant positive impact on improving the accessibility of HCP, creating personalized communication, continuity of engagement, and improving the quality of customer relationships. However, implementation challenges, including digital fatigue, regulatory compliance compliance, technology jigsaw puzzle issues and challenges in ROI attribution continue to hinder the realisation of the omnichannel promise.

In the future, pharmaceutical marketing will most likely be defined by hybrid interaction ecosystems where AI, predictive analytics, and more powerful omnichannel orchestration capabilities will reign. Those offering value-added, ethical and technologically advanced customer engagement strategies will be best suited to win sustainable, competitive edges in the increasingly complex and fluid post-pandemic healthcare environment.

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